Credentialism's Role in Society

Our higher education system is not an engine for opportunity or for overcoming disadvantage. It operates to secure the advantages of those who are already doing very well.[1]

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Applied Education Foundation
Promoting Education in the Useful Arts & Sciences

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[1] Tucker, Marc, *Covid-19 Will Force Us to Redesign Our Higher Education System for Lifelong Learning; You Won't Recognize It When It's Done*, National Center On Education And The Economy (NCEE).

[2] In this and all my other essays, I will periodically add applicable supplemental information as new information becomes available. Therefore, this published year refers to its first release to the public.

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Introduction

What is the purpose of credentials? It is twofold: 1) To demonstrate a certain level of competence in a given activity based on established standards[3] – in particular, for occupational purposes; and 2) To erect barriers in order to protect the welfare of those who control certain interests. The first can be a social good, whereas the second is a social evil. Unfortunately, the former frequently leads to the latter.

The argument for credentials is to provide some standardization, or understanding of level of achievement by individuals, which subsequently is supposed to provide a level of quality delivery in the activity. Theoretically this is a sound principle, however, in practice, this principle has been used by special interests for self-serving purposes. The result is upward pressures on cost of the activity – which hurts lower income families the most – and marginalization of many individuals who would have chosen a particular career had it not been for insurmountable credentialing barriers – again harming lower income sectors the most. This tendency is not in the best interest of society.

This is not a new phenomenon. The Republic of Florence of the Medieval and Renaissance periods got its start through the guilds that eventually became infamous for their protectionism of the various crafts and markets they represented.

Encyclopaedia Britannica offers an analysis of the rise and fall of European guilds, pointing out the benefits they provided early on but revealing their degradation over time as they became focused solely on the welfare of their members. Britannica sums up the negative effects the guilds had in the end:

> [T]he guilds' exclusivity, conservatism, monopolistic practices, and selective entrance policies eventually began to erode their economic utility. Apprenticeships became almost entirely hereditable, and masters set ridiculously high standards for apprentices to become journeymen and for journeymen to become masters. The guilds worked exclusively for their own interests and sought to monopolize trade in their own locality. They were frequently hostile to technological innovations that threatened their members' interests, and they sometimes sought to extinguish commercial activities that they were not able to bring under their own control. The merchant guilds became parties of aristocrats who dominated the town and city governments, sometimes over the opposition of the craft guilds. … [D]ecrees abolishing craft associations were enacted in France (1791), Spain (1840), Austria and Germany (1859–60), and Italy (1864)….

Unfortunately, since we do not teach the lessons of history in school, out of fear of being accused as bigots for being critical of other cultures, history will have to repeat itself.

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[3] However, there is a *standardization dichotomy*. While standardization of knowledge of tasks and activities brings about consistency, inter-operability, and a sense of security, it also has the effect of inhibiting – if not outright prohibiting – creativity, innovation, change and growth. Therefore, people must be ever mindful of this dichotomy, pursuing measures to take advantage of the benefits standardization offers while watching for its limiting and erosive tendencies.

This can be seen with credentialism. The guilds of Europe present lessons of human self-centered tendencies, yet the U.S. appears to be oblivious to these lessons. Therefore, we can currently observe similar patterns of behavior as Britannica's guild summary above explains.

For example:

- The above reference to apprenticeships becoming hereditable can be observed where the ACT and SAT college entrance exams are designed to favor those of a higher socio-economic status. This is rooted in inheritance advantages, intentional or otherwise.

- The reference to "masters set ridiculously high standards for apprentices to become journeymen and for journeymen to become masters" can be seen in barriers to college undergraduate and graduate programs with the justification being based on selectivity and exclusivity in order to rank high in the estimation of society. In other words, the pursuit and acquisition of status and prestige through college degrees justify ridiculously "high" standards – standards that have proven to have no effect on real world performance. The medical and legal professions are two examples of setting ridiculously high requirements to enter their schools. One must first acquire an undergraduate degree in a study that is not in law (political science is the typical undergraduate study) or in medicine (microbiology will open medical school doors). Why, because it significantly reduces the number of graduate applicants, plus it makes them worth more money in their profession, though it is sold as being important to "select for the best" from the population. It sounds like the old eugenics argument made by American Progressives of the first half of the 20th century.

- The reference to the guilds having worked exclusively for their own interests and establishing monopolies is certainly the case where the public school system has been commandeered by the academic community for college prep at the exclusion of the vast majority of the school age population.

- The reference to "they were frequently hostile to technological innovations that threatened their members' interests" can be seen in how, ever since the 1892 Committee of Ten Report,[4] secondary school curriculum has been based on college prep, even when there was another powerful movement underway in that era, called the Manual Arts Movement. This movement was, in large part, marginalized because it was a threat to academic power – hence the reason manual arts were kept within a comprehensive high school system, where it could be controlled and limited, in contrast to the European polytechnic model which was separated from college prep and took into consideration economic forces and the various interests and talents of individuals, thereby truly serving their societies.

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[4] https://archive.org/details/cu31924030593580

- The reference to "they sometimes sought to extinguish commercial activities that they were not able to bring under their own control" is evident in the efforts to abolish private for-profit colleges. The charge is that graduates of these colleges aren't always able to achieve a higher income; yet, the exact same thing can be said of public and private nonprofit colleges.

- And finally the reference to the guilds becoming parties of aristocrats can be seen in how academics identify themselves as elite in a similar manner as though they were an aristocracy. They typically see themselves as somehow superior to the rest of society.

An Analysis of Credentialing

ACE (2016) addresses the problems and complexity of credentialism, but first it gives a brief summary of the evolution of credentials in the U.S.:

> The current credentialing system in the United States developed over time to meet the needs of society and economic structures in which often a single credential served an individual well for a stable career over a lifetime. But today's economy and society depend on ever-higher levels of knowledge and the ability to rapidly evolve and adapt to changing circumstances.

This is why an applied education is so important. With a sound grounding in application, individuals – and thereby society – will possess "the ability to rapidly evolve and adapt to changing circumstances." This cannot happen with the current educational structure.

As reported in OpenGov news article,[5] The Singapore Minister for Education, Mr. Ong Ye Kung, stated Singapore's approach to higher education reform. The first on the list was *experiential learning*. He stated, "What is highly valued today is how someone applies knowledge in real life – in other words, skills. That comes with experience and with practice."

To go back to ACE, the report goes on:

> Today, stakeholders experience numerous critical problems:
>
> - Students do not always have reliable ways to compare credentials with regard to what they include, their market value, their transferability, their relationship to other credentials, and other important factors.
> - Educational institutions need well-defined information about the value of their credentials for employment, career advancement, civic engagement,

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[5] https://www.opengovasia.com/articles/singapore-minister-of-education-on-the-importance-of-higher-education-reform-for-industry-4-0

and other desired outcomes in order to attract students and guide them to successful credential attainment.

- Employers have difficulty understanding the competencies potential employees may or may not have mastered through the credentials they have earned.

In the context of these and other problems, there are increasing calls for more connected and transparent practices that can improve the value of credentials for all stakeholders. Clear benefits include:

- Enhancing the portability of credentials….
- Informing student decision making about which credentials to pursue
- Providing context for educational institutions to make appropriate investments in developing and enhancing credentials
- Increasing employers' trust in and use of credentials in their human resource processes.

Pittinsky (2015) points out the U.S. is quickly becoming a credentialing society with credentials acting as "the coin of the realm." He states, "Colleges and universities are the beneficiaries of this growing credential society because they are the gatekeepers of many of those credentials." Pittinsky points to the trend of credential inflation.

When very few people had a high school degree, that degree was the *currency* used to 'purchase' a job. Now that everyone has a high school degree, the bachelor's degree is the ticket. As more and more people get bachelor's degrees, a graduate degree will become the employment differentiator. … With the competition over scarce opportunities in the labor market, credentials become a way of filtering people.

Labaree (1988) explains how the U.S. transitioned from a competency based assessment system to a credentialing system where standardized tests replaced students performing demonstrable competence. This occurred during the latter part of the 19th century as the German imported centralization system coupled with the consequent bureaucratization of education became firmly entrenched. Institutional certification became the currency, and coordinated the advancement through interorganizational educational tiers. This created a disconnect of individual needs and outcomes as they relate to application in society since the links between layers of educational institutions – that "require a stable set of relationships between schools" (Labaree, p. 130) – supersede the interests of individuals – i.e. the misguided narrative "the greatest amount of good for the greatest number."

Labaree sums it up well where he uses the term "decoupling" to signify deprofessionalization of the teaching profession:

For teachers, this process meant the separation of credentials from performance. For the system as a whole, it meant the separation of schooling from education – that is, the growing ritualization of education to the point where it becomes

defined as 'a certified teacher teaching a standardized curricular topic to a registered student in an accredited school' instead of as the production of particular educational outcomes."[6] (p. 131)

The culmination of this "decoupling" is well stated in what Sykes (2016), author of *Fail U: The False Promise of Higher Education*, offers:

> Can we fix higher education? Is it possible to reform an institution so plagued by bloated costs, academic failure, debt and political correctness? And why would this time be different?
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> The questions sound naïve since so many previous attempts have failed to dent academia's stubborn resistance to change. Nearly three decades ago, I wrote a book called *ProfScam,* an admittedly harsh indictment of American colleges and universities and professors. "The result is a modern university distinguished by costs that are zooming out of control," I wrote in 1988, "curriculums that look like they were designed by a game show host; nonexistent advising programs; lectures of droning, mind-numbing dullness often to 1,000 or more semi-anonymous undergraduates...teaching assistants who can't speak understandable English; and the product of this all, a generation of expensively credentialed college students who might not be able to locate England on a map."

Indeed, college credentials, in many cases, have lost their symbol of competence and are now the default emblem for signifying basic literacy and numeracy abilities. This speaks volumes to the 16 to 18 years of wasted time in an educational system for one who possesses a bachelor's degree.

Lang et al. (2015) summarize college degrees fairly well:

> The standard model of the university credential is to some extent a matter of branding. Employers have tended to differentiate between applicants based on the status of their institution rather than the particular assessments that led to the acquisition of the credential. In this way, credentials act as a value statement about the trustworthiness of institutions generally (universities as an institution are trusted) and in particular (some universities are more trusted than others). But how the credential has been achieved is often overlooked. … Generally, universities and colleges were seen to be the best arbiters of how to assess their students' progress, with governments setting broad goals, such as how much time a degree should take and employers paying little attention to the details of assessment. We can look to recent political statements about the urgent need for more graduates…. The presumption behind [such] plans is that university credentials mean something and that their assessments are sound. Yet, the longstanding global tradition of professional assessment bodies, from the National Board of Medical Examiners in the U.S. to the Honourable Society of King's Inns

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[6] For more on this subject, see Labaree (1988) Chapter 5, Section "Bureaucratization."

who administer legal examinations in Ireland, seem to validate the idea that assessment accountability is not part of the role of a university. (pp. 136-37)

Kennedy et al. (2016) reiterate the "branding" model of colleges:

> Students … have little incentive to push themselves harder than necessary to earn their degrees, since degrees are opaque, deriving their value from institutional brands rather than clear measures of academic achievement. … This lack of transparency regarding outcomes diminishes the incentives schools have to compete on how well they actually educate students, and also the need for students to work hard, because many know this will have limited bearing on their future employment prospects, as long as they do enough to simply earn a diploma. … Perceptive students may realize that their degree, rather than their actual learning, often determines their success, at least initially….

Over one hundred years ago, many graduates of 8th grade were better educated than many with bachelor's degrees today. And I dare say, I've known individuals from that period with less than a high school degree (before the prejudicial term "dropout" was used) who were better educated than contemporary college professors. This is why the term "decoupling," used by Labaree to express the lack of education in our educational system, is so disturbing.

Lindsay (2014) offers a review of Charles Murray's 2008 book *Real Education* that criticizes the "college-for-all" drumbeat. Murray states "too many people are going to college." Lindsay provides,

> The American education system, says Murray, "is living a lie. The lie is that every child can be anything he or she wants to be." The lie is bipartisan, he argues; it spans both Republican and Democratic Party platforms, its unrealistic assumptions driving and distorting both K-12 and higher-education policy.
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> … But what of the need for … students to attend college to enhance their capacity to make a living? Murray responds that four-year brick-and-mortar residential colleges are "hardly ever" the best places to "learn how to make a living." To begin, for most vocations, excluding fields such as medicine and law, four years of class work is not only "too long" but "ridiculous." For many of such students, two-year community college degrees and online education provide "more flexible options for tailoring course work to the real needs of the job. Moreover, the brick-and-mortar campus is becoming "increasingly obsolete."
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> … But what of the "wage premium" reaped by college graduates? For Murray, high-school graduates who pursue the B.A. primarily to boost their earning power are "only narrowly correct." Doubtless, B.A.-holders earn more on average than those without degrees, but this is due in part to a "brutal fact." Given the increase in the number of college graduates over the past half-century (more than a third of 23-year-olds now hold B.A.s), "employers do not even interview applicants"

without degrees. "Even more brutal," the B.A.'s comparative advantage "often has nothing to do with the content of the education" received.

… "[T]here has never been a time in history when people with skills not taught in college have been in so much demand at such high pay as today." In fact, … the wages of top performers in a plethora of occupations not requiring a B.A. are "higher than the average income for many occupations that require a B.A." Murray presents a higher-education system in which too many students are forced to spend too much time chasing their tails.

Gallup-Strada's report (2017) analyzes the choices college graduates made in pursuing a postsecondary degree.

Consumers are … asked how they feel about the quality of their education. As the report details … more than half would make at least one education decision differently if they could do it over again: degree type, choice of major or institution.

… It seems individuals' desires to make different choices may … be a function of having made decisions without complete information, such as future employment opportunities, earning potential or the long-term effect of student debt. In short, education consumers' regret about their previous decisions could be read as a signal to improve the resources available to inform future education decisions.

In closing this introduction, I would like to recommend Credential Engine's April 2018 report, *Counting U.S. Secondary and Postsecondary Credentials*, whose work summarizes the state of credentials in the U.S. The report opens with:

Students and workers in the United States have access to a vast number of credentials to obtain, enhance, and signal their knowledge, skills, and abilities. … Millions of students, workers, educators, and employers who make decisions in the convoluted U.S. credentials marketplace are greatly hindered by the lack of information on the nature of their options and how they compare with one another. In particular, as the necessity of obtaining postsecondary credentials for employability and earnings has increased, the consequences of the lack of information on credentials has resulted in significant labor market dysfunctions. Students, workers, businesses, and schools are making decisions blind, with considerable consequences for making wrong choices.

Figure 1, *2018 Initial Count of Credential-Granting Programs*, in the report, provides an excellent tally of the various types of credentials in the U.S., while Figure 2 provides *Credential Definitions*. This report is a good starting point for better understanding the U.S. credentialing labyrinth.

It is this author's belief that the primary reason for the scant economic information made available to prospective CTE or postsecondary consumers is due, in large part, to the

academic community's disgust with occupational preparation. They see education primarily as a means to better oneself and that this is enough for all things one will experience once a college degree is in hand – demonstrating an ignorance with profound consequences.

Secondary Vs. Postsecondary Credentials

If we reflect on contemporary literature regarding credentials, we are led to believe that credentials are a postsecondary phenomena; as if there were a human biological barrier that will not allow individuals to comprehend information that could be used in a career before a high school degree is in hand. It is a cultural assumption that individuals **must** possess a high school degree before it is even possible to consider any kind of career training. Credentials have been arbitrarily referenced in a postsecondary context.

For example: Ganzglass et al.[7] (2011) offers, "Postsecondary credentials are the keys to individual self-sufficiency, greater civic participation, and higher levels of family well-being and the catalysts for local, regional, and national economic growth." Our culture mistakenly associates postsecondary education with occupational credentials. This is a huge mistake since the correlation has been arbitrarily created by our society through the convenient "seat time" standard – that is, the Carnegie Unit otherwise known to most as the semester hour. This is an incredibly random and out of touch approach to defining occupational requirements for all vocations. It is based on the concept that quantity defines quality – obviously, an ignorant perspective.

Another example is from Jobs for the Future's *Building Pathways to Credentials, Careers, and Economic Mobility* which references Georgetown University's Center on Education and the Workforce position that "the percentage of U.S. jobs requiring **postsecondary** education and training is expected to reach a new high of 65% in 2020." (Emphasis added)

Then in a December 13, 2017 email, Anthony Carnevale, Founder and Director at the Center on Education and the Workforce, Georgetown University, states:

> For good reasons, K–12 education has evolved into an institution exclusively focused on preparing students for college, while career preparation and training now falls almost entirely under the domain of postsecondary education. While there have been efforts to revive vocational training in high school, it has become clear that, for today's students to be prepared for tomorrow's jobs, all pathways lead first to a high school diploma and then to a postsecondary credential with labor market value.

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[7] This paper also makes a common error in believing that "credit" for completed courses is only to be found in academic coursework and that "noncredit" coursework must be made to fit the academic model so that it can be accepted by academia. What few consider is the fact that much of the "noncredit" programs do not accept academic coursework since it bears little resemblance to the real world. They tend to be two very different worlds that will be hard to meld together given their differences.

This is a major flaw in our culture's perspective on education and career preparation. It is also why so many people are so ill prepared for participation in economic life. During the optimal formative years of youth, when we can accomplish the greatest return on an educational investment, our society squanders these years on superfluous, useless, and politically biased programs (statist indoctrination) that neither serve individuals nor society. By the time they're 18, many individuals have had enough of the educational system that was void of any substantive real world use and therefore choose to move on with their lives; but our culture says "Hold on, you are just about to begin an education that will eventually lead to something useful;" as if they've been held back for so many years purely for indoctrination purposes; to be molded into compliant and subservient subjects like worker bees. The prospect of spending more years in the cold and heartless educational culture is depressing to many to say the least.

Weisberg (2016) refers to high school diplomas as empty promises. He points out that we tell our youth that a high school diploma is "the path to achieve your goals in life." Then he states, "Most employers report that high school graduates enter their roles 'deficient' in the skills they need to do their jobs well…." He makes the point that students and parents are not at fault, nor is poverty. He then says,

> These numbers represent families who, despite whatever challenges they may have faced, did everything their schools asked of them for 12 years. The parents paid taxes, bought pencils and three-ring binders and attended parent-teacher conferences. The students got to school every day, studied hard and did their homework. Thy held up their end of the bargain. The rest of us reneged on ours.

> At the root of the problem is a gap between what schools expect from students before they graduate from high school, and what the real world demands from them afterward.

Ridley (2018) describes an important observation when he states,

> In both our state-by-state and national analyses we found that, in almost every state, workers with associate's degrees increase their share of good jobs over time. This was the one education group that was actually able to increase the number of good jobs held between 1991 and 2015 in manufacturing. Every other education group – those with high school diplomas or less than high school – generally lost ground. So, an associate's degree is an important credential, while good jobs have been moving away from those with a high school education or less than high school.

> … Increasingly, workers who earn non-degree credentials, including industry and professional certifications, earn more than those who don't have that credential.

> … What's clear from our research is that people are obtaining and finding value in credentials other than traditional degrees.

Fain (2018) cites a report that looks at how manufacturers use credentials in hiring employees. The report was based on a survey of 945 respondents who identified several reasons for their use of credentials.

> More than half of respondents (55%) said industry-specific certifications were most often used when assessing potential hires. Another 11% said a certificate earned at an apprenticeship, followed by 7% who pointed to certificates earned at a career and technical high school. Among the 15% of respondents who answered "other" to this question, the most common write-in responses were experience and college degrees.

Industry-specific certifications and apprenticeships, being the primary qualification references, speaks volumes to the effectiveness and efficiencies of these credentials. This is an example why colleges need to look to occupational associations for guidance in what constitutes occupational training.

Carnevale et al. (2017b) state, "The share of good jobs held by high school graduates declined in the overwhelming majority of states in line with declining manufacturing and blue-collar employment." (p. 10) As an aside, the primary reasons for such declines are laws and regulations based on public policy that is antagonistic to capitalism and manufacturing. Change this policy perspective and manufacturing and blue-collar employment would return with an associated higher standard of living.

Ridley's and Carnevale's summaries demonstrate that a high school degree no longer has much, if any, value, so why pursue it?[8] As they point out, those with a high school degree or less are rapidly losing ground while those with industry credentials or associate degrees that are in demand have been gaining ground. Any sound cost-benefit analysis would determine that high school, as currently designed for college prep, is a waste of time for the vast majority of our youth. But only in the American educational landscape do we ignore what reality is instructing us to do.

Switzerland provides an example we need to look to for creative alternative remedies to our failed public education system. Japan also provides an excellent example with its Kosen school system. Keep in mind that it is primarily an engineering program, but it does provide a model to analyze to get ideas from. Note in the chart below where the associate's degree becomes an option during the teen years that is reserved.

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[8] Gallup, in their April 25, 2018 survey results (*Americans Have Little Confidence in Grads' Readiness for Work, College*) point out that "U.S. adults who say high school graduates are very well prepared for: college = 3% and the workplace = 5%." It probably isn't statistically possible to reach 0% so it is obvious that high school has become worthless as it relates to college prep, which is currently its primary function.

School System of Japan
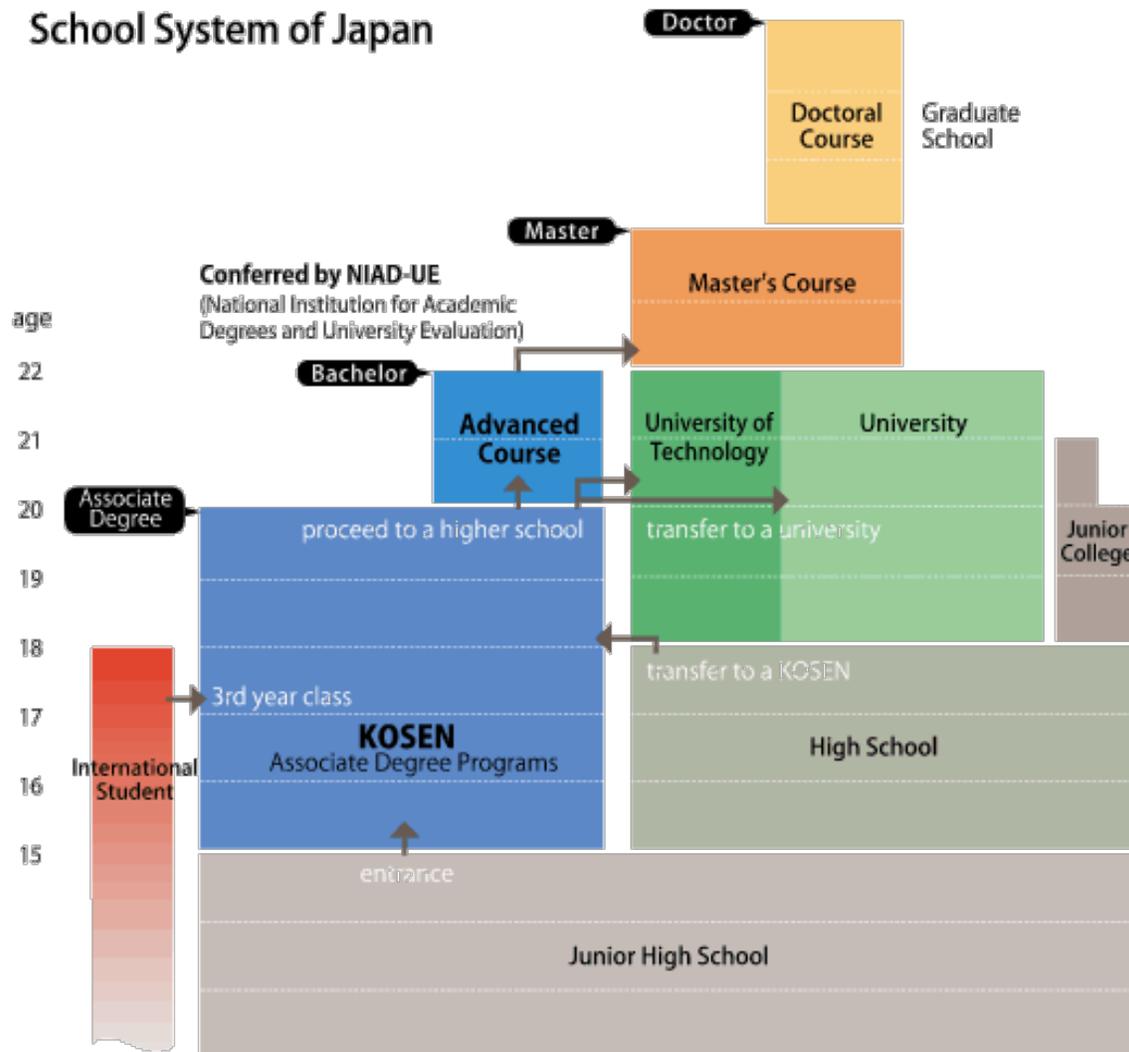
The Southern Regional Education Board's (SREB) Commission on Career and Technical Education (2015) provides a broader view of education than the U.S., generally speaking, takes into account. Here are some highlights from this paper:

> Overall, SREB's analyses of educational and labor market data suggest that for many young adults, the 20s are a lost decade. After years of underemployment or unemployment, many return to school when they are nearly 30.

> Simply put, the bridge from high school to … career opportunities is broken. To solve this problem, more high school students must get … on pathways to … career advancement much sooner.

> The solution: Transform education with rigorous, relevant career pathways that align secondary, postsecondary and workplace learning and lead to … credentials that help individuals secure good jobs.

Promote structured dual enrollment programs for career pathways….

Create guidance systems that include career information, exploration and advisement and engage students in ongoing career and college counseling beginning in the middle grades. Mandate career exploration courses and activities in the middle grades and high school….

Allow students to choose accelerated learning options in settings that provide the extended time needed to earn advanced industry credentials. Encourage school districts to offer career pathways in diverse settings – comprehensive high schools, shared-time technology centers, full-time technical high schools, early college high schools, career academies, and community and technical colleges – that allow students to earn advanced credentials … while still participating in activities at their home high schools.

Early advanced credential programs allow students to graduate with a diploma plus an advanced industry certification, postsecondary credential or significant credits toward an associate degree.

Define technical career readiness in state policy, capturing the knowledge and skills students must master to enter … training programs and secure high-skill, high-wage jobs in high-demand fields.

Use federal, state and local funds to help low-performing high schools reorganize around theme-based career academies that feature rigorous, relevant career pathways. [Seriously failing schools may need to abandon college prep efforts and focus on occupational training.]

Offer early advanced credential programs in shared-time technology centers, aligning their curricula, instruction and technology with home high schools and community and technical colleges. Create the time needed for technology center students to earn advanced industry credentials by offering full-time study during students' junior and senior years; extending the school year or the school day; creating 13th-year early advanced credential programs; converting some centers into full-time technical high schools or full-time regional magnets; or partnering with community and technical colleges to offer junior- and senior-year career pathway instruction.

Ensure that the state accountability system values academic college readiness and … technical career readiness equally.

Allocate extra weight in state accountability systems for each high school student who completes an advanced industry credential in a critical industry sector.

Tobias and Siebenmark (2018) share a story that every school district should be working toward. It is about a program in Wichita, Kansas that provides occupational training that leads to high demand credentials during the high school years. This program will lead to jobs as aviation production and maintenance technicians where starting pay is from $40,000 to $45,000, which is more than many bachelor degree related jobs pay. See http://www.kansas.com/news/local/education/article210614079.html

It is time to step back and take a serious look at what an education really means and how much is really needed based on foundational knowledge necessary for all that can be achieved early on in the educational experience, and advanced career knowledge that is necessary to particular walks of life that can be developed from 6th through 12th grades. Foundational knowledge should be continuously reinforced throughout the secondary years but through an occupational training curriculum that connects disciplines rather than as random and disorganized courses of study. This way STEM and language studies are incorporated into real world scenarios rather than as abstract studies tied to nothing, other than for the benefit of teachers' convenience and that artificially selects students for college.

Earning credentials

Community colleges awarded 1.2 million certificates and associate degrees in 2013-14.

Distribution of enrollments and completions at community colleges: 2013-14
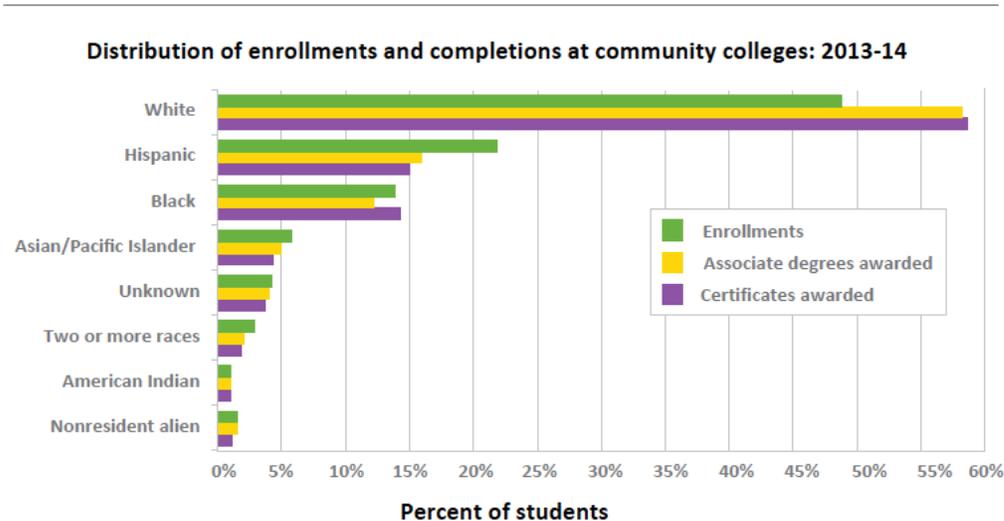
Source: AACC analysis of Integrated Postsecondary Education Data System (IPEDS) 2013-14 Completions and Enrollment data file, U.S. Department of Education, National Center for Education Statistics.

While this concept applies to all people equally, minorities are the ones who can benefit the most by this approach to reality. Minorities graduate high school at lower percentages but this is also true of community colleges. The American Association of Community Colleges published a graphic that displays percentages of Americans, by race, who were enrolled in community colleges and who were awarded a certificate or a degree for the 2013-2014 school year (see above). This is not being offered to the reader to argue that

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there is "white privilege" (a concept I loathe due to its offensiveness and its use as a crutch or an excuse rather than addressing substantive change), but rather to point out that there is indeed a problem with a ready solution at hand if we would only overcome academia's conservatism in the traditional educational culture it is clinging to.

Appendix C. Good jobs occupations

These are some examples of occupations—in both blue-collar and skilled-services industries—that pay without a BA.

BLUE COLLAR	SKILLED SERVICES
Automotive service technicians and mechanics	Applications and systems software developers
Carpenters	Bailiffs, correctional officers, and jailers
Computer, automated teller, and office machine repairers	Bookkeeping, accounting, and auditing clerks
Construction workers	Computer and information systems managers
Driver/sales workers and truck drivers	Computer support specialists
Electricians	Customer service representatives
Heating and air conditioning mechanics	Diagnostic related technologists and technicians
Heavy vehicle and mobile equipment service technicians and mechanics	Engineering technicians
Industry machinery operators	Financial managers
Machine operators, assemblers, and fabricators	Firefighters
Maintenance and repair workers, general	Food service managers
Metalworkers and plastic workers	Human resources workers
Operating engineers and other construction equipment operators	Industrial production managers
Pipelayers, plumbers, pipefitters, and steamfitters	Licensed practical and licensed vocational nurses
Production workers	Managers
Radio and telecommunications equipment installers and repairers	Marketing and sales managers
Welding, soldering, and brazing workers	Nursing, psychiatric, and home health aides
	Police officers
	Property, real estate, and community association managers
	Registered nurses
	Sales representatives
	Secretaries and administrative assistants
	Security guards

Note: Not all workers in these occupations make a minimum of $35,000 per year.

It is my recommendation to those who have abandoned the false god of *status and prestige* – which a college degree purportedly bestows upon the recipient – to attend a

high school that is exclusively dedicated to occupational training; or participate in a dual enrollment program (attending a community college during the high school years); or take the GED test after sophomore year of high school and if passed, attend a community college or industry training program[9] immediately thereafter. In this way, individuals will save a significant amount of money, wasted time will be avoided, repulsion of education can be minimized, more time can be spent in one's career (providing for an increase in lifetime earnings), and one's life ambitions can be pursued earlier in all of their manifestations.

While I have great respect for Director Carnevale and love much of his wonderful work, I do have to take issue with his view, which is held by most in academia, that the only path to success is through the college prep secondary school system and then on to postsecondary education. I would argue, not so unlike Andrew Carnegie's position expressed in *The Empire of Business* (1902, pp. 109-114), we have far too much education with quantity being perceived as the only thing that is relevant and quality almost a forgotten idea.

One of Carnevale's outstanding contributions to a better understanding of where opportunities lie can be found in his paper *Good Jobs that Pay Without a BA* (2017a).

Cronen and Isenberg's statistics (2018) add to Carnevale's work. They break down credentials into categories that help paint a percentages picture. From this, I don't believe one can discern free market forces that would show real world demand. Cronen and Isenberg's statistics reveal credential percentages based on monopolistic, or at least oligopolistic, forces. They provide:

> A common approach to describing the credentials required for occupations is to cite whether workers hold an educational degree beyond a high school diploma – that is, whether they hold a postsecondary degree. Using a postsecondary degree as a measure of occupational credentialing, 45% of labor force participants (adults who are working or looking for work) had this type of credential in 2016. Data from [a new survey] identifies adults who have *nondegree* credentials – that is, subbaccalaureate educational certificates and the two work credentials of certifications and licenses. When these types of credentials are considered in addition to postsecondary degrees, 58% of labor force participants had a credential beyond high school completion in 2016.
>
> Thirteen percent of labor force participants did not have a postsecondary degree but did have a nondegree credential. An additional 18% of labor force participants had both a degree and a nondegree credential, for a total of 31% of all labor force participants holding a nondegree credential.
> … Among the 13% of nondegreed labor force participants, the most common credential, held by about half of these adults (56%), was a license. The next most

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[9] See Conley (2018) for a very good example: https://evolllution.com/revenue-streams/workforce_development/closing-the-skills-gap-one-mooc-at-a-time-how-google-is-transforming-the-lifelong-learning-environment/

common credential was a postsecondary certificate (43%). The least common nondegree credential held by these adults was a certification (21%).

… As defined [by the survey] licenses are issued by government agencies, while certifications are issued by credentialing bodies, often a professional or trade association.

The above information demonstrates that there is a high demand for alternative credentialing that is equally relevant and important as any college degree offered. These alternative credentialing training opportunities should be offered to those in the secondary school age group to serve their needs instead of the monopoly's.

There is so much disconnected and superfluous information taught in public schools that if we took a serious look at what is needed by the average citizen versus what is taught, time spent in public education would look more like the Finnish and Swiss systems.

How to Provide Credentials That Serve All in a Society

Tucker (2015) provided a very interesting analysis of the way our educational establishment has been optimized for a narrow sector of society:

One of the great successes of the American education system in recent years has been the rise of women in the ranks of the educated. When I went to college in the late 1950s, most women were sent by their parents to college to find husbands. They were expected to work at home, as housewives. Now women outnumber men in our colleges and in many of our graduate schools and they are preparing themselves for high status careers. They are marrying spouses who are themselves highly educated and those couples are becoming economic powerhouses in our economy. Their incomes are high and their divorce rates are low. They read to their children when they are young and take them to museums on weekends. They sacrifice to buy their way into the best school districts and push their kids to take as many AP courses as possible when they are in high school. They make sure that their kids volunteer to spend their high school summers helping out poor kids in South America or an American city so they can write about that on their college application. They do all of this because they are determined that their kids, like them, will go to one of the best selective colleges in the land, and, when their kids are in college, they use all their connections to get their kid the right internship at the right firm to position them for the right job offers when they graduate. It is the children of these parents who now stand the best chance of getting into the best colleges, the best chance of graduating, the best chance of getting into graduate school and the best chance of getting a good job when they are finished with school.

It is true that, at one time, our public schools could be described as the great equalizer. Not anymore. Since the 1970s, we have built a highly efficient system for reproducing social class in the United States, the very opposite of a system

that operates as "the great equalizer." None of this was inevitable. All of it can be fixed. But it will require big changes in education policy.

Of course, this bias is referred to as "white privilege" by some – a most disgusting phrase used to attack the white community to beat it into political submission. That said, there are certainly inequities, but not only for minorities. Many, if not most, in the white community are hurt just as much by this unjust optimized system. One of the primary purposes of the Applied Education Foundation is to outright eliminate any and all biases that favor one sector of society over another as well as to eliminate any bias that favors one individual over another. A free society such as ours cannot tolerate even one individual being harmed by society when it is within our power to prevent it. Those who contribute to the inequities of any one citizen should be held accountable.

Let's consider paths that can lead to greater equality for everyone – not just group identities. After all, are we all humans or sub-groups of humans with different rights, with some having more rights than others because of political forces?

Ferenstein (2014) writes about Sal Khan, founder of Khan Academy, who has argued for transforming "the college transcript into a portfolio of things that students have actually created." He also wishes to use leveling forces to marginalize legacy universities' power over credentials by using a universal credentialing system.

Sykes (2016) sums up how the basic nature of postsecondary education could be radically changed with the following:

> Futurist Nathan Harden sees the MOOCs as a mighty and irresistible model of creative destruction: "The live lecture will be replaced by streaming video. The administration of exams and exchange of coursework over the Internet will become the norm... Universities will extend their reach to students around the world, unbounded by geography or even by time zones. All of this will be on offer, too, at a fraction of the cost of a traditional college education."

> The results, he wrote, will be apocalyptic: "The future looks like this: Access to college-level education will be free for everyone; the residential college campus will become largely obsolete; tens of thousands of professors will lose their jobs; the bachelor's degree will become increasingly irrelevant; and ten years from now, Harvard will enroll ten million students."

> The MOOCs would challenge the status quo on just about every level of higher education, from admissions to teaching to the granting of coveted degrees. When universities no longer hold the keys to those credentials, their world will be rocked. This is not only disruptive. It is breathtakingly radical. The MOOCs are anti-elitist and profoundly meritocratic. There would be no barriers to entry, no SAT or ACT scores, no legacy admissions preferences, no class or race bias, no affirmative action, no bloated lists of extra-curricular activities—just the willingness to do the work and to achieve mastery. Equally radical, they would shift power from the institution to the student as academia decentralizes in a way

familiar to so many other industries that have found themselves upended by consumer-driven on-demand models. Let's imagine this possible future:

Rather than showing up with a degree from the U of Somewhere with a simple BA degree, a student arrives for his first interview with a degree or a bundle of certificates of mastery that includes courses with world-class scholars. He can show his prospective employer a stacked portfolio that includes a course in artificial intelligence from Stanford, courses in computer science from Cornell and Harvard, a course in Alexander the Great from Wellesley, a course in environmental law from Yale and a course in globalization from Georgetown. His degree also includes "verified certificates from Princeton for a course in the 'paradoxes of war,' a course from the Copenhagen Business School in 'social Entrepreneurship,' and the University of Pennsylvania's 'Analyzing Global Trends for Business and Society.'" He can moreover show that in each of those courses he achieved actual mastery, in contrast to other graduates who may have gotten credit for C-level work in far less demanding classes.

And our applicant shows up without a mountain of debt, since he was able to get his degree for a fraction of what his peers pay. That student could mark the beginning of the end for the business model that has sustained higher education for decades.

Keep in mind that what Sykes offers above doesn't have to be exclusive of secondary students. The model he provides could also be the demise of currently structured high schools since they no longer serve the purpose they were designed for, which was no different than a college for city dwellers of the 19th century. As a matter of fact, colleges used to compete with high schools for the same school-age students.

Credentialing System in the United States
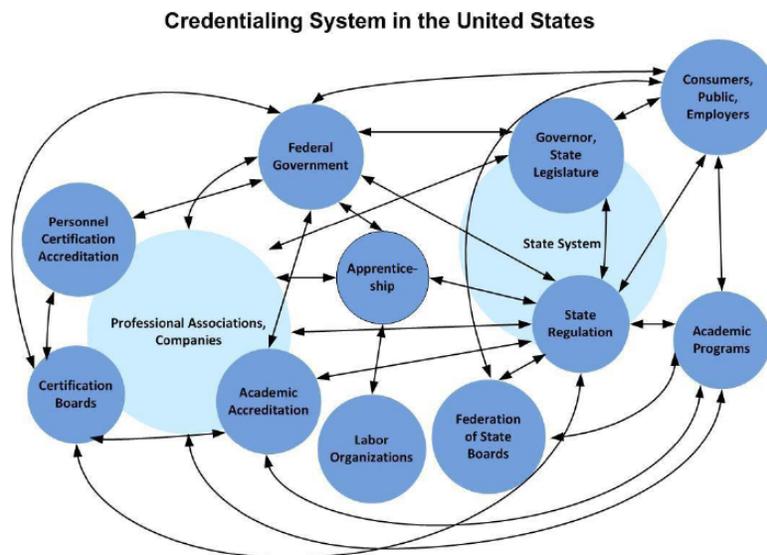
A paper by the Corporation for a Skilled Workforce (CSW, 2014) offers a graph demonstrating, in their words, a "complex and highly fragmented credentialing system."

While they recognize how haphazard credentialing is, they wisely do not see the "need to create a single unified accrediting body as other countries have done…."

The paper states,

> We believe that large scale expansion of the use of credentials that recognize an individual's competencies – **regardless of means of acquisition** – is essential to meet the demands of students, job seekers, employers, government and education and training providers. (Emphasis added)
>
> … The importance of understandable, reliable credentials as a common currency of exchange in an already complex marketplace is becoming even more crucial. The fast-paced expansion of technology-based educational alternatives … is revealing the potential both for deinstitutionalizing education and for new forms of credentialing such as "micro-credentialing systems" … that could expand the variety of potential credentials significantly….
>
> … Three key elements are missing from our current credentialing system:
>
> - **Transparency** – Users must be able to easily understand what a credential represents, including what competencies holders should have, what has to be accomplished to obtain it, and the rigor of how it was developed to ensure the validity;
> - **Trust** – Users need to be able to know that a credential accurately reflects the competencies it asserts; and
> - **Portability** – Users need to be more able than now to put together and use multiple credentials across an array of boundaries – across industries, states, countries, and credentialing organizations, including education and training providers.
>
> … We envision an [occupational credentialing system] that is supported with shared language, tools and approaches that promote transparency, trust and portability of credentials, including pathways among the disparate credentialing [sources] that now exist. Needed supports include:
>
> - Consistent definitions and language about competencies and credentialing mechanisms that are used across credentials;
> - Shared quality assurance mechanisms that span process quality, content quality, and user quality and collectively ensure credentials are trusted by employers, government, workers, and educators; and
> - Shared public-private data infrastructure to facilitate open exchange of information and analysis among stakeholders and more user-friendly information for consumers.
>
> Using competency as the basis for credentials would create a transparent student-centered approach to credentialing. A common phrase used in the military is,

"You can standardize training but you can't standardize learning." Learning can only be determined through an effective assessment process that measures what each individual has learned as a result of the education, training, or work/life experience.

… Building blocks already exist. Competency-based credentials can be found in thousands of places – diverse industries, educational institutions, assessment organizations, government agencies, and more. We need to scale and connect.

The authors provide "A list of roles played by some of the major system participants can be round in Appendix A." To view this paper, go to
http://skilledwork.org/publications/call-for-credentialing-conversation/

* * *

A Rutgers paper (Noy et al., (2019) addresses three key questions as it relates to measuring non-degree credential quality:

1. How can quality be conceptualized for non-degree credentials?
2. What are possible measures of quality for non-degree credentials?
3. How can stakeholders better measure and promote quality in non-degree credentials?

I'll leave it to the reader to further investigate this topic if inclined to do so:
https://smlr.rutgers.edu/sites/default/files/rutgerseerc_ndcquality_framework_full_paper_final.pdf

To make the case for organization of credentialing, Kuczera and Field (2013) offer a suggestion that could promote the positive tendencies of credentialing while checking the negative consequences inherent in them.

Occupational credentials are subject to less central organization in the United States than in almost any other OECD country. This allows local college provision and industry certifications to be very flexible and highly responsive to changes in labor market demand. But it also means that some of the benefits of more structure and organization in credentials – greater clarity for both students and employers about the skills and credentials required for particular types of job – cannot readily be obtained.

It would be unrealistic to propose the systematic creation of occupational standards. Instead [we] recommend a more modest advance, by creating a [federal] quality standard for certifications.

The recommendations of Ganzglass et al. (2011) are for standardization of industry credentials generally speaking and to tie them to academic standards on top of this. Their focus appears to be on comparing credited versus non-credited training/education, but

with a bias of academia's "superior" position. Non-credited instruction must seek to be credit-bearing so postsecondary institutions will "accept" non-credited work. This is a backwards perspective. Academia's instruction needs to be credited by industry associations to have any real meaning in the world of work. Academics' view that they are in the drivers seat is like the horse pushing the cart.

To their credit, Ganzglass et al. advocate for competency-based assessment in contrast with credit hour recognition, pointing out that with competency underlying the educational structure, the comparison of credit versus non-credit instruction becomes a moot point, since credit is rooted in competence – that is quality versus quantity. The relevance of this is pointed out by them when they provide, "Noncredit occupational education and training … is estimated to make up nearly half of all postsecondary education." To view this half as subservient to academia is illogical, arrogant, and diminishes the standing of those who believe in it. In addition, to think that the training for the multitudinous fields of economic activity can find a common standardized approach appears to be naïve, if not downright stupid, on its face. It's simply too complex of a system (think of the failures of command economies) which Adam Smith summed up in his concept of the invisible hand guiding mankind's economic activities.

By establishing standards as they relate to quality of certifications rather than establishing standards of certifications generally speaking, bureaucratic central controls can be relegated to the margins where they belong. The Federal government can collect, organize and disseminate relevant information for local governments to use as they see fit, but without dictating what is to be and how it is to be done.

If we are aware of both the positive and negative human tendencies, as can be witnessed through the lessons of history, we can take actions that maximize the good while minimizing the bad effects.

Kuczera and Field suggest using private organizations to provide quality assurance:

> To make the certification process more reliable and rigorous, some bodies issuing certifications apply external standards such as those provided by the American National Standards Institute and The National Commission for Certifying Agencies. ANSI publishes accreditation criteria and procedures along with assessment results.

> **An International Standard in Examinations for professional certification (ISO/IEC 17024)**

> This standard has been established by a working body through the International Standards Organization. It aims to set out clear standards governing the integrity, impartiality and credibility of examination systems used for professional certification. It covers matters such as the consistency and transparency of the examination criteria, and the impartiality of the examiners and avoidance of conflicts of interest. The revised standard also covers:

- How competencies are defined
- Knowledge, skills and personal attributes of examiners
- The independence of examinations
- Ensuring that the examination is a valid test of competence

The authors

> propose an initiative to make quality certifications clearer and more valuable to students, employers and education and training bodies. This needs to be achieved while maintaining the principle of certifications as professional examinations driven by industry and the professions, rather than by government. to this end we propose that the federal government should promote a national hallmark standard for certifications. This standard should be linked *i*) to evidence that the certification is supported by a sufficient number of employers in the relevant industry sector and would be used by them for recruitment purposes; and *ii*) that the examination is a robust test of the relevant professional competences. … [The authors provide Switzerland as an example for quality regulation of examinations on page 84.] Seeking the hallmark would be voluntary, but the existence of the standard would encourage credential providers to seek recognition.

> … Wide employer representation is one of the major requirements of the standard. This ensures certifications match the demand for skills in the sector and provides a guarantee against too narrowly defined content, as the skill standards must be transferable enough to match the needs of various employers.

Burning Glass Technologies[10] (2017) uncovers a distinction between the meaning of a *certification* versus a *certificate* – strange as this may seem since if one has been certified in completing some training, a certificate would be given to demonstrate certification.

> Certifications are awarded by an independent body, often trade or industry associations, and usually involve an examination process. Because certifications are independently verified, employers often use them as a check on whether an applicant has the specific skills or competencies needed. In particular, employers use certifications when the skills involved are technical and don't align with traditional degrees.

> … Certificates are short-term, professionally oriented credentials awarded by an educational institution (as opposed to an industry body) based on completion of specific course work.

In their research, Burning Glass found that employers overwhelming favored certifications over certificates. Given the distinction between who awards the credential – a single institution that has a vested interest in the significance of the award versus an

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[10] See http://burning-glass.com/about/

independent body that represents an industry whose concern is quality of instruction – it is no wonder employers prefer certifications over certificates when there is a clear choice. This is why industry associations need to establish the primary criteria that public and/or private educational institutions follow when formulating curricula that are related to career education programs. Educators may understand how to deliver instruction, but they do not understand industry criteria. This is why they take the "shotgun" approach and cast a very wide net in hopes they cover everything individuals may have need of. But, of course, this leads to the situation of being a jack-of-all-trades and a master of none; hence the reason there is little confidence in public education.

Long (2018) compares two tech-training programs in Seattle for coding – one (Apprenti, run by the Washington Technology Industry Association (WTIA) Workforce Institute) was very successful while the other (LaunchCode a nonprofit that offered it as a "free" – using Federal funding – program) failed in short order. Long points out that "The WTIA is a trade association of 800 large and small Washington tech firms, including the region's heavy hitters, such as Microsoft, Amazon, T-Mobile and Expedia. It was able to draw on its network to craft the apprenticeships, and it knew what local employers wanted…. It's an employer-driven program…. About 83% are offered a job after the apprenticeship ends, with a median salary of $88,000. And there's no difference in success between students who had a college degree and those that did not. It's validating what our original thesis was – that not all highly competent people go to college, and we can create another pathway for them, through an apprenticeship." The if we look at LaunchCode "They were misaligned with the marketplace…. LaunchCode was an outside entity coming into a new place, where [they] didn't have an existing level of partnership and relations."

This is a perfect example of why industry/trade associations are superior to outsider educational efforts to design programs they "believe" are needed in society.

*   *   *

For an evolution toward very high quality credentials to occur, applied studies will be a must so when individuals enter a career training program, their foundation will be so solid as to allow them to easily absorb what is taught. This will need to be preceded by a solid primary school education in literacy and numeracy where the entire program is centered on these two priorities.

The authors point to a potential legal problem as it relates to anti-trust laws, "which might prevent a group of companies in one industrial sector banding together to promote one sort of occupational qualification…." Anti-trust statutes may need to provide exceptions related to education, though this is probably not an issue given the nature of our educational institutions that are constantly colluding to protect their interests. Education is perhaps the least competitive industry in the United States. Academia is given a pass and held to a different standard compared to the rest of society.

ROI of Community College Credentials

Given the expanding enrollment in community colleges at the secondary (e.g. dual enrollment) and postsecondary levels, it's time serious consideration and analyses were given as an alternative to the one-size-fits-all misguided approach of bachelor's degree or bust.

An important study done by Xu and Trimble (2014) on community college certificates speaks to the limited research done on the subject and how using broad data to report credential trends, such as income and employment, is very misleading. Their abstract states,

> The annual number of certificates (non-degree awards that typically require less time to complete than degrees) awarded by community colleges has increased dramatically since 2000, but relatively little research has been conducted on the economic benefits of certificates in the labor market. Based on detailed student-level information from matched college transcript and employment data in two states, this paper estimates the relationship between earning a certificate and student earnings and employment status after exiting college. while prior research in this area has explored how returns to certificates vary across broad fields of study, there may still exist substantial variation across programs within broad fields of study. Our paper extends prior research by examining the returns to specific programs that are most popular in each state. Our results indicate that certificates have positive impacts on earnings in both states overall, and in cases where there is no impact on earnings, certificates may nonetheless lead to increased probability of employment. In addition, we find substantial variation in the returns across fields of study and, more importantly, across specific programs within a particular field. These results suggest that important evidence is lost when information about the benefits of certificate programs are simply averaged together.

Dual-enrollment increases

While overall enrollment in community colleges is decreasing, their enrollment of high school students is rising.

Community college enrollment of students younger than 18 by enrollment status: 2001-2015
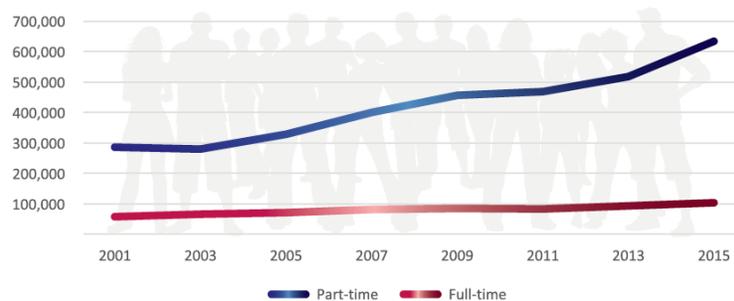
Legend: Part-time, Full-time

AMERICAN ASSOCIATION OF COMMUNITY COLLEGES

The American Association of Community Colleges published the graph provided above. Given the trajectory of the uselessness of a high school degree, it makes perfect sense that market forces are bearing down on young peoples' choices. Enrollment of students under 18 in community colleges is bound to increase dramatically over the coming years. One may say that natural market forces are taking us in the direction of wiser nations – as it relates to education – such as Switzerland.

The authors of this graph state, "Over a decade and a half, community college enrollment for part-time students who are younger than 18 has more than doubled, jumping from 287,000 in 2001, to more than 635,000 by 2015 – an increase of 122%."

Dadgar and Trimble (2015) provide some needed insight into community college credentials, though limited by research in only one State – Washington – which they recognize as a limitation on any conclusions that can be drawn across the country. They start out stating, "This study provides one of the first estimates of the returns to different types of community college credentials … across different fields of study" and then pose three of the most important questions needing answers:

1. "To what extent do sub-baccalaureate credentials (short-term certificates, long-term certificates, and associate degrees) increase the wages of students who earn them?"
2. "What is the effect of these credentials on increasing the likelihood that students will be employed or, if employed, work more hours?"
3. "How do the wage returns to credentials vary by field of study?" (pp. 399-400)

They point out, "A vast majority of the literature on the returns to schooling has focused on the returns to education at high school and 4-year colleges." They also note that individual ability plays a significant role in lifetime earnings in spite of educational attainment, a point rarely conceded by academics.

The authors offer a summary in their introduction:

> Our findings suggest that there is great variation in the labor market value of different credential levels, and that there is even greater variation by field of credential. Although we find that earning associate degrees or long-term certificates is associated with increased wages, an increased likelihood of being employed, and increased hours worked, we find minimal or no positive effects for short-term certificates. (p. 400)

Then to summarize their conclusion, the authors offer the following:

> Our results suggest that some credentials lead to high returns to wages, but some do not; in addition, there are large variations by the field of credential. … Furthermore, our findings suggest that returns to earnings are likely to be partly driven by greater likelihood of employment and more hours worked, in addition to the increase in wages. For both men and women, the earning of associate degrees

and long-term certificates has an important role in increasing the likelihood of employment and, to a lesser extent, hours worked. … Earning a short-term certificate is not related to either likelihood of employment or hours worked.

We find that there is great variation to returns across fields of study within a given credential level. For example, earning an associate degree in nursing is associated with increases in women's wages (37.7%), whereas earning an associate degree in humanities and social sciences or information science, communication, and design is not associated with wage gains. Another important point is that simply comparing the average returns to associate degrees versus long-term certificates without regard to the field in which those credentials were earned can be misleading. [*True also of comparing bachelor's degrees to associate's degrees and certificates.*]

… Although our study and the study by Jepsen et al. (2014) are the only rigorous studies to our knowledge that have examined the returns to short-term certificates, both studies find that these credentials have zero to very small returns. Thus, based on this emerging evidence, we believe that this dramatic national increase in the number of short-term certificates in the last decade may not have produced a commensurate increase in wages for those earning them. State policymakers may want to place greater value in investing in associate degrees and long-term certificates in high-return fields of study that are known to have positive impacts for students.

However, such considerations must first begin with an analysis of supply and demand forces for each field of study. Otherwise policymakers may create shortages in some fields and surpluses in others, which will then create a spiraling of trend reversals causing them to end up chasing an elusive *high return fields* phantom. Good market data that analyzes both supply and then demand along with ROI for individuals and input from employers and trade associations must be made available for easy access by the public and then leave the decision making to individuals.

The authors finish the paper with "A more general question for future research is whether or not the differences in the labor market value of credentials of different length are related to the differences in knowledge and skill gains or whether they reflect differences in the extent to which these differences reflect employer knowledge of various credentials or opportunities for industry certification." Employers may be ignorant of the benefits short-term certificates provide, or perhaps, short-term certificates are of such low quality that employers rightly see them as useless. It appears a remedy to this dilemma is needed.

The authors' occupational research efforts can be viewed in Table 7, *Estimates of Wage Returns to Credentials by Field of Study*, in their paper with a breakdown of the three levels of credentials and field of study combinations.

As I allude to in so many of my essays, our fanatical fixation on quantity over quality of education is destructive of individuals and society, so the effort by Dadgar and Trimble is

a refreshing effort. It is my opinion that findings such as those found in this type of research, provide valuable information for formulating secondary programs.

While people will tend to be drawn to focus efforts on the more lucrative credentials, as the authors recommend, it cannot be emphasized enough that this would lead us to fall prey to the same illusionary forces that quantity is more important than quality. We cannot lose sight of the fact that every occupational niche is restricted by market demand. So if all educational efforts are focused only on fields that provide the greatest ROI, we will create oversupply in those fields – driving down their value – while ignoring all other fields even though they provide opportunity for individuals and are needed for a vibrant economy.

That said, educational programs, especially those born at public expense, need to be based on real needs by the economy, with high quality Bureau of Labor Statistics employment data offered so individuals are free to choose if a program provides what they're looking for. Perhaps income and employment levels are not as much a concern to some people as to others; think of mothers who contribute supplementary household income as an example. Think also of those who hold two jobs: a primary job that required a state license and a secondary job that required only a short-term certificate. The authors allude to this where they state in their conclusion, "the methodology we use in this article still does not allow us to rule out potential sources of bias resulting from unobserved differences among students that affect the trajectory of wages."

Carnevale et al. (2018b) published a paper on certificates in Oregon. They chose Oregon because it is embracing certificates as part of a "broader educational attainment goal" and because it is at the forefront of this effort. The authors point out the growth trend throughout the U.S. of certificate programs due to: their accessibility, their low cost, the market demand (for certain jobs), and the speed at which one can complete a program.

Let's consider some of the authors' findings:

> Certificate holders without postsecondary degrees earn an average of 20% more than workers with no more than a high school diploma. But the benefits vary widely, especially based on field of study. Certificate holders in technical fields, such as computer and information services, earn as much as many degree holders, while those in fields such as cosmetology make much less.
>
> … The number of certificates awarded at Oregon community colleges has more than tripled since 2007.
>
> … Younger certificate holders increase their earnings dramatically as they enter the workforce, build their skills, and gain work experience. Certificate recipients ages 29 or younger reap sizable earnings gains, in some cases more than doubling their pay, as they enter the workforce.

… Students from low-income backgrounds boost their pay by earning a certificate.

… Certificate holders who work less than half time before they enter a program (mostly younger students and Pell Grant recipients) experience particularly large earnings gains as they start at a low level and then greatly increase their hours of work.

… Completing a community college certificate typically boosts workers' overall earnings by almost $5000, or 19%, compared to their previous wages.

… For certificate recipients as for degree holders, the choice of field of study is an important decision that influences future earnings.

… Men out-earn women, but women experience much stronger earnings growth.

… Certificate programs can support career transitions.

These reasons justify incorporating certificates into a secondary program offering, along with offerings in certification, licensing, apprenticeship, etc. that can be offered at community colleges, amongst other avenues. Why wait until after high school? During high school, it should be at the public's expense – at community colleges – or at employers' expense – for apprenticeships – and it is typically at a time before the complications of life make it difficult for many to pursue post-secondary training/education. We do a tremendous disservice to our youth in requiring them to attain a college prep high school degree and then dismiss them and say "Good luck!"

A study done in Massachusetts by The Boston Foundation (June 2021) found more evidence that community college credentials offer significant returns on investment. Jonas (2021) summarizes the findings:

> Those graduating with a two-year associate's degree from Massachusetts community colleges had earnings that were 31 percent higher than their peers who only completed high school, according to the study, while those obtaining a community college certificate — a credential in a specific field without a full, two-year degree — saw earnings that were 26 percent higher than high school graduates. Even completing at least two semesters of community college without getting a degree or certificate led to a modest 2 percent earning premium for those who were in the workforce. Average annual earnings were $29,700 for degree recipients, $28,600 for those with a certificate, and $22,600 for those with only a high school diploma.

However, Jonas brought up an important point that is rarely considered. He states,

> Lots of research has shown that earning levels are closely related to education, with higher income associated with each increasing level of postsecondary degree

attainment. But many of these studies don't tease out the actual impact of higher education. Those with better K-12 academic preparation, for example, who are more likely to pursue college degrees, are also likely to earn more in the labor market apart from whatever higher ed credential they obtain."

So, the question that begs an answer is this: Are higher earnings more closely correlated with higher levels of education or are character attributes, such as ambition, conscientiousness, and hard work more closely correlated with earnings? Since the education community controls the lucrative credentials, many ambitious people seek postsecondary credentials as a route to success, thereby making it appear as though it's the postsecondary education that provides greater economic prosperity rather than personal attributes that are actually at the core of actively pursuing a highly successful career, as well as possibly pursuing higher education. That is, the cause of pursuing higher education and the cause of pursuing higher earnings are based on personal motivations, and education and earnings aren't necessarily as tightly correlated as academia chooses to assert. Keep in mind, people can study all they want outside of formal institutions to learn what's required of them. Therefore, it may be that "less ambitious" people are content with less education and less income, relatively speaking, (i.e., they have different motivations) whose ambitions lie elsewhere. Therefore, society must take this *less ambitious* (not less intelligent) sector into account and strive to assist young people acquire a credential while still in secondary school before other forces in life become greater priorities to them.

Grant (2018) reports on a survey done by the College Savings Foundation which showed that "the majority of high school students who will be entering college over the next three years would like to see more colleges promote education and skills training rather than only offering majors for future employment…. 81% would like to see colleges offer skills instead of majors…." More students than before are looking at technical schools, vocational schools and community colleges. According to the survey, this trend has been growing over the last four years.

This demonstrates that the academic bias, both in high school and college, is being seen for what it is: a failure for the vast majority of individuals. This calls for an analysis of what function education is supposed to serve which we can base on Herbert Spencer's education principle of *relative worth*: What is worthy of an individual's time and what constitutes knowledge that has substantive value to individuals. Spencer (1860) addresses this with the following:

> **The question which we contend is of such transcendent moment, is, not whether such or such knowledge is of worth, but what is its *relative* worth?** When they have named certain advantages which a given course of study has secured them, persons are apt to assume that they have justified themselves: quite forgetting that the adequateness of the advantages is the point to be judged. There is, perhaps, not a subject to which men devote attention that has not *some* value. [*Spencer proceeds to demonstrate examples of relatively useless learning.*] … But in these cases, every one would admit that there was no proportion between the

required labor and the probable benefit. No one would tolerate the proposal to devote some years of a boy's time to getting such information, at the cost of much more valuable information which he might else have got. And if here the test of relative value is appealed to and held conclusive, then should it be appealed to and held conclusive throughout? Had we time to master all subjects we need not be particular. … Before devoting years to some subject which fashion or fancy suggests, it is surely wise to weigh with great care the worth of the results, as compared with the worth of various alternative results which the same years might bring if otherwise applied. (pp. 13-14) (Emphasis added)

[W]hile every one is ready to endorse the abstract proposition that instruction fitting youths for the business of life is of high importance, or even to consider it of supreme importance; yet scarcely any inquire what instruction will so fit them. … While the great bulk of what else is acquired has no bearing on the industrial activities, an immensity of information that has a direct bearing on the industrial activities is entirely passed over. (p. 32)

Spencer then offered the following considerations for individuals:

Our first step must obviously be to classify, in the order of their importance, the leading kinds of activity which constitute human life. They may be naturally arranged into:

1. Those activities which directly minister to self-preservation;
2. Those activities which, by securing the necessaries of life, indirectly minister to self-preservation;
3. Those activities which have for their end the rearing and discipline of offspring;
4. Those activities which are involved in the maintenance of proper, social and political relations;
5. Those miscellaneous activities which make up the leisure part of life, devoted to the gratification of the tastes and feelings. (pp. 17-18)

It can only be imagined that if we analyzed education from Spencer's perspective, much that passes for educational instruction would be discarded, and much that is given little to no attention would be expanded considerably. And when the dust settled, I would wager that the quantity of time individuals spend in education would be reduced substantially while the quality would increase exponentially.

Recent surveys like the one Grant cited above, along with others that demonstrate a vote of no confidence in our education system, is directly correlated to Spencer's analysis which concludes there is little return for individuals and society with a system as currently structured.

To conclude this section: Not everyone can become *politically influential* or *prestigious*, as academics tend to focus their energies when pushing for bachelor degrees or bust.

Certainly many people do not aspire to these two idols. Therefore, policymakers must resist the temptation to promise a pot of gold at the end of the rainbow and come back down to earth with a clear social vision of the **realistic** needs of citizens, society, and our economy. And most importantly, policymakers need to look at what the self-serving academics promote as being just one of many biased perspectives that are marketed as the Holy Grail.

Apprenticeships[11]

Ferenstein (2018) reviews the history of apprenticeships in the U.S. and how difficult it has been to broaden the use of apprenticeship programs here due to the perspective that "the model in America is 'high school to Harvard,'" but also due to the conflict between the academic culture and the rest of society. He then makes the comparison to Switzerland where two-thirds of students work and learn simultaneously with little to no debt at the end of such programs. In addition, "Swiss students end up earning the most compared to their university-bound peers." This reveals a serious market disruption in the U.S.: Our cultural perspective in conjunction with a poorly designed occupational education system distorts educational outcomes as it relates to economic returns.

Fuller and Sigelman (2017) point out that while in Europe apprenticeships are a common part of the training culture for a large swath of jobs, it is relegated to a narrow playing field in the U.S. The authors' essay looked to answer basic questions about apprenticeships:

> What is the true scope or potential for apprenticeships in the U.S. economy? Armed with this analysis, employers can then pursue a targeted strategy for expanding apprenticeships into more occupations, especially those areas where they see a shortage of middle skills talent. We hope this research inspires more questions: If business leaders and policymakers are committed to making apprenticeships more available, how many positions could be created? What are the characteristics of the occupations that lend themselves easily to apprenticeships? How might apprenticeships help close the skills gap for employers and open up opportunities for average Americans in jobs that provide rising living standards?

Noble questions indeed! The authors then analyzed millions of job postings in 2016 and found that "The number of occupations commonly filled via apprenticeships could be nearly tripled, from 27 to 74."

The authors then point out a

> significant barrier to apprenticeships is that technical schools often find it challenging to forge relationships with potential employers. In an apprenticeship

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[11] For an historic analysis of apprenticeship, please see *The Contemporary Review*, Vol. XXXVIII. July-December, 1880, pages 472-85 https://archive.org/details/contemoraryrevi00goog

model, employers and local educators can work together to define a curriculum as well as on-the-job training that is aligned with employers' needs and helps direct young talent into the workforce.

What distinguishes an occupation that is appropriate for apprenticeships from one that is not? Out of 810 occupations identified by the U.S. Department of Labor, 27 make up the core of apprenticeships in the United States. More than half of them are in the Construction and Extraction career family (for example, Mining), and another nine are in Installation/Maintenance or Production.

… Most important, each occupation is focused on a relatively narrow cluster of skills: Boilermakers, Carpenters, Glaziers, and so on. In other words, those roles require a "narrow and deep" skill set, an in-depth ability in one orr two specific areas rather than a broad array of skills. This sets apprenticeship jobs apart from other fields, such as the rapidly growing field of "hybrid jobs" that mix skills not normally taught together.

The authors then go on to explain their "set of criteria by which to identify occupations that have *potential* for apprenticeship expansion."

Herk (2016) reports "Apprenticeship is much less prevalent in the U.S. than in other developed economies. Apprentices make up only 0.2% of the U.S. labor force, compared to 2.2% in Canada, 2.7% in the U.K., and 3.7% in Austria and Germany…."

Bergman and Kobes (2017) analyze the role of workforce boards in apprentice programs. Further investigation into these boards will be required by Applied Education Foundation researchers to determine the support they may offer in promoting applied education principles.

National Network is an organization made up of various business and industry associations interested in developing training pathways to careers. They offer succinct papers on the expectations of training for apprenticeships.

Their paper *Learning While Working* provides a nice explanation apprenticeships serve:

Apprenticeships address the needs of both employees and employers. For employees, apprenticeships emphasize practical, on-the-job learning for individuals who need to earn while they learn. For employers, apprenticeships offer a turnkey solution to common hiring conundrums, such as how to attract and retain qualified workers who understand an employer's way of doing business; how to identify the technical and foundational skills necessary in a specific line of work; and how to streamline training to use time, money and other resources efficiently.

National Network's paper *Blueprint For Organizations to Create Standards-Based Credentials* lays the groundwork for effective apprenticeships:

The National Network of Business and Industry Associations (National Network) believes the learning world and the working world should be meaningfully connected, and one way to do that is through quality industry credentialing programs.

While quality industry credentials are essential to strengthening connections between working and learning, the marketplace is full of so-called "solutions," making it hard for employers, educators and students to understand which credentials have real value. That is where the National Network comes in. Representatives from more than 10 high-demand industry sectors have identified the attributes of high-value, standards-based, industry credential programs. While this list refers mostly to certifications, a type of industry credential, it is a first step in defining the qualities that make programs valuable to consumers – employers, workers and students. Quality credential programs have:

- An independent, third-party governing body that operates with impartiality
- A scope statement for the credential that is publicly available
- Current job task analyses or other standards on which a program is based
- A validation process for the job task analysis
- A process for examination development, maintenance and administration
- Eligibility requirements or prerequisites
- Alignment of learning objectives with assessments
- Credential and training that are industry recognized
- A code of ethics
- Policies that guide all credentialing decisions…
- Stakeholders that provide ongoing systematic input
- Separation of training from testing (The attributes of certifications and certificates differ, and those stated above refer mostly to certifications. The starred attributes are applicable to only certifications, not certificates. Certifications require an "independent third party" assessment of competencies; the organization that trains cannot be the organization that certifies.[12]) ….

These characteristics allow any industry to understand what quality credentials entail, but that is just a starting point.

National Network's paper *Registered Apprenticeship: Challenges and Solutions* provides a nice summary of the shortcomings of government involvement:

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[12] An education organization cannot objectively judge itself, as we currently have it in our public system. Few will admit when they are doing a bad job. Rather, people look to place the blame elsewhere. Our public system places the blame on students when they don't perform in a manner to academics' liking. Terms like "academic rigor" are used to establish a "quality" type of argument to justify marginalizing most students in order to erect entry barriers into the "coveted" discipline or profession.

Today, too many employers in a wide range of business sectors find the Registered Apprenticeship Program, as administered by the U.S. Department of Labor and State Apprenticeship Agencies, as overly bureaucratic, cumbersome, rules-driven and costly. As a result, employers across multiple sectors are calling for a new version of apprenticeship that is competency-based – related directly to nationally portable, industry-recognized credentials and updated to today's realities of learning and work.

The paper then enumerates the characteristic failings of government, typical of bureaucracies, which impede current apprenticeship programs and impede the implementation of new programs – especially by small and medium sized companies who simply don't have the means to navigate through the demands of bureaucracies. This exemplifies why government is not the solution to our problems, but frequently the creator of our problems.

National Network has a number of other papers that address apprenticeships. These should be researched further for more in-depth guidance:
- *Registered Apprenticeship: Challenges and Solutions*
- *Learning While Working: Building 21st Century Competency-Based Apprenticeships*
- *Attributes of the New Business-Led Work-And-Learn Models*
- *Work-And-Learn in Action: Successful Strategies for Employers*
- *Apprenticeships for the Modern World: How Employers Are Building America's Workforce Through Competency-Based Work-And-Learn Programs*

In addition, National Network put together a paper titled *Common Employability Skills, A Foundation for Success in the Workplace: The Skills All Employees Need, No Matter Where They Work*. The skills it addresses should be incorporated in every occupational training program.

Browning and Nickoli (2017) address the role that community colleges play in apprenticeship training, something that was "almost unheard of a few years ago":

Community colleges are becoming increasingly active in developing and delivering apprenticeship programs. As part of an effort to expand apprenticeship to a wide range of stakeholders and better connect it to existing educational and training opportunities, the U.S. Department of Labor launched the Registered Apprenticeship College Consortium in 2014. This fast-growing network of approximately 350 colleges across 46 states demonstrates this shared interest.

… Community colleges are delivering … apprenticeship programs with a range of employer partners. While apprenticeships have a reputation as a predominantly union strategy, community college programs represented in the survey results are far more likely to serve non-union partners, rather than union-affiliated ones.

The authors point out that many community colleges are interested in joining with current industry certifications within their training programs. This is where trade associations come in to dictate much of what is required for certification which community colleges will have to accept in order to be of any use to industry.

Swisher (2017) speaks to the unique American problem of tracking as it relates to vocational education in general and apprenticeship training in particular. It is unique to the U.S. because vocational education was marginalized by American academics due to the disdain this sector has for applied education.

The title of Swisher's article, *Will the Ghost of Tracking's Past Haunt Youth Apprenticeship's Future?*, expresses well the content of the article. However, there is much missing from it – which is a comparison to European educational systems such as Switzerland's. Swisher references a 1985 book that addressed inequities based on race and gender challenges as it relates to vocational education, which lead to so-called "tracking." Now if an educational program is poorly designed and few resources are invested in it, then I would say that this would be "tracking," in a negative sense, as she describes. But if we look at occupational training as we see in Switzerland, then I would say that we are currently "tracking" U.S. students in the college prep program that will serve the majority of them very poorly; and actually every bit as poorly as an inadequately designed vocational education program. But this is rarely discussed because it would be unpopular to do so since an academic track is mistakenly seen as the superior one.

When reference is made to the negative effects of "tracking," we really need to understand what tracking means from a higher vantage point rather than from the shallow "social justice" political bias.

The U.S. Dept. of Labor, Employment and Training Administration provides summaries of apprenticeship numbers:

Federal Data: Top 30 Occupational Federal Workload (Fiscal Year 2017)

Occupation Title	O*NET Code	Active Apprentices
Electrician	47-2111.00	45,264
Carpenter	47-2031.01	17,297
Construction Craft Laborer	47-2061.00	14,089
Truck Driver, Heavy	53-3032.00	15,801
Plumber	47-2152.02	14,532
Pipe Fitter	47-2152.01	8,541

Line Maintainer	49-9051.00	7,993
Sheet Metal Worker	47-2211.00	7,638
Structural Steel Worker	47-2221.00	6,121
Dry-Wall Applicator	47-2081.00	5,779
Roofer	47-2181.00	5,489
Sprinkler Fitter	47-2152.01	4,383
Millwright	49-9044.00	4,265
Operating Engineer	47-2073.00	3,974
Elevator Constructor	47-4021.00	3,847
Painter	47-2141.00	3,833
Boilermaker	47-2011.00	3,414
Maintenance Mechanic	49-9041.00	2,875
Protective Service Specialist (Active Duty Military)	33-3051.01	2,870
Heating and Air-Conditioner Install/Servicer	49-9021.01	2,660
Cement Mason	47-2051.00	2,516
Telecommunications Technician	49-2022.00	2,303
Reinforcing Metal Worker	47-2171.00	2,299
Cook	35-2012.00	2,197
Line Installer-Repairer	49-9052.00	2,107
Floor Layer	47-2042.00	2,001
Glazier	47-2121.00	1,858
Fire Fighter	33-2011.01	1,788
Pharmacy Support Staff	29-2052.00	1,735
Tool and Die Maker	51-4111.00	1,679

Federal Data: Active Apprentices by Industry for Fiscal Year 2017

Industry Title	Active Apprentices
Construction	175,195

Military (USMAP)	89,301
Public Administration	23,004
Manufacturing	17,559
Transportation	15,895
Utilities	9,019
Health Care and Social Assistance	2,549
Retail Trade	2,435
Education	2,303
Wholesale Trade	2,256
Warehousing	1,690
Other Services, except Public Administration	1,221
Administrative and Support and Waste Management and Remediation Services	1,116
Agriculture, Forestry, Fishing and Hunting	819
Information	607
Accommodation and Food Services	542
Mining, Quarrying, and Oil and Gas Extraction	470
Professional, Scientific, and Technical Services	357
Finance and Insurance	161
Arts, Entertainment, and Recreation	62
Real Estate and Rental and Leasing	46

Source: https://doleta.gov/oa/data_statistics.cfm

These numbers reflect a very weak apprenticeship system not only in the number of participants but in the type of available apprenticeships. We should be mobilizing resources, not unlike preparing for war, to attack the forces that are restraining needed reform and expansion in all forms of occupational training – of course, that opposing force emanates primarily from academia. Again, Switzerland reflects a model to analyze.

McCarthy (2016) really hits the nail on the head in her article *Time For a Closer Look: Apprenticeships in American High Schools*. She provides:

> [W]hile Central European countries are often held up as models for the United States to emulate, what is often overlooked is that their apprenticeship systems all start in high school, usually during the last two or three years of a student's

secondary education. In the view of many experts, including the Organisation for Economic Co-operation and Development (OECD), this early start is key to their success. American apprenticeship, by contrast, has been aimed squarely at adults: in 2012, the average American apprentice was nearly 30 years old, compared to 17 in Switzerland and 18 in Germany. The current administration's investments and policy development have benefited adult apprentices and strengthened ties between Registered Apprenticeships and postsecondary institutions, but have neglected high schools and their students.

The focus on adults probably doesn't surprise anyone who follows education policy: Americans are generally uncomfortable with efforts to route high school students away from an academic path leading directly to college. [The author shows her academic bias here since this may be true in the upper socioeconomic strata, but this would be inaccurate for the middle and lower strata.]

… We think it is time to reconsider the role that apprenticeship can play in American high schools. Our young people need options other than just enrolling in college and hoping they beat the odds. Well-designed youth apprenticeships can provide structured transitions out of high school that lead to good jobs and further educational opportunities. They can help young people acquire valuable skills, credentials, and work experience, all of which are strong predictors of labor market attachment and success throughout adulthood. Well-designed apprenticeship programs can also deliver math and literacy skills on par with academically focused courses, but do so in a way that is more contextualized and experiential. They can be particularly effective pathways to "middle-skill jobs," which require postsecondary education but not a four-year degree. They can also strengthen linkages between high schools, employers, and the local economy, building a talent pipeline that is rooted in the community.

… But while there are many good reasons to reconsider the value of youth apprenticeship, none of them make it any easier to actually implement such programs. American high schools are still organized around preparing students for college, not careers, which creates a host of practical and political challenges to setting up youth apprenticeship programs. High schools leave little space for students to participate in alternative forms of learning, and may in fact discourage them: outside of some two dozen states working to better integrate career and technical courses into their diploma structures, such courses may not even count towards graduation requirements.

… New America will explore the opportunities and challenges facing the expansion of youth apprenticeship into American high schools. We are analyzing potential policy obstacles such as high school graduation requirements and federal and state labor laws, practical constraints like scheduling and teacher development, and the lingering social and cultural stigma associated with vocational education….

Most occupational training must begin in the secondary school years: middle school and early high school years should broaden individuals' minds in applied studies, while later years in high school should begin greater refinement in particular economic sectors and/or specific occupations.

This idea is nothing new. Around the turn of the last century, there was the manual arts movement underway in the U.S. that produced highly skilled tradesman and technicians for various occupational walks of life. The high school years was the focus for this movement and countless texts were published to serve this education sector of the population. One good reference to review is the book written for instructors, *How to Teach a Trade* (1923) by R. W. Selvidge. This should be reviewed by curriculum writers who can layout a template for the various experts who will need to assemble instructional materials to train students.

Due to our dilemma with academia's bias against occupational education, President Trump signed *Presidential Executive Order Expanding Apprenticeships in America* on June 15, 2017. Let us hope academia is unable to marginalize his efforts this time as they have for past presidents. Obama and Biden also supported CTE and apprenticeship initiatives. Let us hope this trend continues.

Occupational Licensing[13]

Kleiner (2015) offers an unbiased analysis of occupational licensing policies. His findings reflect the tendencies of interest groups to build protective barriers around their interests in the name of the *public good* – the catchall phrase used to justify any effort for social control, justified or not. In his introduction, Kleiner summarizes the definition and use of licensing by States.

> Occupational licensure is the process by which governments establish qualifications required to practice a trade or profession, so that only licensed practitioners are allowed by law to receive pay for doing work in the occupation. This form of regulation has rapidly become one of the most significant factors affecting labor markets in the United States and other industrialized countries. In the early 1950s less than 5% of U.S. workers were required to have a license from a state government in order to perform their jobs legally. By 2008, the share of workers requiring a license to work was estimated to be almost 29%. Workers often requiring a license include those with extensive formal education such as physicians, attorneys, nurses, and teachers, as well as those in occupations requiring less formal education such as truck drivers and hair stylists. In fact, in the early 1990s the Council of State Governments estimated that about eight hundred occupations were licensed by at least one state. Given the pervasiveness and growth of occupational licensing, it has become a key issue in workers' access to jobs, and those workers' potential labor market and economic outcomes.

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[13] Haskins defines licensing as a credential that is "usually issued by local or state government based on a test that, if passed, results in permission to practice a specific profession." In other words, it is highly regulated with significant barriers to entry.

The main rationales for occupational licensing are to protect the health and safety of consumers and to ensure a sufficiently high level of product or service quality. By making would-be practitioners undergo specific training, pass exams, and complete other requirements, according to this rationale, the public is better protected from fraudulent, disreputable, and unqualified service providers. However, not all occupations pose equivalent threats to health and safety. While work by an unskilled electrician could lead to faulty wiring and a fire hazard, it is hard to imagine a similar level of risk from a less skilled interior designer, travel guide, or auctioneer.

Moreover, the degree of occupational licensing varies widely across states, even for the same occupation, and it is not clear why some have more-restrictive requirements for entering the occupation than others.

It is interesting to compare the contemporary social forces Kleiner points out, as it relates to licensing, to those of the Italian Renaissance, as it relates to the influence of guilds. The same forces that Kleiner points out for contemporary arguments were the same used in the Renaissance.

A few of Kleiner's highlights help establish key points:

- "economic studies have demonstrated far more cases where occupational licensing has reduced employment and increased prices and wages of licensed workers than where it has improved the quality and safety of services."
- "studies have found that occupational licensing improves the employment prospects of licensed workers and can raise their wages by as much as 15% and enhance other benefits…."
- "occupational licensing transfers income from consumers (in the form of higher prices) to licensed workers (in the form of higher wages)…."
- "studies have also shown that licensing reduces employment growth and limits job opportunities, especially for low-income individuals; the additional requirements needed to earn licensure may steer these workers into lower-paying but more-accessible jobs."
- "standard economic models imply that the restrictions from occupational licensing can result in up to 2.85 million fewer jobs nationwide, with an annual cost to consumers of $203 billion."
- "evidence suggests that occupational licensing can result in a loss in overall output of about 0.1% of annual consumption expenditures."
- "overall, current research shows many cases in which there are limited benefits of occupational regulation for consumers."
- "there is little evidence to show that the licensing of many different occupations has improved the quality of services received by consumers, although in many cases it has increased prices and limited economic output."

In Selingo's 2015 article summarizing Kleiner's paper, he addresses the academic's interest in maintaining the status quo:

> … Here's the higher education angle to this story: Many states require applicants to take courses or get a credential just to sit for a licensure exam. Often you can take the exam only if you attended an accredited program, a requirement put into place in many states after lobbying by professional associations. These are the same groups that make money by accrediting specific academic programs at colleges.

Haskins (2015) summed up a report from The Council of Economic Advisors (CEA): *Occupational Licensing: A Framework for Policymakers*. The report reveals the importance of mid-skilled jobs and how they

> play an important role in promoting economic mobility among young adults…. The middle-skill jobs … now constitute about half of American jobs and promise to remain the biggest sector of employment in the American economy. Around half of these jobs require a license, so licensing is of great importance to anyone trying to figure out how to help workers … get decent jobs.

Haskins then provides the reports warnings about the protectionist tendencies credentialism leads to.

> The CEA report provides a concise overview of the prevalence of licensing, the costs and benefits of licensing, and policy ideas to make sure that licensing does not unnecessarily hold back young people trying to acquire and use employment skills to earn a decent living. Although licenses can provide protection to consumers and allow professionals to signal their competence, the CEA report identifies several problems with current licensing practices. Perhaps the most important is that licenses are sometimes too restrictive, in which case they constitute a barrier to worker entry and earnings. Restrictive licenses also result in higher prices for goods and services, which impose direct costs on consumers. In fact, as the CEA says, "licensing restrictions cost millions of jobs nationwide and raise consumer expenses by over one hundred billion dollars."

Because of such protectionist tendencies, the CEA report recommends the use of licensing for situations where serious public health and safety are at issue. Otherwise certificates are the better vehicle to provide evidence of competency in a field.

In closing his article, Haskins states "This world of certification holds real promise for helping young people enter good jobs in occupations that offer decent salaries and a chance for advancement. If the CEA recommendations are followed, and licensing is scaled back in favor of certification, the path to the middle class will widen and more Americans will get ahead."

Dembicki (2018) references a Senate hearing that addressed President Trump's $1.5 trillion plan to modernize the country's infrastructure, which includes "allowing students to use Pell grants for quality short-term programs that are focused on in-demand fields." Dembicki quotes U.S. Labor Secretary Alexander Acosta:

> "Current Pell Grant eligibility overlooks the growing importance of postsecondary, short-term credentials to the career entry and advancement of many Americans, including those infrastructure-related occupations. … Work-study funds are disproportionately distributed to four-year colleges and universities, disadvantaging quality community colleges and other programs that are more focused on workplace readiness."

> … The secretary also recommended reforming state licensing requirements, some of which prevent workers from working in other states. "I have engaged with state and local officials and offered this advice: if licenses are unnecessary, eliminate them. If licenses are necessary, streamline and make them reciprocal with other states," he said.

Kuczera and Field (2013) also have this to say about licensing in the U.S.:

> [A]pproximately 20% of the U.S. workforce in in licensed occupations, and around 30%, or 65 million individuals, have a certification or a license as reported by NCES. This would therefore imply that between 10% and 30% of adults in the U.S. hold a certification.

> … "Licenses" are required by law (usually state law) to pursue particular professions. Quite often particular certifications are a prerequisite for licensure. Sometimes licensing arrangements artificially restrict the supply of labor to the occupation and increase the cost of labor. Entry barriers have slowed down growth in the retail sector in France.

Kuczera and Field also point to the shortfall in data accumulation in America for credentials.

> Currently federal data are available on postsecondary associate's, bachelor's, graduate and professional degrees, but not on the number of individuals with industry certifications, state and local government issued licenses and those who have received non-credit instruction.

> … To address these serious gaps in data, a federal Interagency Working Group on Certificates and certifications was established and mandated to develop measures of the prevalence of certifications, licenses, and educational certificates. This led to the Adult Training and Education Survey Pilot Study….

Kuczera and Field then explain advanced credentials for entrepreneurs:

In the Germanophone countries the "master craftsman" qualifications are typically pursued by qualified apprentices with some years of work experience in their trade who want to run their own small business – the examination tests competences in entrepreneurship and in training apprentices, as well as higher level skills in the target trade.

Bailey and Belfield (2018) takes a look at, as their essay's title provides, *The Impact of Occupational Licensing on Labor Market Outcomes of College-Educated Workers*. Their abstract provides:

> More than one third of college-educated workers have a license that provides the right to practice a particular occupation. In contrast to certificates, these licenses – serving either as a productivity signal or acting as a restrictive practice – are associated with significantly higher earnings. Thus, it is possible that some part of the returns to college are in fact returns to licensing. Here we identify the effects of licenses on a set of labor market outcomes for the college-educated workforce. … We find significant advantages from licensing in terms of earnings and labor market participation (hours worked). … Licenses convey economic benefits even in occupations where they are not required.

In their conclusion, the authors state:

> [C]ompleting college is taking longer and becoming every more expensive – workers may attempt to bypass this commitment of time and money by obtaining a competency-based license that demonstrates degree-level skills. Hence, licenses are now common and may grow in prevalence over time if the price of college keeps increasing.
>
> Our analysis finds that licensing conveys significant benefits to workers in terms of higher earnings and greater labor market participation.
>
> … Importantly, licensing does not undercut the economic value of a college degree. Having a license only trivially reduces the returns to college: these returns are only 2-3 percentage points lower when we control for licensing. This finding remains to be explained: one possibility is that the degree generates long-term human capital across all work activities, whereas the license reflects worker competency at a specific set of tasks. Indeed, there is a clear pinnacle in returns: workers with degrees and licenses report the best labor market outcomes – both in terms of earnings and labor market participation. Below this, licenses and associate degrees appear to be approximately equivalent in their effects on labor market outcomes. We therefore speculate that licensing opportunities may in part explain high dropout rates from community colleges. Moreover, licensing may be preferable to obtaining a certificate, a certification, or stacked credentials. These awards convey weak-to-modest effects on earnings, and any advantages they do convey appear to be short-lived. In conclusion, there is some support for an optimistic interpretation of licensing: even as a license may serve as a potential

substitute for certificates and certification, it appears to complement degree attainment by providing occupation-specific skills and by signaling worker productivity.

Perhaps the combination of stacked credentials – in place of a college degree or perhaps seen as an alternative degree – and licensing may provide the same benefit as the combination of possessing a bachelor's and license.

Alternative Credentials

Ewert and Kominski (2014) compare alternative credential attainment "independent of, and in supplement to, existing levels of educational attainment, i.e., 'traditional' academic degrees" in the U.S. population. See Figure 1.

Figure 1.
Alternative Credential Status by Regular Education Level: 2012

Percent

Legend:
- No credential
- Professional certification or license
- Educational certificate

Note: Nonrespondents are not included in estimates of alternative credentials.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel, Wave 13.
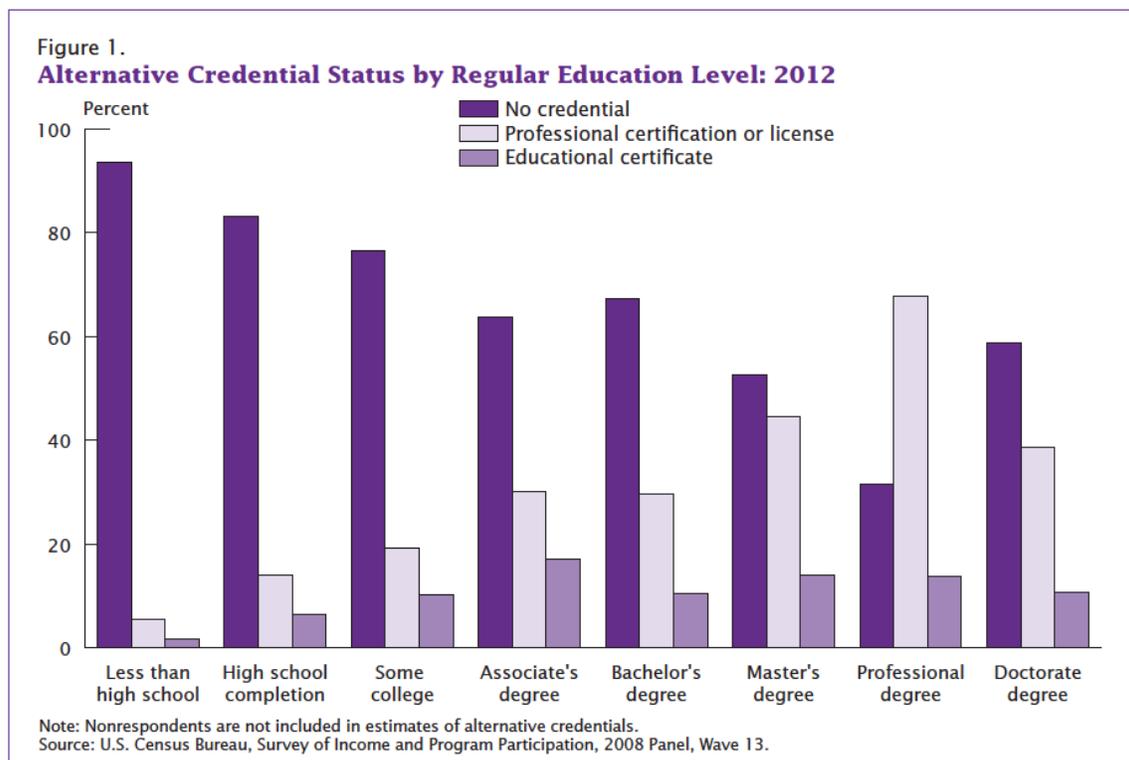
In Nyren's interview (2018) with Credly's founder, a couple of points were brought up that may reflect changes in the educational winds.

> In January 2017, Michael Horn … co-founder of the Clayton Christensen Institute, wrote a piece for Forbes asking if alternative credentials could replace college degrees.

The same year, Linkedin conducted a survey of corporate learning and development professionals. 57% said that they'd be placing more value on non-traditional credentials when reviewing candidates.

… It's no longer an assumption that simply having a bachelor's degree is the proxy that represents you're ready for a job.

Engler (2016) states:

The … certification industry is booming. In the last three decades, the number of occupational licenses, industry certifications, and other … credentials awarded has jumped 800%. There are now thousands of certifying institutions. The advent of online learning has empowered students to earn those credentials at their own pace, in their own time, anywhere in the world.

Young (2017) reveals the alternative credentialing trend is expanding in universities. "EdX … now lists 40 'MicroMasters' programs from 24 colleges and universities around the world." Coursera has also been expanding its online course offerings.

Dunagan (2017) of the Christensen Institute speaks to the trend of disruptive innovation in the higher education community. She uses the demise of Border's Books, Kodak, and Xerox as examples of what happens when innovative alternatives are created in industries. These same forces are underway with alternative credentialing such as MOOCs, bootcamps, competency-based programs, microcredentials, etc.

Reynolds (2016) discusses digital badging as a more efficient and effective method of proving competency as compared to traditional diplomas.

Just ten years ago, one would never have considered the portability of credentials that could follow a person from location to location, allowing potential employers to verify a job candidate's fit for a position quickly. However, that is just what has happened, and the explosion of interest in digital badging and microcredentials is changing the landscape of higher education. … [T]hey … show potential employers the certification and competency skills they earned during their [education] journey. … [For some] the idea of earning a microcredential may seem less daunting than going back to school for a full degree.

The author uses public service, fire and emergency employees as an example of how digital badges can work. These personnel "are required to obtain continuing education units (CEUs) to maintain certifications." Badges would be an excellent method of recording continuing education achievements for this industry.

Reynolds continues:

Knowledge, skills and abilities are the foundations of any career field. … Digital badges encoded with microcredentials contain meta data that links back to the

issuer, performance criteria, and verification of evidence. Meta data could include logistics, planning, operations, finance, command, and liaison training and experience.

… Ultimately, badging offers portability of acknowledged skills and abilities that can be carried anywhere to demonstrate competency. Learners can accumulate badges across institutional platforms, and the badges can be sorted, shown, or hidden by the learner to reflect achievement in the particular skills or knowledge which the learner wishes to exhibit.

Tyszko and Finkelstein (2018) point out with the advent of online resume submissions, human resource personnel spend a tremendous amount of time weeding through an inordinate amount of resumes. However, digital badges provide a superior mechanism for them to weed through resumes. Resume spamming has further contributed to the problem but badging resolves this problem too since badges cannot be counterfeited.

Bradley (2016) notes that since our ability to deliver instruction in more efficient and effective ways has taken hold "learning today … needs no classroom, not even a teacher, and can take place anywhere, anytime and on any device." This has opened the door to creative and innovative means of instruction that can be far more efficient and effective for individuals and society. This is disrupting higher education and some predict it will be the demise of higher education as we've known it.

Bradley's article also addresses it from a "digital badges" scenario but it can be applied to the various alternative credentials that are growing in popularity due to their real-world connections. Bradley states:

Digital badges are defined as a visual, verifiable demonstration of knowledge, shared online, allowing the identification of individuals whose skillsets can be proven rather than merely listed on a resume. These alternative credentials can be used to recognize the attainment of skills and competencies, whether they are learned in formal or informal learning environments.

Professional associations, industry organizations and some nonprofits have embraced them as a way for members and employees to demonstrate participation in certain activities or in completing training programs.

Higher education, however, has been slower to embrace digital credentials. Some see them as a threat, upending the traditional approach to learning, which measures academic progress and achievement largely by time spent in a classroom.

Bradley then mentions early players in the badging platform: Pearson's Acclaim program; Accreditrust Technologies' TrueCred program; and the Workcred program. Portfolium also offers digital badging services.

In addressing the mechanism to relay the meaning of credentials and how they are stored and communicated, the University of Texas is developing a "blockchain" (portfolio) transcript system they refer to as "ChainScript," a database technology used to store educational accomplishments. Walsh (2017) explains:

> TEx allows the learner's academic record to transfer from a traditional transcript into a blockchain-powered ChainScript that can be kept by the individual learner. This ChainScript contains a validated and immutable record of the learner's academic and professional accomplishments across multiple institutions and experiences, building a portfolio of accomplishments that includes credits, competencies, micro-certificates, degrees, and other records of achievement.

Cortez (2018) points out the benefits of blockchain technology.

1. All learning experiences become trackable. … With students transferring from other institutions and with the rise of microcredentials … blockchain could allow students to keep all of their credentials in one place and truly "own" their proof of learning.
2. Students' credentials could be more accessible. With a blockchain record of their education, students are able to package informal and formal learning experiences to share with prospective employers. … Blockchain affords the ability for students to display, assemble and augment learning experiences in a way that's more appealing to employers. Generally, students will want to track their education in blockchain because they understand its ability to help tell employers exactly what they've learned…. [B]lockchain will also make it harder for students to list fraudulent credentials when applying for jobs.
3. … [B]lockchain can ease data management by adding security….

Prebil (2018) is less enthusiastic about blockchain technology. However, he does provide a definition for blockchain:

> Blockchain is a record-keeping system comprised of a continuously growing list of data batches called blocks. The most recent block serves as a ledger of each user's current resources; the set of all blocks ever written (the blockchain) contains the whole history of transactions made by users.
>
> Each block's connection to its predecessor is secured with public-key cryptography, the same type of protocol [computers use to securely access a website]. In a blockchain application, public-key cryptography allows users to validate that other blockchain users actually have the resources they say they do, while making it practically impossible to tamper with a previous block of data without raising alarms. But unlike [a central database that stores a webpage's digital content], a blockchain is a decentralized or "distributed" data store, where each user of an application automatically downloads a copy of that application's blockchain. On a public blockchain … each new block of records must be validated by a majority of users; to add a fraudulent new block, you'd have to

hack at least half of the devices with a copy of that blockchain in the space of a few minutes or even seconds.

This is the source of optimists' greatest hopes for blockchain technology: security and authenticity without a central authority, the thinking goes, means blockchain users can have complete ownership of their information.

Degreed is an organization that offers something similar to ChainScript. It offers "Digital assets for Linkedin, your resume, Facebook, Twitter, and anywhere you post your professional profile. … With Degreed Skill Certification, you can certify the skills you have – any skill, any level, regardless of where you got them – so you can be ready for the next big thing."

If you ask why such mechanisms as ChainScript and Degreed Skill Certification are required, Chen and Black (2018) offer the following:

For as long as registrars have been organized … the current academic transcript has been a largely successful document, designed with a specific purpose and audience in mind. It is a record whose primary function is to serve academic institutions and faculty, not external stakeholders such as employers or even the students and alumni whose learning is being documented.

The traditional and antiquated diplomas and degrees, with their bloated requirements of superfluous raw data that serve primarily the education establishment, is in large part, a thing of the past. Bradley cites Accreditrust Technologies' survey that uncovers the early stages of a paradigm shift occurring in this direction. Granted, it is likely some fields of study will retain the traditional paradigm at the college level (St. Johns College in Annapolis, Maryland being an excellent example of a superior liberal arts program), but the high school diploma is likely to fade into oblivion since it is no longer a functional model of preparation for college or a career (for example: if advanced placement classes provide college credit, why take classes in a high school?).

Students who are academically oriented can start college between ages 14-16 (dual enrollment programs and AP classes prove this), as was historically the case prior to the bureaucratization of education, while all others can pursue a multitude of paths that suit their talents. The Progressive's bureaucratic controls, with their **terrible** educational results, can finally be abandoned and replaced with greater autonomy, customization, and **far** superior educational results for individuals and society.

The current one-size-fits-all paradigm is finally being seen for what it is – a complete and utter failure that **must** be abandoned. Alternative credentialing provides the escape hatch from the hell hundreds of millions of our youth have been subjected to – many of whom demonstrate highly dysfunctional behavior because of it.[14]

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[14] (See *Generation Me*, Jean Twenge, Atria, 2014, to learn of the ramifications the educational establishment contributes to).

Stansbury (2015) explains *disruptive innovation*:

> [D]isruptive innovations carry four rules worth noting. They typically start by serving non-consumers outside of the mainstream – areas where the alternative is literally nothing at all. They tend to be simpler than existing services, so the elite and the sector's leading organizations tend to dismiss them. Accordingly, they both redefine the notion of what is quality and performance, and they don't fit neatly into existing regulatory structures. Third, incumbent organizations cannot successfully adopt them within their core operations. And finally, they predictably and reliably improve over time to tackle more complex problems to transform a sector into one that is more affordable and accessible.

> In education, online learning is the first disruptive innovation since the advent of the printing press. Combined with competency-based learning … there is a big opportunity to transform our higher education system into a more affordable, student-centered one that is able to serve many more students.

For a good summary of what higher education institutions are facing as it relates to disruptive innovation, please see *Tottering Ivory Towers* by Stuart Butler, The American Interest, Aug. 11, 2014: https://www.the-american-interest.com/2014/08/11/tottering-ivory-towers/. Also see *University Unbound! Higher Education in the Age of "Free"* by John Harney, New England Board of Higher Education, Oct. 23, 2012: http://www.nebhe.org/thejournal/university-unbound-higher-education-in-the-age-of-free/
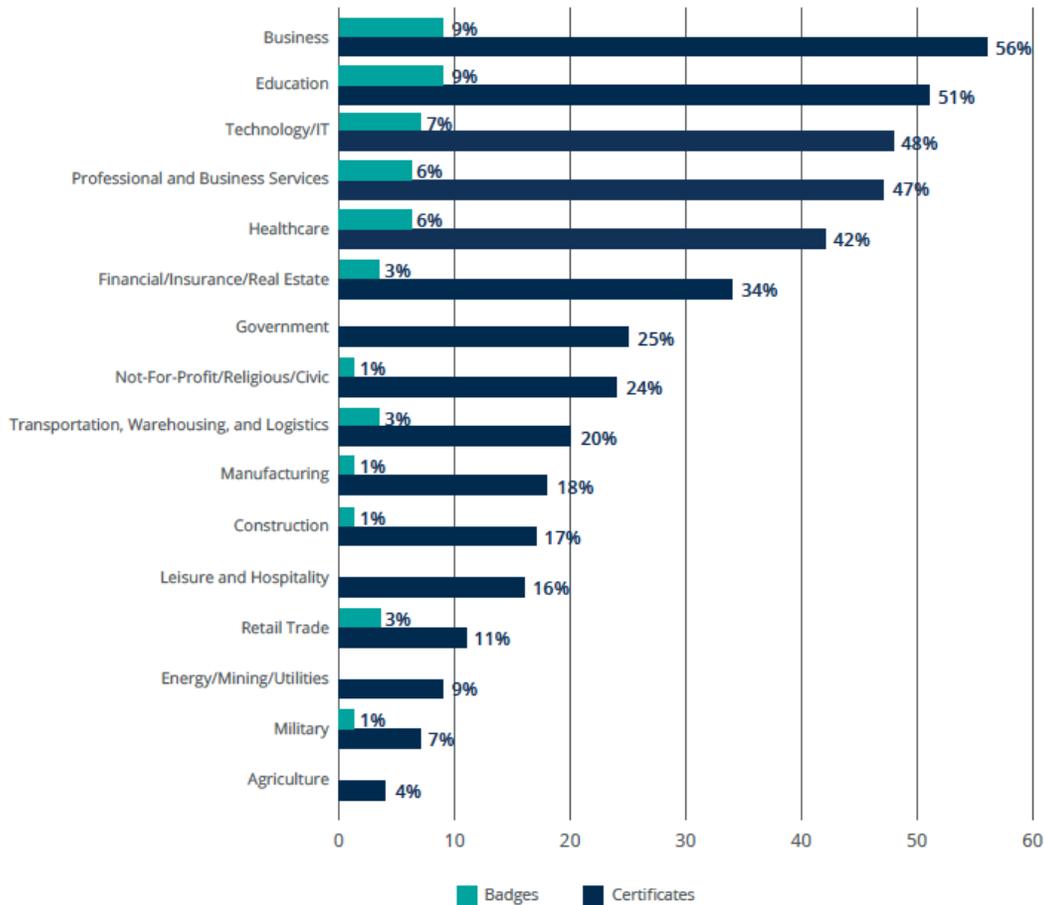
Coursera (2015) published very positive findings of the benefits of open online courses. The report is titled *Impact Revealed: Learner Outcomes in Open Online Courses*. Hollands (2017) describes *the metamorphosis of MOOCs* in an article of that name.

Radionoff (2016) sums up the origins for alternative credentials fairly well.

> Working adults require lifelong learning to maintain skills in the face of continual changes in technology and work methodology. Alternative and informal education provides just-in-time, targeted skills training. Adults struggle to find the time for training given their work and family responsibilities. Alternative and informal education such as non-credit courses provides the flexibility that they need. Another consideration is the educational attainment of adult students. Approximately 85% of our non-credit students already hold a postsecondary credential or degree. Returning to school to earn additional college credits does not make sense for these students. They are not looking for an additional degree, but instead to update and upgrade their skill set.

While this is true of mature adults, it also speaks to the needs of a majority of young people who are faced with extremely limited choices that universities offer, not to mention the investment of time and money that is quickly exceeding, at an ever-accelerating pace, the wherewithal of most people.

Industries For Which Institutions Offer Certificates or Badges

Industry	Badges	Certificates
Business	9%	56%
Education	9%	51%
Technology/IT	7%	48%
Professional and Business Services	6%	47%
Healthcare	6%	42%
Financial/Insurance/Real Estate	3%	34%
Government		25%
Not-For-Profit/Religious/Civic	1%	24%
Transportation, Warehousing, and Logistics	3%	20%
Manufacturing	1%	18%
Construction	1%	17%
Leisure and Hospitality		16%
Retail Trade	3%	11%
Energy/Mining/Utilities		9%
Military	1%	7%
Agriculture		4%

Fong et al. (Pearson, 2016) note various forces shifting educational efforts toward career needs, which are eroding the traditional brick and mortar, credit hour model due to escalating costs and the ineffectiveness in preparing people for a career, amongst other forces. The authors state:

> Alternative credentialing has become more common in higher education because it provides individuals with new ways to demonstrate their knowledge and skills to potential employers. Non-credit training courses, non-credit certificate programs, and micro-credentialing all provide learners with less expensive and faster alternatives to traditional degree programs. … What was previously thought of as cutting edge is now becoming mainstream. A 2014 study by the United States Census Bureau revealed that 30% of the adult population holds an alternative credential. … Major players in the private sector are increasingly focused on talent development and skill progression.

Many private sector educational programs "deliver need-to-know content to working professionals, just-in-time, in small units, often with associated digital learning credentials." The authors point out this may disrupt the pursuit of diplomas.

[Career]-focused learning goals require smaller, simpler, more applied learning programs that are shaped by industry need, less expensive than degrees, and sometimes smaller than courses. They also benefit from recognition through digital credentials that enable learners to tell the story of their learning and development across professional networks and job sites.

… The root of the word "credential" is "credence," and the value offered by credibility is only possible when credentials are based on a foundation of solid learning and assessment design.… Policy- and tenure-bound institutions may find it difficult to redirect existing faculty and staff to produce outcomes-driven learning design and to conduct the assessments that will allow them to compete in this arena.

The authors then provide their findings on where certificates and badges were most popular: The business sector was number one and education number two. However, they point out: "Though certificates related to every industry listed in the survey were offered, no institution reported offering badging in courses or programs related to agriculture, energy/mining/utilities, government, or leisure/hospitality."

Do You Award Credentials With or Through Any of the Following?
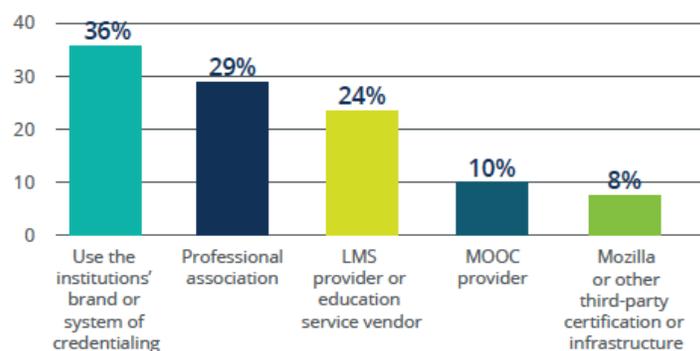
… The greatest number of institutions award credentials through their brand or system of credentialing (36%) while over a quarter (29%) use a professional association. Because brand recognition is a primary driver of trust in digital credentials, significant opportunities for university-industry co-branding around partnered programs are expected to emerge.

A trade/industry/professional association credential should be seen as the more respected brand since it represents the interests of various participants; whereas public or private institutions' credentials should be perceived with reservations given their motivations are frequently more self-serving – whether profit and/or prestige driven. Public institutions are every bit as guilty of these self-serving forces as the private sector – please don't be fooled by the "public" title.

Twenty-two percent of institutions offering alternative credentials offer only credentials that are not competency-based, and only 12% of institutions offer mostly or all competency-based credentials.

An important question to ask of these competency-based providers is whether they are public institutions or trade/industry/professional associations. It would not be surprising to find the 12% to be dominated by the public institutions and the 22% dominated by associations since associations' primary purpose is to serve its constituents.

The authors close by pointing out that alternative credentialing is likely to be developed by the private sector given its nimbleness compared to public sector institutions with their bureaucratic cultures that are anything but nimble given their revulsion of market forces. The authors do not present this point in such a blunt manner, but the message is there. Their reference to "a perfect storm" of forces that is changing the delivery of education, reveals that organizations that can adapt to a changing environment will become the leading forces in the future of education.

A good model to analyze might be the medical industry and how it trains medical practitioners with alternative credentials as advances in medicine come into being.

* * *

In an interview addressing alternative credentials, Salzman (2016) addresses the question "Why have … alternative credentials become so popular in recent years?" She answers:

> It's important to back up for a moment to say that alternative credentials are not a new concept. This concept may not have existed digitally, but Boy Scouts and Girl Scouts have been using it for years. In the professional development space, certifying organizations like Microsoft have been using alternative credentials— which are also in their case called industry-recognized certifications—for years.

> We all recognize the idea of badges and alternative credentials. What's new is how higher education is incorporating these concepts into their programming. It's become so popular primarily because employers – and both prospective and current employees – are realizing that in today's knowledge-driven economy, the "required" knowledge changes very quickly.

Young (2018) speaks to the development of "micro-bachelor's" degrees. It can be imagined that alternative credentialing is pushing academia to innovate in order to survive. Young states, "EdX, the nonprofit online-education group founded by MIT and Harvard, is quietly developing a "micro-bachelors" degree that is designed to break the undergraduate credential into Lego-like components." Stackable credentials is another term used to describe the idea.

Carter (2017) further speaks to micro-degrees:

Several colleges and universities are now offering micro degree programs in the hopes of attracting professionals interested in career development while selling full graduate degree programs in the process….

MIT, Columbia University and the University of Michigan are just a few of the high research institutions attracting students through these online programs, which offer advanced credentialing in engineering, business and computer science for a fraction of tuition costs….

Lang et al. (2015) explain in simple terms what digital badges are about: "Badges draw inspiration from both the Boy/Girl Scout badge system and the way that online games keep track of achievements. They use a digital image to represent skill-related experiences verified through a rich set of associated metadata." (p. 149)

In an article addressing "digital badges," DiSalvio (2016) discusses the part alternative credentialing can play in the educational mix:

Badges capture a more comprehensive way to describe student learning than just a one-line naming degree. As an alternative credentialing system that aims to allow the learner to control the credentials and move away from seat time, the idea with badges is to have an alternative system that allows us to supplement the degree and instead of having just a grade at the end of a course or a degree, recognize various competencies along the way. … The only things in the game right now are grades, transcripts and degrees, and there are only certain ways you can get those and there is learning that's getting missed.

While I think this is an accurate explanation of the contribution these credentials can offer, keep in mind DiSalvio's intentions may not be purely altruistic. Consider his argument for academics to take alternative credentialing seriously: "Colleges and universities are in a unique position to be the gatekeepers of many of those credentials." This displays the arrogance of academics who believe they must be the gatekeepers of all credentials in society. It allows them to pick winners and losers and to mold society into something more to their liking. And DiSalvio is a dean of a college at the Univ. of Mass. so he is looking out for his own kind. Tuck this away in your memory bank for the next time you hear academics bemoan the lack of access for those coming from lower socioeconomic stations. Of course, it will be sold as the only way to maintain quality.

DiSalvio referenced a consortium that "stressed the importance of students earning digital badges to help them in the job market…. Digital badges allow students to turn competencies and achievements to marketable credentials." He perhaps inadvertently revealed how traditional educational institutions focus on things other than students when he stated alternative credentialing "places the focus on individual student learning accomplishments." He then explained how such credentialing can be used:

This collection of individual competencies could be accessible from a variety of social media sites or as part of a resume or e-portfolio. Providing a more detailed

story to prospective employers about those activities that specifically define a student's learning, a digital badge can communicate specific skill-sets acquired and knowledge obtained. With the fierce competition in the labor market today, credentials such as digital badges can serve as a way to align employee competencies with employer need.

To ensure the quality of alternative credentialing, DiSalvio cites a list of questions from an initiative funded by the MacArthur Foundation:

> 1) Can the badge be validated through an evidence-rich credential? 2) What does the recipient of the badge have to do to establish a claim of learning? 3) What evidence will be used to substantiate learning claims? 4) Can the badge exist with the institution's learning management system or can it exist within any learning management system? 5) Is the learning evidenced in the badge context-specific and not subject to expiration or valid for a limited amount of time until more training is required?

At the end of 2015, Garrett postulates that 2015 will be "the year when the market and policymakers got serious about alternative credentials." He then lists the economic and social forces in play that has driven a change in the winds: global economic forces, automation, increased postsecondary enrollment, poor ROI of many college degrees, ballooning student debt, poor graduation rates, and poor graduate quality. He then points out it's very hard to judge which institutions are doing a good job since it is such a complex maze of inputs and outputs.

Garrett then rhetorically asks, "Where do alternative credentials fit in? Alternative credentials offer the potential to forge clearer student pathways to capability." He concludes that they provide alternative choices in the educational mix. The reader should take away the point that the quasi-monopolistic education system will never be the same now that competition has entered the field.

Evolllution.com's 2016 article sums up the significance of alternative credentialing paths – bootcamp certificates, MOOC certificates, nano-degrees, micro-certificates, digital badges, etc. – and then lists some recent players in delivering them – Galvanize, HackReactor, General Assembly, Udemy, HackBright, CodingHouse, Udacity, Coursera. We can add to this list Linkedin, EdX, and Digital Promise.

These alternative paths reflect an adoption of tried and true certification programs that have been around for a very long time – think of licensing of the trades or professional certifications for highly specialized or narrowly focused activities. They address a need where formal institutional structures have failed the market for numerous reasons.

Evollution.com explains the delivery in the following:

> Instruction is face-to-face and in small groups, far removed from mind-numbing power-point lectures in college classrooms. It is typically project-based and

highly interactive, with industry experts serving as mentors rather than academic faculty. Many programs cater to the job demand in the technology industry, directly bridging the skills gap by teaching coding, software engineering and data science. … Participants work long hours in teams that simulate a real work environment, and gain just enough knowledge to develop competencies that are aligned with jobs in the industry. The pace is fast and furious, the technologies are state-of-the-art and the group dynamics supportive.

… The success of such programs sends a strong message to universities and colleges that their degree offerings are out of sync with employment opportunities in the real world. … [I]nstructional methods in college classrooms need a complete overhaul, with fewer lectures and more project-based work, team work, problem solving, and real-world activities.

Alternative credentials are following Clayton Christensen's disruptive innovation process. According to this framework, innovative services take root and gather support in simple applications at the bottom of the market and then "relentlessly move upmarket, eventually displacing established competitors."

Stackable credentials are another form of alternative credentialing. Brown (2016) sheds light on the advantages of this trend with affordable prices and perhaps superior results. Brown defines them as

academic programs – sometimes only a few weeks long – offered at public colleges that result in a credential, certificate or degree. What makes stackable credentials different is that the academic credits that students earn can be reused – 'stacked' – later in life to fulfill academic requirements of more advanced programs, including four-year bachelors' degrees. Students can re-use the credits they earn.

These stackable credentials give students the freedom to choose among institutions at which to pursue more advanced certificates or degrees. They can switch schools after each short credential, without starting over.

Ganzglass (2104) provides,

The definition articulated by the U.S. Department of Labor reflects a common understanding of this approach. It defines a stackable credential as one that is "part of a sequence of credentials that can be accumulated over time to build up an individual's qualifications and help them to move along a career pathway or up a career ladder to different and potentially higher-paying jobs."

Williamson and Pittinsky (2016) provide this explanation for stackable credentials:

The most common description of stackable credentials goes something like this: over a lifetime of learning, individuals can assemble, or stack, a series of

traditional degree-based and/or nontraditional credentials -- certificates, certifications, licenses, badges, apprenticeships and more -- that recognize achievements and provide an accurate assessment of knowledge, skills and abilities. The more credentials learners accumulate and stack, the more they increase their currency in our knowledge economy, creating more direct pathways to better jobs and higher wages.

To pick up on Brown again, he then points out just how empowering this is for students since it robs colleges of monopolistic controls. Students have far greater liberty in what they do with education and at substantially lower costs. In his summarizing paragraph, he states,

> Rather than focusing on loan-forgiveness and other well-meaning programs that do nothing to contain the rising cost of college, policymakers should focus on reforms that enhance choice, transparency, and competition, and reduce racial and economic inequality. Stackable credits open the door to low-cost, quality-focused programs, recognizing that higher education is not a one-size-fits-all proposition.[15]

The U.S. Chamber of Commerce Foundation (2016) suggests a different approach based on "lessons learned from supply chain management to expand the leadership role of employers as end-customers of talent supply chain partnerships. … [W]e argue that there is a need for a different approach that would establish a voluntary, employer-driven talent supplier recognition and certification system – one that can complement the existing accreditation system and be used to improve government-supported quality assurance systems over time." (p. 2) See https://www.uschamberfoundation.org/sites/default/files/Changing_the_Debate_Report.pdf

Zanville (2017a) addresses how the education establishment is incorporating alternative credentialing into formal programs:

> More and more of today's students stand to benefit from a promising new trend: certification-embedded education programs. These are partnerships between education institutions and industry and professional associations that stack industry certifications within education programs. The practice lets learners simultaneously obtain marketable industry certification(s) *and* education credentials such as degrees, diplomas and certificates.

Of course, this would be ideal to incorporate in high school programs so that the majority of high school graduates could enter the workforce primed for what lays ahead. An applied general curriculum joined with credentialing focuses, would provide individuals with preparation the likes of which Americans are unaccustomed to.

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[15] As an aside, a similar argument can be made for health care. Rather than throwing money at it, remove excessive statutory and regulatory barriers that inflate prices and protect monied interests.

Arnett (2017) sees alternative credentials disrupting the current paradigm.

> E-credentials are to higher ed what e-commerce is to retail…. [B] they can show competencies and drill down on learning … e-credentials provide employers with a more detailed glimpse of graduates' abilities, making them more practical than traditional grades and transcripts.
>
> … Microcredentialing and badging were named 2016's disruption of the year because of the ability to quickly showcase what students were learning and what they could do as a result of their time in college.
>
> … [I]t is important to find ways to ensure issuing microcredentials doesn't fly in the face of encouraging students to persist to graduation. If a student can demonstrate after two years that he has mastered certain competencies needed for a particular career, there may be a disincentive to continue.

It is interesting to watch the academic community attempt to save its reputation and relevancy in face of such disruptive innovation.

Figure 1: Key Attributes of Three Common Types of Sub-Associate Credentials[21]

	Certificates	Certifications	Micro-Credentials (Includes Digital Badges)
Development Process	Curriculum and assessments (if applicable) developed through close collaboration between local industry and college faculty.	Diverse set of industry leaders provide input into curriculum competencies and design. Training and education provided by community college or other education and training providers.	Varies by educational provider, no standardized protocol for development.
Often Endorsed By	Industry or other approving body such as accrediting or regulatory agency.	National industry associations, professional societies, or industry leaders.	Industry or other approving body, such as accrediting or regulatory agency.
Customization (degree to which the program's curriculum is reflective of local industry skill needs)	Varies depending on level of industry engagement, but has high potential.	Low to moderate.	Varies depending on developer.
Portability (degree to which the credential is recognized in various parts of the country)	Low.	High.	Varies depending on developer.
Flexibility (degree to which curriculum can be updated quickly)	Moderate.	Low.	Varies.
Learning Assessment.[22]	Completion of program, formal or informal knowledge and skills assessment.	Standardized exam or formal skills assessment designed and vetted by a diverse set of industry experts and administered by certified professionals at approved education locations.	Completion of program, project, or informal or formal knowledge and skills assessment.
Industry Awareness	Varies by region.	Moderate.	Low.
Length of Typical Program	Several weeks to a year or more.	Varies depending on certification requirements and existing knowledge and experience.	Often three months or less, but can be longer.

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Buckwalter (2017) analyzes alternative credentials she refers to as "short-term" and "sub-associate" credentials.

Buckwalter notes three of the most common alternative credentials. See her "Figure 1" above for further refinement of these ideas. She defines them as follows:

Certificates
Certificates are awarded upon the successful completion of a course of postsecondary study, usually one year or less but at times longer. They are offered primarily by public or private two-year institutions of higher education and often hold high value within local areas where employers had input into their development. … Once issued, a certificate does not require any further action to retain. …

Certifications
Certifications indicate mastery of or competency in specific knowledge, skills, or processes that can be measured against a set of industry standards that have been created through a validation process. … Community colleges [may] offer coursework for the competencies required to earn a certification, though the credentials themselves are assessed and awarded by external businesses, trade associations, or industry groups. After attaining a certification, individuals often must meet ongoing requirements to maintain its validity.

… Certifications typically share the following distinguishing characteristics: they are sought or accepted by employers within the industry or sector involved as recognized, preferred, or required credentials for recruitment, screening, hiring, retention, and/or advancement purposes. They also often are endorsed by a nationally recognized trade association or organization representing a significant part of the industry or sector.

Micro-Credentials
[A] micro-credential attests to achievement of specific knowledge, skills, or competencies. It is more narrowly focused than certifications or most certificates, which typically attempt to capture that individuals have demonstrated a comprehensive, interrelated set of knowledge and skills required to competently perform a job role.

… While micro-credentials and digital badges can be considered a sub-associate credential because most programs can be completed in less than two years, an increasing number of longer-term, high-skill micro-credentialing programs are emerging. For example, EdX has formed partnerships with various universities to develop MicroMasters credentials. MicroMasters programs are a series of graduate-level courses in a specific field intended to advance one's career.

… Micro-credentials are designed to be highly focused and, with an effective design and development process, could enable workers to demonstrate their specialized skills and experience….

Buckwalter then attempts to define "what makes a credential high quality."

- Industry recognized
- Portable
- Stackable
- Third-party validated
- Demand-driven
- Designed by a diverse mix of subject matter experts
- Flexible

These certainly are very good starting points.

Craig (2016) summarizes the trend away from the need for traditional degrees and toward competency-based credentials as it relates to hiring practices. This will "result in competency-based hiring, with job descriptions spelling out competencies rather than mindlessly parroting degree requirements. Which will unbundle degrees into employment-connected credentials that are shorter, less expensive and easier to complete. Which in turn should ameliorate the foremost inequity in higher education: that 46% of students … who undertake bachelor's degrees fail to complete, and thereby incur significant direct and opportunity costs without achieving any credential or payback."

The alternative landscape, with the ability to "stack" – perhaps accumulate is a better word – certificates into a personalized credential, is best suited to a free society like the U.S. The current education system rooted in German statist (a bureaucratically controlled environment) is not at all suited to our society. Bureaucracies become optimized for a particular culture, which is antithetical to a free society where diversity, in all its forms, must be given free rein. Bureaucracies are also monopolistic in nature and therefore lose sight of the purposes they were created for. They eventually serve the bureaucrats alone.

The alternative landscape provides the escape route from this Leviathan. Industry organizations can spell out their needs and then individuals can acquire that knowledge plus any other knowledge they deem useful or necessary for developing-improving their minds. Of course, individuals – or their parents – will seek out the most effective and efficient means of accomplishing this, which would be in sharp contrast to the inefficient and ineffective bureaucracy we now have. Education associations can be formed that represent various perspectives who can then make recommendations of what entails a good education above and beyond occupational requirements. With the absence or minimization of bureaucracies, innovative alternatives would sprout like prairie wildflowers in spring. Indeed, such change would be a new spring – a rebirth of liberty.

Competency-Based Education

What is meant by competency? It is the ability to apply what one has learned – i.e. transfer – to a real-world scenario rather than simply parroting data, an abstract concept, or idea. If it has not been absorbed enough for an individual to be able to transfer outside a classroom context, for example, competency has not been reached. That is, one must be competent enough to apply what one has learned. However, a distinction must be made between competence and mastery. Competence may be seen as the acquisition of sufficient knowledge and skills to accomplish a task in a given domain – such as close and medium transfer – whereas mastery is where one can also achieve far transfer by connecting what appear to be unconnected phenomena.

In their effort to identify competencies that offer the biggest payoff, generally speaking, as well as for given careers, Georgetown Univ. Center on Education and the Workforce (Carnevale et al. 2020a) provides the following in attempting to define competencies:

> Competencies are the knowledge, skills, and abilities that workers use in their jobs:
>
> **Knowledge** includes the principles and facts associated with certain content domains, from the subjects taught in formal education to applied disciplines learned through practice.
>
> **Skills** are vehicles that allow workers to successfully complete job tasks, to apply their knowledge usefully, and to engage in further learning.
>
> **Abilities** are the aptitudes that influence work performance; they are both innate and developed, in contrast to knowledge and skills, which are acquired over time.

Carnevale speaks to "four trends that hold across the workforce": 1) cognitive competencies have increased in demand while physical competencies have decreased; 2) communication skills are in the highest demand along with the highest earnings potential; 3) there are five primary competencies currently in demand: a) communication skills, b) teamwork abilities, c) sales and customer service, d) leadership, and e) problem solving & complex thinking [anyone in the working-world would immediately recognize that our education system is wholly inadequate in preparing individuals for these five competencies]; and 4) "to succeed in their jobs and earn optimal compensation, workers need a balanced mix of competencies that are generally valued across the workforce and competencies that have high value within specific occupational contexts."

A point needs to be made about Carnevale's observations: Academia tends to look at trends in a similar manner as they look at students; that is, they observe averages and then draw conclusions based on the averages. While statistical averages certainly exist, there are no individuals who are "average" and there are no individual occupations that are "average." Therefore, when we hear such statements as cognitive competencies have increased in demand while physical competencies have decreased, this doesn't mean there aren't abundant and profitable opportunities in the physical realm. As a matter of

fact, as more people have flowed into the cognitive oriented careers, with fewer pursuing the physical careers, there is actually a shortage of skilled labor in physical occupations, which will put pressure on wages. In addition, as technology has improved efficiencies in all industries, even the physical occupations require more cognitive abilities than before. So, while the knowledge of competency trends and statistics are useful, they require a discerning mind to understand how they can be used for the benefit of individuals and society.

Something missed in Carnevale's observation regarding the shift from physical to cognitive oriented careers is the loss of manufacturing jobs, which was due to extremely poor laws, high taxes, strangling regulations and destructive policies that manufacturers had to contend with. Manufacturers were quite literally driven offshore, and with them went millions of jobs that had created and sustained our middle class. Shortsighted politicians and bureaucrats – the product of our higher education system – were to blame.

Carnevale makes two important points, and I quote:

1. Some competencies (which we refer to as "general competencies") are in high demand across the labor market [they are timeless and universal], while others ("specific competencies") are in high demand only in a few occupations and jobs [or for a limited time before evolving technology makes them obsolete].
2. Research has shown that workers with high levels of general competencies tend to have higher rates of job satisfaction, advance more quickly in their professions, and have higher earnings than workers with low levels of general competencies.

Such information is useful in researching activities, pursuits, hobbies, sports, etc. that can contribute to the development of high demand competencies. Such endeavors need to be winnowed for particular contributions they make toward high demand competencies. For example: Sports, such as football and basketball, provide excellent opportunities to instill wonderful attributes such as sportsmanship (i.e., ethical behavior) and teamwork, which are "soft skills" in very high demand. However, due to the high stakes that accompany sports, the ethics of sportsmanship is all but lost.

Carnevale lists five competencies with the greatest demand across occupations: communication, teamwork, sales & customer service, leadership, and problem solving & complex thinking (Carnevale elaborates on these competencies on page 16 in their essay). The *sales and customer service* category should probably be referred to as interpersonal competencies. These encompass the desire to serve others, but more importantly to display moral behavior in treating others courteously and with respect. Being a good listener is an important attribute as well. Interpersonal competencies also involve the ability to convince others – while remaining within ethical bounds – in what one is presenting as the better choice of a mix of alternative choices, whether it is an object, service, or idea that is being sold (do not confuse this with sophistry). The art of persuasion is what salesmanship is all about, and whether it is for business or simply attempting to convince others of one's personal ideas, salesmanship is fundamental in communications and therefore in a successful life.

Carnevale points out: "Knowing how competencies vary from occupation to occupation can help students and workers prioritize which competencies to acquire, whether through education or experience"; also, "Every occupation requires a different mix of competencies"; and "While some competencies, such as communication, are demanded across occupations, the ranking based on demand varies from occupation to occupation."

*   *   *

When employers look for candidates to fill organizational positions, they need individuals who can hit the ground running – or who need minimal training – and not require extensive coaching to bring the newcomer up to speed. Training is expensive and contributes to lost productivity for the company. If one thinks this is simply the cost of doing business, then I would ask such a person if they don't mind paying much higher prices for goods and services since this would be the consequence. Of course, apprenticeships and internships are meant to be a compromise to this perennial challenge.

In addition, if minimum wage laws were repealed, along with a relaxing of young adult labor laws (couched in "child" labor law language), this perennial challenge would recede significantly since a ROI could be realized. But it would also require moderation of immigration so that employers could not so easily bypass American citizens for a surplus of cheap immigrant labor, as America experienced around the turn of the last century which was a major contributor of the call for regulatory controls over wages and labor.

Competency-based education (CBE), though not a new practice, is really catching on due to the shortcomings of the current education system. Person et al. (2014) try to provide some guidance in the understanding of this loosely defined learning style.

> There is no single, authoritative definition of "competency-based education," but it is generally distinguished from other educational approaches by a few key features. First, all learning outcomes – the required competencies – are precisely defined so as to be measurable. Most CBE programs are focused on preparation for specific jobs, from which the competencies are derived. Second, the student must demonstrate mastery of each competency before moving on to the next. Some CBE models use "direct assessment," which allows students to skip program content related to a competency if they can demonstrate mastery on an assessment. This supports a final characteristic common to CBE: the potential to accelerate the student's progress through the educational program.

Various education institutions "distilled the foundational principles of CBE as follows:

1) The credential must reflect robust and valid competencies. …
2) Students should be able to learn at their own pace and should be supported along the way. …
3) Effective learning resources should be continuously available and reusable. …

4) Assessments should be reliable and secure.

Rather than presenting these principles as a rigid set of requirements for all CBE programs, however, the report suggests that institutions adopt them "to fit their own campuses, systems, and state structures."

When analyzing educational choices and credentials that will be bestowed, a **very** important consideration is the level of competency one will achieve in a program. If it is predominately an academic oriented program, this may be fine for a career in academia, but chances are it will not provide competence for a career outside academic halls.

Fain (2016) references a 2016 report, published by Information Technology and Innovation Foundation (ITIF), which challenges the "dominance of traditional college degrees … [and argues for] breaking the ironclad link between education and certification." The report argues for groups outside of academia to assess competencies since academia cannot help but be biased in favor of its own interests. Even the college degree is rightfully being challenged since it really is an arbitrary representative of some abstract notion of what entails "knowledge" rather than a transparent credential with evidence of real competencies.

The opening paragraphs of ITIF's report summarizes their ideas succinctly:

> Across modern economies, innovators and entrepreneurs are marshaling the power of information technology to reorganize business processes and reimagine entire industries, thereby improving quality and lowering the costs of goods and services. But higher education has largely escaped such disruption, even as IT and the Internet have created new ways to research, learn, and impart knowledge. The reason is that colleges and universities hold a unique franchise: They are responsible for educating students and for granting them degrees. Schools thus lack incentive to help students learn outside the classroom, even if it would lower costs or be more effective, since it would cut into their revenue, and they lack incentive to raise standards for their degrees because it would drive away customers. Students meanwhile have little incentive to push themselves harder than necessary to earn their degrees, since degrees are opaque, deriving their value from institutional brands rather than clear measures of academic achievement. This paper argues that the federal government should spur reform by promoting alternatives to traditional college diplomas that allow individuals to more effectively demonstrate educational mastery to prospective employers. This would give students the freedom to pursue their own best options for learning, incentivize students to study harder and schools to teach better, and apply competitive pressure on colleges and universities to reduce the costs of education.

> There are at least two major problems with allowing colleges and universities to control through granting of degrees the primary way learning outcomes are assessed. First, these institutions usually limit students from mixing and matching various, and usually cheaper, ways of learning, such as community college

courses, massively open online courses (MOOCs), or self-study, if students want to receive the "sheepskin" showing mastery. So even though information technology should be making higher education more efficient, tuition costs are rising faster than inflation, making college less affordable. Second, since each college and university has its own grading practices and degree standards, students, parents, and employers have little ability to compare the quality of education that different schools provide for a particular degree. Instead, each school is evaluated mostly on reputation and other factors such as quality of its facilities, notoriety of its graduates, and SAT scores of entering students. This lack of transparency regarding outcomes diminishes the incentives schools have to compete on how well they actually educate students, and also the need for students to work hard, because many know this will have limited bearing on their future employment prospects, as long as they do enough to simply earn a diploma. This is one explanation of why the quality of higher education in the United States is uneven, and many college graduates enter the workforce underprepared.

The report also points out the following: "there are two major challenges with higher education today: high cost and low quality. … The standard college degree is losing its value as a signal to employers…. Perceptive students may realize that their degree, rather than their actual learning, often determines their success, at least initially, and therefore have too little incentive to work hard in college."

A novel idea is presented by the report:

> [E]valuating what students have actually learned should not be left up to the providers. Rather, third-party organizations should be in charge of evaluating knowledge, skills, and abilities. These systems already exist for vocational occupation such as auto repair, welding, and truck driving and for some professions, such as law and medicine. (p. 11)

I argue that consideration of what is to be included in an educational program and the curricula should not be left to the providers either. The providers should be trained in the highly effective delivery of curriculum – not its formulation or its assessment – so that as many students as possible can acquire competency in what curricula offer. This is in direct opposition to the current mindset of most professors who believe it is their job to weed out as many students as possible – i.e. to select what they subjectively believe to be "the best and brightest." Of course this is eugenics through and through.

Zanville (2017b) discusses Lumina's efforts in providing for an electronic system to register an individual's credentials:

> What if we had a "GPS" for credentialing – an easy-to-use system that would help us navigate the maze of degrees, certificates, certifications, and other credentials in today's workplace? Such a system would benefit everyone – including learners, employers, policymakers, career counselors, licensing and certification organizations and accrediting agencies – by providing accurate, current, and

transparent information about the array of credentials awarded by multiple providers.

Such a system isn't a pipedream. Lumina Foundation has been collaborating with many partners to develop this vision.

See Lumina's Credential Registry for more information on what this system offers: http://credentialengine.org/credentialregistry

What About the Idea of *Custom Degrees*?

Walsh (2017) discusses the possibility of custom degrees being developed that furthers the interest of individuals over institutions.

> [I]t is not hard to envision a higher education world where one can "assemble your own degree". Wouldn't it be awesome if students could combine areas of experience with purposefully selected educational experiences to earn a degree that revolves around skills and knowledge they are passionate about?
>
> Of course, there's a question regarding how schools would go about naming these degrees. The entire process of getting a degree program validated at the state, regional accreditor, and federal level is based on a clear definition of what the degree is, so that's a hurdle that would have to be overcome. Maybe this requires the definition of something like "degree competency blocks" that can recognize skill sets by groups of competencies. For example, if one can earn 30 credits in music composition and theory and 30 credits in programming languages and data structures, perhaps this could lead to an Associate's Degree in "Music Theory and Programming"?
>
> But, "what about employers?", you ask. Will they hire people with these custom degrees? Why not? In fact, it is not uncommon today for employers to struggle to understand what skills many degrees are supposed to represent. A more granular, competency-based definition of the skills behind degrees and micro-credentials could actually be a big improvement. Back to our example above, a company that developed apps related to music composition and education would probably love to hire someone with the above-mentioned Music Theory and Programming degree!

Swanson (2015) contributes to this dialogue by offering 3 scenarios for credentialing with each leading to a highly personalized path.[16] However, to start, let's look at his introductory proposition.

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[16] Swanson does offer a 4th scenario but it is one I would avoid at all costs given the potential for abuse it would allow ambitious centralizing politicians to use, especially given the U.S. Progressive history with eugenics. I know of Progressives who admit to the belief that eugenics is still a legitimate and viable mechanism to improve society!

[E]ducation in the United States is facing a decade of deep disruption…. These disruptions point towards a future in which education will be increasingly personalized to each learner, school will take many forms, and variety of learning agents will guide students in their learning journeys. With education becoming increasingly learner-centered, assessment is likely to become increasingly focused on mastery instead of time….

The employment sector is also experiencing change, affecting how, when, and where people might work. Current trends are pointing towards a future of work in which people are likely to think less in terms of climbing a career ladder and more in terms of navigating a career lattice. Employment is increasingly becoming ad hoc and networked, with full-time employment for a single organization declining as employers increasingly seek talent on demand. … Such shifts could push many people to be in a mode of constant learning and continuous career readiness and could increase the need for specialized training similar to that required for professionals such as doctors, lawyers, engineers, and scientists.

With future trends pointing toward profound shifts in the structures of both education and work, credentials could evolve considerably over the next ten years.

Formal education institutions will find it increasingly difficult to respond to such a fast-paced changing world. This is where a strong foundation of applied education can lay the groundwork for subsequent specialized training for evolving occupations over the lifetime of individual citizens. A general applied education will provide the foundation; individually tailored occupational training (a customized degree) will provide the springboard; and continuing periodic lifetime education will allow individuals to keep pace with changes, like doctors, engineers, and scientists are faced with.

Swanson then describes his 3 alternative scenarios that lead to highly diverse paths. I'll leave it to the reader to review his paper if the interest is there. http://connectingcredentials.org/resources/certifying-skills-and-knowledge-four-scenarios-on-the-future-of-credentials-april-23-2015/

The Staff of Access WDUN[17] cites Brenau Univ. President who proposes the "development of individually customized programs tailored to specific needs of undergraduate and graduate students as a supplement to traditional college and university degree tracks." The idea incorporates "unbundling" and then "bundling" "portions of traditional degree-track programs." This would allow for individuals to "develop portions of programs that are relative to their needs and desires." It entails the idea of "combining different aspects of multiple programs to give them the kind of degree they need." In other words, it allows for individuals to create their own custom degrees.

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[17] Brenau President Says It's Time to "Shake Things Up" In Higher Education, Sept. 26, 2014.

Example of the Challenges of Teaching to Achieve Competencies

Taking perhaps the most difficult things to teach, art forms, provides insight into the challenges of teaching and learning to achieve competencies. While art forms have mechanical attributes associated with their performance, it is the creative element that makes true artists stand out from the herd. The mechanics can be taught to most people – which is one reason why the Suzuki Method[18] of teaching how to play a musical instrument is so successful – but the creative element must first be a native or innate disposition that simply needs coaxing to rise to the surface.

I once knew a violinist who was a member of the Chicago Symphony Orchestra. He explained that being a musician in a symphony is not unlike a tradesman in the construction fields. While one must have the talent and disposition sufficient to play in a good symphony, it doesn't necessarily require a great deal of creativity as many of us might think. He said playing instruments is more mechanical than creative. It is the composer who possesses the creativity and it is the composer who must guide the musicians to perform in a way that expresses his creative intentions.

Now when we look at jazz music, musicians must be creative to be successful since so much innovation is expected from each of them – typically every time a piece is played. Rarely will one hear a piece played exactly the same way twice amongst high caliber jazz musicians. They are not mechanical in their expression and therefore find a new way to express a piece every time they play it.

Let's take the jazz piece *Bahama Mama* played at the Montreux Summit in 1977. This is a very creative jazz classic. Alphonso Johnson (bass) provides outstanding examples of syncopation.[19] We can provide the definition of syncopation, as I do in the footnote below, but how does one teach for it? Just memorizing the definition does not mean you have achieved competency in performing with syncopation. It is a starting point for sure, but in no way does it approach competency.

Now let's look at Alphonso Johnson's instructions in a YouTube clip titled *Alphonso Johnson Intervals & Syncopation*.[20] Johnson provides explanations and also references the challenges his students frequently encounter, but he demonstrates concepts on his bass to get the ideas across so they can actually be comprehended – that is, he applies concepts to a real world scenario. When his students understand the concepts and can then demonstrate them in a satisfactory manner, they are ready to move to the next level of competence. Levels of competence are relative to a variety of factors we won't address here since they correspond to real world needs and are multitudinous.

I believe this summary of teaching for competency, in a form of expression such as in jazz music, demonstrates that what passes for "formal education" is better correlated to

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[18] https://suzukiassociation.org/about/suzuki-method/?gclid=EAIaIQobChMIkfXL8K_71gIVB4JpCh0bDw7lEAAYASAAEgJZaPD_BwE

[19] A temporary displacement of the regular metrical accent in music caused typically by stressing the weak beat. Merriam-Webster Dictionary

[20] https://www.youtube.com/watch?v=BZnAjgNQ_60

the memorization of the Merriam-Webster definition of syncopation rather than to Johnson's instruction in demonstrating syncopation on the bass guitar. This is why individuals have so much difficulty in transferring what they've learned, and it is why employers lament the unpreparedness of job applicants. That is, they may have memorized the definition of something, but they don't understand how to apply it. If you think about it, this is the reverse of what it should be. If the relative worth is to be measured, the memorization aspect has little value in the present example while applying the technique – that is, performing – has all the value.

The Need for *Real* Credentials

We must differentiate between the generic term "credentials" and what the title of this section means by "real credentials." Currently, what passes for degrees – whether high school or college degrees – are frequently simple statements of time in a school seat,[21] memorization of data, and recall of this data for tests. This means what's being measured is predominately quantity of exposure to a formal educational institution and its arbitrary data rather than a measurement of quality of learning and application.

However, what really matters is knowledge of a given subject, or a portion of it, and a demonstration of competency in it. If thorough competency is demonstrated, then one can move on; if not, then one must stick with it until competency can be demonstrated. This would go a long way in overcoming our literacy and numeracy challenges at all socio-economic levels.

Currently, neither our high schools nor colleges typically ask students to demonstrate competency. Frequently a program of study comprises poorly articulated expectations along with random and disconnected data – much of it superfluous to novices – which is expected to be memorized and recalled **very** quickly for tests. Such randomness hardly leads to credentials that are *real*. They simple have an air of authority surrounding them due to a bureaucracy providing the rubber stamp. If nothing better is available, then by default it receives relative "high" value. A high school versus college degree demonstrates the truth of this proposition. Business leaders typically have little respect for a college degree, but then they have less respect for a high school degree. So by default, a businessman will frequently higher a person with a college degree over the high school graduate which explains why high school graduates are being economically marginalized. To the employer, it's simply a choice between the lessor of evils – hardly a winning scenario for both the employee and employer.

For credentials to have real significance, they must provide the possessor abilities that are measurable through real world application and useful to some real world purpose rather than for status and prestige. In addition, it's imperative that one who demonstrates a competency in some task not only knows how to perform it but also the rationale undergirding it. This provides for the ability to transfer – both close and far transfer –

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[21] See Laitinen, Amy, *College Credit? Kill That*, CNN, Mar. 30, 2015. Laitinen tears apart the fabric of the credit hour showing how poorly college grads are educated.

what one has learned to real world scenarios that a credential is meant to signify the bearer is capable of.

Think of a military education where the way a subject is hypothetically taught is the same way it is taught in high schools and universities. A military composed of such people would be one easily defeated in war since everything is abstract and theoretical with no knowledge of application.

Dintersmith and Wagner (2016) discussing the issue of "college and career readiness" give sobering advice when they offered the following:

> Employers are recognizing the disconnect between college and career readiness. Google, for instance, changed its hiring strategies after Laszlo Bock, senior vice president of people operations, analyzed their data and found no correlation between job performance and an employee's GPA, SAT's, or college pedigree. Google now considers an applicant's ability to collaborate and to perform authentic job-related challenges. Now, they hire many new employees who never went to college.
>
> Our education goals have lost touch with what matters most — helping students develop essential skills, competencies, and character traits. It's time to reimagine the goals for U.S. education, and hold all schools — from kindergarten through college — accountable for teaching the skills and nurturing the dispositions most needed for learning, work, and citizenship.
>
> Let's set our overarching goal as producing students who are "life-ready," and treat colleges as one potential means to this end.

One of the primary reasons Google's findings are not the least bit surprising is the disconnect between academia and the rest of the world. Academia is not referred to as the *ivory tower* for nothing. Academics are typically out of touch with real world needs since no one holds them accountable and barriers have been erected to insulate them from real world forces. This is why, as it relates to "life-ready skills," professional and industry associations need to determine the content of subject matter to be taught, the context in which it needs to be learned, and the assessment principles needing to be employed.[22] (see *Changing The Debate on Quality Assurance in Higher Education: The Case for Employer Leadership and a Roadmap for Change*, U.S. Chamber of Commerce Foundation, 2016) Academics can then take what's been handed to them, compare it to general needs of individuals and society, and then formulate the means to deliver it. This is not unlike the relationship between pharmaceutical companies and physicians. The pharmaceutical companies do the research and development to provide cures for diseases and physicians diagnose diseases and prescribe the appropriate medicines. The former

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[22] Fain (*Groups Seek Stronger Role For Employers in the Accreditation Process*, Inside Higher Ed, Jan. 28, 2016.) offers a very good summary of this concept: https://www.insidehighered.com/news/2016/01/28/groups-seek-stronger-role-employers-accreditation-process

understands the nuances of the body and disease while the latter understands general principles of interpretation and implementation. One might call it a symbiotic relationship. This form of symbiosis is required of industry and academia.

Putre (2017) mentions the opinion of Montez King, then interim executive director of the National Institute for Metalworking Skills (NIMS). "King, whose organization received $1.4 million of the $90 million Apprenticeship USA funds during the Obama administration, feels that the best people to develop manufacturing apprenticeship programs are manufacturing leaders themselves – through associations or regional collaborations." Of course this is not only true for manufacturing but it holds true for most economic sectors. Those in occupational "trenches" understand what's needed far better than those who live in the theoretical, abstract, disconnected world of academia.

Stirgus (2018) writes about the efforts of the University System of Georgia (26 public colleges and universities) engaging industry leaders to help formulate curriculum that will serve industries. The program will include internships and hands-on training. University System "officials believe it's the first system of colleges and universities in the nation to embark on such a coordinated initiative with businesses and industry experts." Let us hope other states will follow their lead.

Many degrees are arbitrary; they are determined by a committee of individuals who frequently do not understand what is required in the working world for the multitude of jobs that exist. Therefore, we must not look to contemporary degrees as the measure of competence; rather, we must change the current paradigm and look at what is taught and then comprehended, measured in transfer of learning terms, by students as providing the necessary "credentials" for success. This means that the information taught must be useful and thorough in preparation for the multiplicity of careers; plus students must fully comprehend what will be required of them by the marketplace. An individual with the bare minimum of education can find a job at an entry level and work his way up the ladder – and be far more successful than an individual with extensive education – if he applies himself and searches out the necessary knowledge on his own. Knowledge and experience are the key to success – not the institution one spent time in or the certificate handed to him for having spent a sufficient amount of money with the institution.

Successful Education Programs in Europe with Meaningful Credentials

When looking at the value of credentials, we need to step outside our own community – since ours is an artificial monopolistic environment that gives a deceptive perspective of the forces in play – and compare it to the international community to get a more accurate picture.

Nguyen[23] (2014) does exactly that. He reports on the increases in the number of college graduates around the world. There was a 10% increase between 2000 and 2011 for

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[23] http://www.swissinfo.ch/eng/by-the-numbers_young-and-jobless--the-solution-isn-t-always-university/40518378

member countries in the Organization for Economic Cooperation & Development. As he states, the reasons are compelling to pursue a postsecondary degree since wages and employment statistics – i.e. averages – demonstrate a positive return.

However, he then asks the question: Is there an enrollment rate limit?

> Too many highly educated young adults would cause a mismatch between the skills they have and what the market needs, leading to them not finding a job or taking up jobs for which they are over-qualified.[24]

> According to the International Labour Organization, the average incidence of over-qualification in developed economies was 10.1% in 2010…. Furthermore, with increasing demand for higher education, costs have been steadily rising and shifting more from public to private or student funding sources, creating financial strain on young people who invest in higher education without reaping any financial benefits from pursuing their studies.

> … So, can the adage that higher education leads to a better chance of being employed be verified when comparing countries? If that were the case, countries with more university graduates would have less youth unemployment.

Nguyen then provides charts comparing youth unemployment in various European countries. He continues:

> … The chart … shows no clear correlation between the number of young people with a university degree and overall youth unemployment. Quite the opposite, actually: Germany and Austria are among the European countries with the least number of university-educated youth but they boast a very low youth unemployment rate.

> So are apprenticeships the answer, given that countries like Germany, Austria and Switzerland have been relatively immune to spikes in youth unemployment and are also the places with the most developed apprenticeship systems?

> … [A]ccording to the OECD in 2009, about three-quarters of the graduates whose highest level of education was upper secondary in Switzerland and Austria followed the apprenticeship route instead of the general academically based education. In Greece, a similar figure came in at around 30% and in the United States, close to 0%. In those countries, the apprenticeship system is less valued in the workplace than in the Austrian, German and Swiss labour markets.

> … And the World Bank has bought into the trend as well: "In cross-country comparisons it is generally found that countries maintaining a substantial dual apprenticeship system, i.e. Austria, Denmark, Germany and Switzerland, exhibit

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[24] Though mis-qualified is a more appropriate term. After all, many high school graduates are "over-qualified" if all that is needed are 6th grade competency abilities.

a much smoother transition from school to work… low youth unemployment and below average repeated unemployment spells than other countries"….

The U.S. Bureau of Labor Statistics shows that only 28% of jobs require a postsecondary degree – associates through graduate levels. However, we have approximately 40% of the population with one of these degrees. So not only does the U.S. have a problem with the quality of credentials, we also have a serious problem with an oversupply of college graduates. And yet, academia continues with its drumbeat "college for all" and "more money is needed" for this purpose. Of course this is to be expected since universities are businesses, not unlike any other, except it is monopolistic in nature.

In her article on the U.S. Department of Education's report, *The Condition of Education 2018*, Supiano (2018) references the authors' point that though many majors are offered by colleges, only a handful of the various options are pursued by the majority of students at the undergraduate level: "business, health professions and related programs, social sciences and history, psychology, biological and biomedical sciences, and engineering. Graduate students are clustered in an even narrower selection of fields. More than half of master's degrees awarded were in business, education, and health professions and related programs. At the doctoral level, almost two-thirds of degrees were awarded in two fields, health professions and related programs, and legal professions and studies." Given these numbers, why is the "college for all" agenda promoted so intensely? If 100% of young people went to college, the majority would be concentrated in the fields enumerated above, which would equate to a substantial portion of the U.S. population being underemployed. This is utterly nonsensical.

The cry "college for all," to quote Smarick (2016), has "inadvertently undermined the dignity of vocations associated with other paths?" Smarick continues:

> In one sense, the "college for all" mindset simplified the job of state K-12 policymakers. They could ask institutions of higher education what constituted "college readiness" and then backward-map that set of skills and information on the K-12 system. Those requirements then become the exit-pass for all high school students.

> But once "high school success" is expanded to include standards other than "college readiness," things become complicated fast. Not only do K-12 policymakers need to understand the needs of an economy made up of countless industries and jobs, they need to do so in our current era when the future of the economy and its component industries and jobs is impossibly difficult to predict. Such uncertainty is industrial-strength kryptonite for central administrators. How in the world do you create uniform rules for an invisible and moving target?

Of course, we leave it to private occupational organizations to determine career requirements and relegate bureaucrats and academics to the margins.

In reference to Smarick's point that occupations and economic sectors are "an invisible and moving target" we have to keep close tabs on economic trends. As occupations ebb and flow or outright come and go, citizens need to watch for what the market will offer individuals. If growth in an occupation has good potential yet the occupational training programs are flooded with candidates, the future might actually be quite bleak. See *Occupational Changes During the 20th Century* (by Wyatt and Hecker, BLS, Monthly Labor Review, 2006)[25] to observe how occupations shifted drastically from 1910 to 2000. The chart below provides sufficient imagery to see the seriousness of this assessment.

Chart 1. Proportional employment in occupational categories, 1910 and 2000
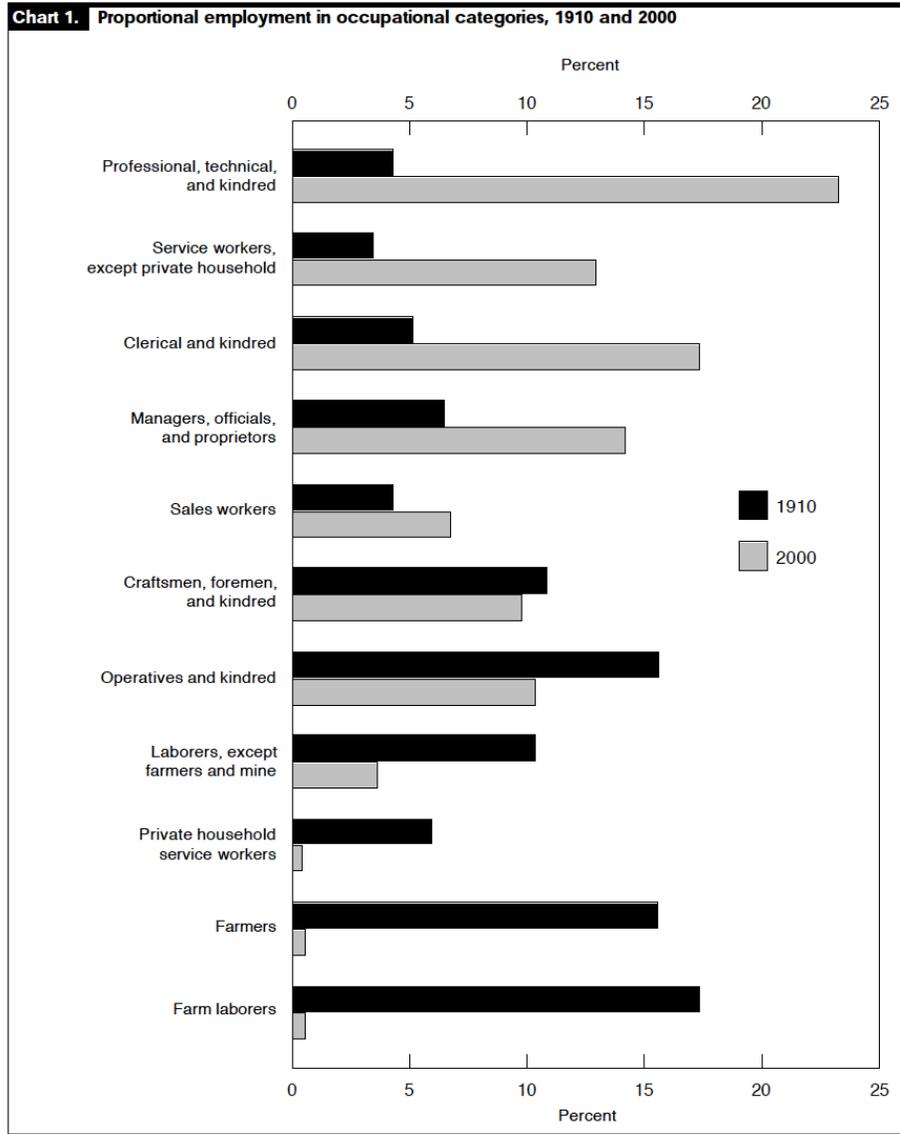
Hoffman (Aug. 30, 2017) visited Switzerland to get a firsthand look at their apprentice system and how effective it is in looking out for the needs of individuals and society rather than for the interests of academia.

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[25] https://www.bls.gov/mlr/2006/03/art3full.pdf

In Switzerland, the labor market is organized by occupational sector with each broad sector having its own association. These associations work in partnership with the regions and the government to design and implement occupation-based apprenticeships. The government provides support and quality control for all approved occupations, including 230 at the upper-secondary level. This is a key function that prevents an imbalance between employers and educators.

Hoffman addresses the concerns American companies have with being the exclusive agent in the education of employees: The company's investment in individuals' training will be poached by competitors. In Switzerland this is avoided. Hoffman explains how:

> With sector associations designing, implementing, and monitoring education and training and creating standardized assessments for each occupation, all companies benefit. Swiss employers will tell you that they even encourage their young professionals to change companies knowing they will be able to replace their departing apprentice with someone just as well-trained. In addition, because associations develop the competencies and accompanying assessments for a finite number of [occupations] employers know the skill sets of each person they hire.

Malgorzata and Field (2013) cite Swiss quality control mechanisms to ensure appropriate delivery of CTE: "Professional organizations and industry bodies identify and define competencies in the profession and on this basis develop core curricula of college programs and professional examinations."

One example where an American industry association is providing training to people in the industry it represents is the Association of International Metallizers, Coaters and Laminators (AIMCAL). It has a Converting School. This program offers a model that can be joined with an apprenticeship system for the converting industry.[26] There are many other U.S. associations that set standards of training for its members so this wouldn't be an insurmountable hurtle. I've been collecting names of these types of associations for years just for this purpose. So now all we need is for State governments, industry and professional associations, and educators to come together to begin the process of developing apprenticeships.

Hoffman (Aug. 16, 2017) states, The Swiss Vocational and Professional Education and Training program "educates 71% of Swiss students who attend upper secondary school (the equivalent of grades 10 through 13/14 in the U.S.). It supports teens in their transition to adulthood and careers … and keeps youth unemployment in the single digits." This is as it should be. If we look at the numbers of credential requirements the U.S. Bureau of Labor Statistics reports, the Swiss' 71% figure correlates well with what we should be doing.

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[26] For a good explanation of what the converting industry does, see
https://en.wikipedia.org/wiki/Converters_(industry)

Limits On The Need For Credentials

Many vocations need credentials; especially those where public health, safety, and security issues are at stake – think of medical vocations as well as construction jobs such as plumbing and electrical trades. Here there are serious public issues at stake that require training and credentials demonstrating competency.

Then when there are no public welfare issues at stake, and where there are significant employment numbers in particular sectors, training may be economically feasible and credentials offered, but not necessarily controlled by regulatory authorities to get a job or open a business. Think of hairstyling. While cleanliness is important in this field, local ordinances can easily provide the necessary safety observances – not unlike how municipalities handle restaurants.

Then there are inestimable jobs that offer no pattern; no large numbers that allow the tailoring of training programs. They are random and frequently changing types of jobs. There are no specific credentials that can be customized to such requirements, yet they have as an important role in the economy as any other – they simply are unique jobs. A general education credential can be designed for this sector that provides an education based on applied studies rather than the general academic education currently being provided that offers this large segment of society **nothing** at the secondary level.

Let's break down these numbers. The Bureau of Labor Statistics provides the following:

As can be seen below, the BLS shows the current demand for college degrees (associate's and higher) to be 27.9%, which is expected to rise to approximately 30% by 2024. For postsecondary certificates, the BLS shows a change in demand from 6% to 6.7% (if the U.S. took career training more seriously, this number would be significantly higher – that is, more like the European All-Stars).

Now let us consider that portion of the population the BLS identifies below as *some college, no degree*; *high school diploma or equivalent*; and *no formal education credential*. The percentage of the population that falls within these categories is 66.1%. There is no doubt there are plenty of jobs that fall within this category that should be based on some form of training program (Switzerland, Germany, Austria, and Denmark – the European All-Stars – should provide plenty of statistics in this regard) and/or credentialing. Kuczera and Field (2013) point out that "Research evidence suggests that strengthened CTE in high school, alongside substantive and good quality workplace training, would help the transition into … the labor market." However, there are still too many random and ever-changing jobs that do not lend themselves to such custom training programs. A general applied studies program could offer this population a solid foundation for non-credential careers that employers currently long for. For a more in-depth analysis of conceptual ideas that *could* be offered in such a program, see my essay *The Applied Education Concept* www.appliededucationfoundation.org, in particular, pages 19-59.

Employment, wages, and projected change in employment by typical entry-level education (Employment in thousands)

Typical entry-level education	2014 Employment		Employment change, 2014–24 (percent)	Median annual wage, 2015(1)
	Number	Percent distribution		
Total, all occupations	150,539.9	100.0	6.5	$36,200
Doctoral or professional degree	4,111.5	2.7	12.2	$100,490
Master's degree	2,518.8	1.7	13.8	$66,420
Bachelor's degree	31,848.6	21.2	8.2	$70,400
Associate's degree	3,458.2	2.3	8.7	$50,230
Postsecondary nondegree award	9,090.7	6.0	11.5	$35,660
Some college, no degree	3,785.8	2.5	0.5	$33,870
High school diploma or equivalent	54,927.4	36.5	3.9	$36,210
No formal educational credential	40,799.0	27.1	6.9	$21,420

Source: U.S. Bureau of Labor Statistics
http://www.bls.gov/emp/ep_table_education_summary.htm Last Modified Date: April 18, 2016. Please note that the "Employment change, 2014-24 (percent)" in the fourth column is the projected growth over that period of time. For example: The bachelor's degree projected growth is 8.2%; it is not a decline from 21.2% to 8.2%. The BLS's chart does not make this distinction clear.

Carnevale et al. (2013) show conflicting information on educational requirements in the labor market (see Table 1 below).

> The BLS estimate of education needs in the U.S. economy falls far beneath actual expectations…. What's also surprising is that these numbers do not conform at all to three other prominent government datasets: the U.S. Census, the American Community Survey (ACS), and the Current Population Survey (CPS). Table 1 demonstrates that, by BLS calculations, a mere 31% of all jobs could be classified as postsecondary, yet both the ACS and the CPS consistently report figures twice as high. Despite overwhelming evidence of increasing education requirements for jobs[27], the BLS estimates of education required for various occupations has remained stagnant.

> BLS's government mandate prevents it from publishing commentary on the meaning of its numbers, but the implication here is clear: if only 31% of Americans need postsecondary education as the minimum education level required for their jobs, and 60% have postsecondary education, then 30% of our workforce is overqualified. (pp. 6-7)

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[27] But what kind of education and how much?

Given what the CPS and ACS show in Carnevale's Table 1, below, that 60% of prime-age workers have postsecondary education and training, but they don't provide its significance to individuals or to the economy (like the paper *Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay?*), the BLS appears to be the safer dataset to base decisions off of. Given the high numbers of the CPS and ACS, insufficient data such as this is not useful information to base educational decisions on for individuals or policymakers when the consequences of following it could very well break the American economic bank – which we are currently on the threshold of experiencing given the debt[28] and default[29] rates of student loans due to the poor ROI in education in so many cases.

Both the CPS and the ACS show that 60 percent of prime-age workers workers have postsecondary education or training. The BLS projections numbers claim that only 31 percent of jobs in 2010 required postsecondary education and training.

TABLE 1: Prime-age workers 2010—employment by educational attainment

Educational Attainment	Prime-age workers[a]		
	Current Population Survey 2010 (%)	American Community Survey 2010 (%)	Bureau of Labor Statistics 2010 (%)
Less than high school	10.9	12.6	25.9
High school diploma or equivalent	28.9	26.7	43.4
Some college/no degree and postsecondary vocational certificate	17.4	22.2	5.2
Associate's degree	10.4	8.6	5.6
Bachelor's degree	21.9	19.8	15.5
Master's degree	7.9	7.2	1.4
Professional degree	1.4	1.9	3.1
PhD	1.3	1.0	
Total	100	100	100
Postsecondary education and training required	60.2	60.7	30.8

[a] Prime-age workers are 25 to 54 years old.

However, if the 60% figure is correct, then it is time to abandon the failed 4-year high school college prep paradigm and allow a majority of students to enter a community college, or another proven technical/occupational school, at the community's expense at age 16 so that they will possess some form of credential when they completed the necessary requirements. The comprehensive high school system can no longer be justified or sustained. It is a dinosaur whose time is at an end.

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[28] "Student loan debt is now the second highest consumer debt category - behind only mortgage debt - and higher than both credit cards and auto loans. According to Make Lemonade, there are more than 44 million borrowers with $1.3 trillion in student loan debt in the U.S. alone. The average student in the Class of 2016 has $37,172 in student loan debt. The latest student loan debt statistics for 2017 show how serious the student loan debt crisis has become - for borrowers across all demographics and age groups."
https://www.forbes.com/sites/zackfriedman/2017/02/21/student-loan-debt-statistics-2017/#6fd87f385dab
[29] http://time.com/money/4701506/student-loan-defaults-record-2016/

Carnevale et al. validate this position when they state,

> Over time, it is progressively difficult to increase the supply of workers with postsecondary education. Students from lower socioeconomic backgrounds, minority students, adult learners, and nontraditional students often face practical obstacles to getting an education and are harder to train using conventional teaching techniques. The result is an increasing labor shortage caused by the slowing pace of postsecondary attainment and the quickening pace of educational demand. (p. 15)

> By 2020, fewer jobs will be available to people with less than high school or only a high school diploma. (p. 18)

This is a perfect defense for abandoning the current secondary school paradigm and adopting something more akin to Switzerland's education system. Individuals' future depends on it and employers' needs depend on it!

<p style="text-align:center">*   *   *</p>

"Despite the expectation of postsecondary for all," Kuczera and Field state, "the reality is that many high school graduates immediately seek work. More recently, greater emphasis has been placed on transition from high school directly into the labor market…."

Vedder (2012) reveals an important point that balances the interests of prospective employees and employers.

> The announcement of agreements between Burck Smith's StraighterLine and the Education Testing Service (ETS) and the Council on Aid to Education (CAE) to provide competency test materials to students online is potentially very important, along with several other recent developments.

Vedder (2012), being a professor of economics, points out the influence pricing of a product/service has on buying decisions and then relates this to the substantial increases in the costs of an education, which both individuals and employers must bear. But if a less expensive alternative that delivers what the market requires is available, individuals and employers are bound to take advantage of the savings. Vedder states,

> The announcement of agreements between Burck Smith's StraighterLine and the Education Testing Service (ETS) and the Council on Aid to Education (CAE) to provide competency test materials to students online is potentially very important….

> There are other promising approaches. The Saylor Foundation, Khan Academy, the Learning Company, and others have developed low- or no-cost high-quality

course materials. MIT, Stanford, and others have open sourced learning material and MIT is planning to offer some form of certificate – a huge step. If costs are kept low, students can avoid borrowing money, and thereby sidestep the stranglehold imposed by the Accreditation Cartel. Some highly regarded nonprofit entity (the equivalent of Underwriters Laboratories) could certify that a given student "has achieved the equivalent of a bachelor's degree." In short, we can create an equivalent instrument to the GED test equating to high-school diplomas.

[I]f companies can find good employees with high school diplomas who have demonstrated necessary skills and competency via some cheaper (to society) means, *they might be able to hire workers more cheaply than before* – paying wages that are high by high school graduate standards, but low relative to college graduate norms. Employers can capture the huge savings of reduced certification costs. And students avoid huge debt, get four years more time in the labor force, and do not face the risks of not getting through college. Since millions of college grads have jobs which really do not use skills developed in college anyhow, alternative certification is more attractive than ever.

Credentialing Inflation

To begin this section, an analysis of market forces is very important. Education institutions have a vested interest in offering as many programs, and subsequent credentials, as people are willing to buy. Just consider how universities currently invest millions into non-academic entertainment and facilities to recruit customers … oh, I mean students.

In addition, those industries that benefit by protectionism that credentials afford them will join forces with the educational community. Both interests are well served by such a partnership.

Then there are the customers/students who believe credentials raise them above others in society giving them a competitive advantage. This becomes of greater concern as a larger share of a country's population achieves more and higher levels of education – the race to the top has no finish line.

Then there is the problem with the educational establishment "dumbing down" programs so that a larger percentage of the population can be channeled through their system. "Dumbing down" is totally inappropriate given the fact that the stupidity is found in the terribly designed system, not individuals. The stupidity rests primarily in the one-size-fits-all standardized approach that requires simplicity and efficiencies to rule for it to work, but no one system can fit the needs of everyone. Hence the reason some students appear "smarter" than others.

Currently, there appears to be no force to check this trend. Perhaps the only thing that can check it is the power of reasoning. If instead of people attempting to desperately race to the top of a one-size-fits-all system, the quasi-monopoly were to be divested into

innumerable competitive baby programs (think of Baby Bells after the divestiture of AT&T), and like water seeking its own level, honest market forces would eventually come to dominate, giving individuals what they want and need rather than having to accept dictated product/service offerings of a government protected quasi-monopoly.

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Credentialing in and of itself is not necessarily a problem. It becomes a problem when students are inundated with superfluous information and a commitment of unnecessary time to acquire a credential. For example, accreditation institutions demand that high schools and colleges provide a "general education." First of all, this needs to be defined based on what we are trying to accomplish for the entire population and/or for subsectors.

This want becomes readily apparent when we consider that the educational goals we currently labor under were defined and formulated by radical Progressive statists in the early 20th century. This requires us to analyze what they handed us since curricula was frequently cloaked in attractive collectivist garb but hid from sight much of the dangerous social engineering intentions – such as eugenics for example. The early Progressive reformers/social engineers were: social meliorists, mental disciplinarians, and social efficiency (with its mental measurement/assessment subgroup) interest groups and each had tremendous impact on the outcome of 20th century education, though they were commonly at odds with one another.

A second point that needs serious analysis is duplication of curriculum between high school and college. The general education requirements of high school is duplicated to a certain extent at the college level; hence the reason we are seeing advanced placement classes and CLEP exams being accepted in many colleges. Students' time and public resources are not free and we need to stop consuming both as if they were. If individuals are not college bound, either we eliminate college prep requirements for them or if a subject area is important enough for every citizen to be knowledgeable of, we need to design curriculum that meets the needs but does not exceed it simply to fill up a semester of seat-time to satisfy the arbitrary Carnegie unit/credit hour.

A third topic needing attention is the amount and type of information required to pass a class. Let's use history as our first model to analyze. History is frequently taught with names, dates, and events dominating the subject matter and hence what students will be tested on. Since 20th century historians have been largely influenced by the relativistic movement of the late 19th and early 20th centuries, they have been discouraged from making any judgments on historic figures, periods, or cultures – at least until the Nazis made this an untenable approach. Great historians, such as Edward Gibbon, author of *The History of the Decline and Fall of the Roman Empire* (1776-89) have been ridiculed for summarizing the moral lessons history offers mankind; yet if history does not provide insight into moral lessons, what use does the subject serve in education, other than providing employment for relativistic historians? The excuse "the pursuit of knowledge for its own sake" does not hold water, especially when we're looking at empty and meaningless history lessons.

Let's use algebra as our second model as it relates to the amount and type of information required in school. How many people will actually use algebra? How many people are talented at math where in-depth studies of algebra create no conflicts? Can we provide introductory algebra to show its usefulness but not delve too deep for those who will have no use for it? For those who could have some limited use, can we teach it in a concrete applied manner rather than in the current disconnected abstract form? This leads us to the next point.

The fourth topic is the memorization of abstract academic information required to pass a class. Application needs to precede abstract material for deep and broad learning to take place, which is then, and only then, transferrable to the real world. However, academic theoreticians, who contribute to the writing of textbooks, often shun applied or useful sciences considering them too worldly and beneath them. Currently, much of what passes as education is predominately abstract in nature, and cognitive psychologists have discovered that abstract instruction disconnected from application is more often than not, incapable of being transferred to the real world. William James in his 1890 book *The Principles of Psychology* had demonstrated that simply memorizing data did not contribute to the transfer of learning, which our contemporary cognitive psychologists' findings support. Therefore, applied studies need to precede abstract instruction, and the memorization of raw data needs to be firmly coupled to the subject matter being learned.

Every time we add excessive amounts of superfluous information to curriculum, we alienate or marginalize a portion of the school age population. Statistics of social ills reveals a great deal of education's shortcomings and just how large the ill-served population really is.

Assessment testing is also a very large problem with our public education system. Rather than requiring students to demonstrate their comprehension of acquired knowledge through demonstration of its application, i.e. transfer of learning, we demand they memorize raw data and possess an outstanding ability of recalling disconnected and apparently meaningless facts – at least meaningless to students. The acquisition of "knowledge for its own sake" is a marketing slogan for the academic establishment; that is, it has some truth in it like any marketing slogan, but like any product or service, not everyone desires its possession, yet accreditors do not allow for such individual choices regardless of its usefulness to individuals or society. Assessment tests provide institutional control rather than individual discovery, which is perfectly aligned with statism.

Labor Market and Educational Correlations

Perea (2017) speaks to the skills' gap that exists in the U.S., which is a direct reflection of our education establishment's disconnect from real world needs:

[I]n today's tight labor market, employers share a common refrain: the jobs are there, but the skills aren't. Open positions sit unfilled as hiring managers struggle to find qualified candidates.

And that shortage of skilled workers is impacting the bottom line. A full 77% of global CEOs now report that skills gaps are limiting their company's growth. The Business Roundtable went so far as to characterize the skills gap as a "national crisis threatening our economic future." Today's hard-to-find skills range from technical competencies in high-growth fields like engineering and healthcare, to basic employability skills like teamwork, collaboration, adaptability, and effective communication.

Although the skills-gap is rooted in a lack of qualified workers, skills scarcity alone is not to blame. The challenge also stems from a communications gap between job-seekers eager to share what they know and employers that struggle to understand and parse the capabilities of would-be employees. Colleges and universities, in turn, must grapple with the difficulty of translating student outcomes into terms that employers can understand and trust.

Burning Glass Technologies provides incredible insight into labor hiring trends as it relates to education trends. Let's start with the description of the organization found on their web homepage.

Developing Labor Market Data Technologies for Matching People with Jobs

Burning Glass Technologies is an analytics software company that has cracked the genetic code of an ever-changing labor market. Powered by the world's largest and most sophisticated database of labor market data and talent, we deliver real-time data and breakthrough planning tools that inform careers, define academic programs, and shape workforces.

Burning Glass Technologies delivers job market analytics that empowers employers, workers, and educators to make labor market data-driven decisions. Burning Glass is reshaping how the labor market works, with data that identify the skill gaps that keep job seekers and employers apart and tools that enable both sides to bridge that gap and connect more easily. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. This real-time strategic intelligence offers crucial insights, such as which jobs are most in demand, the specific skills employers need, and the career directions that offer the highest potential for workers.

Burning Glass' applications drive practical solutions and are used across the job market: by educators in aligning programs with the market, by employers and recruiters in filling positions more effectively, and by policy makers in shaping strategic workforce decisions. At the same time, Burning Glass' data-driven

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applications for workers and students help them choose career goals and build the skills they need to get ahead.

Based in Boston, Burning Glass is playing a growing role in informing the global conversation on education and the workforce, and in creating a labor market that works for everyone. https://www.burningglass.com/about/

Let's review Burning Glass' 2014 paper *Moving the Goalposts: How Demand for a Bachelor's Degree is Reshaping the Workforce*. We need to keep in mind that this paper was published under depression-like forces during the Obama catastrophe. Many were out of work as a result, so employers were able to demand more for their money. Of course this is not as likely to occur during the Trump recovery where labor shortages are occurring and wages are rising. This will force employers to hire people without B.A.s when such degrees are really not required – that is, if they wish to fill job vacancies. The Los Angeles Times article *U.S. Job Openings Soar to a Record-High 6.3 Million as Companies Seek Skilled Workers* (March 16, 2018) reveals how the economic winds have shifted since President Trump came into office with pro-growth economic policies, and in particular since he signed into law the Tax Jobs and Cuts Act on December 22, 2017.

In the introduction, Burning Glass points out "employers are seeking a bachelor's degree for jobs that formerly required less education, even when the actual skills required haven't changed or when this makes the position harder to fill." They refer to this phenomenon as "upcredentialing." Burning Glass compared past trends of employees' education levels to the 2014 trends of employers' requirements as seen in job postings. They referred to the changes as the "credentials gap": that is, "the difference between the educational attainment of currently employed workers and the educational attainment employers are demanding of new hires."

Burning Glass provides, "Labor analysts have generally pointed to two possible explanations for this degree inflation: either jobs are becoming more complex and require new skills (known as 'upskilling'), or employers have become more selective and favor more educated workers."

Two "Key Findings" Burning Glass offers are important considerations:

1. In [some] occupations … the skill sets indicated in job postings don't include skills typically taught at the bachelor's level, and there is little difference in skill requirements for jobs requiring a college degree from those that do not. Yet the preference for a bachelor's degree has increased. This suggests that employers may be relying on a B.A. as a broad recruitment filter that may or may not correspond to specific capabilities needed to do the job.
2. Jobs resist credential inflation when there are good alternatives for identifying skill proficiency. Many health care and engineering technician jobs … show little sign of upcredentialing. That is likely because those positions are governed by strict licensing or certification standards, well-developed training

programs, or by measurable skill standards such that employers do not need to look at a college degree as a proxy for capability.

This last, points to the position that industry associations should lead the charge for occupational education. They do a far superior job for the needs of individuals, employers, and society; therefore we must encourage their development of training programs. Burning Glass alludes to this when they state, "employers may be using the bachelor's degree as a rough, rule-of-thumb screening system to recruit better workers.[30] … [G]reater alignment between K-12 schools, job training programs, and employers might accomplish the same goal with greater precision."

Burning Glass reveals a recruiting force that I believe has the greatest affect on upcredentialing: "The phenomenon of upcredentialing is particularly strong in the Human Resources occupations and related roles that manage the talent pool. … It is … possible that the upcredentialing of Human Resource positions could itself be contributing to the credential gap in other occupations if higher-credentialed recruiters are displaying an affinity for similarly qualified talent."

As the Trump recovery gains steam, upcredentialing will experience a reversal, and employers will start working with their industry associations to establish substantive training programs that will better serve all concerned. The U.S. Chamber of Commerce Foundation (2014) is responding to these forces. They provide:

> Our nation's education and workforce development systems are failing to keep pace with the development of our economy. Employers throughout the U.S. struggle to find skilled workers who can contribute to their companies' growth and success. As a result – despite stubbornly high unemployment rates [during the Obama depression] – many jobs are left unfilled. If employers nationwide are to maintain their competitiveness, it will require closing an ever-worsening skills gap.

> The business community must be involved in more effective ways if the skills gap is to be closed. To that end, the U.S. Chamber of Commerce Foundation (USCCF) is championing a new vision for employer engagement with education and workforce systems, one that yields more effective transitions into employment for students and improved career advancement for workers.

> In undertaking this task, we must accept a hard but undeniable truth – the nation's current approach to skills development is no longer capable of meeting the needs of a rapidly changing business environment. Employers can no longer afford to

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[30] This speaks volumes to the lack of confidence people have in high school degrees. A lack of confidence in high school degrees plus biases of human resources gate keepers are probably the two primary driving forces behind the upcredentialing trend; especially if we consider the lack of confidence in college graduates as Pew reports. Those doing the hiring (or at least those setting up the gatekeeper barriers) are frequently very different from the real decision makers.

wait for others to find a solution; rather, they must play a leadership role in exploring new public-private approaches to closing the skills gap.

This new approach – *talent pipeline management* – argues that employers can close the skills gap by applying lessons learned from supply chain management. These lessons point to the need for major changes for both employers and their partners. They provide guidance in how employers can close the skills gap by scaling leading employer practices and forging new types of partnerships with education and workforce providers. … [W]e believe talent pipeline management represents a bold departure from prior practice and novel approach for addressing the inadequacies of the current system.

… Education and workforce providers will benefit from improved partnerships with employers and better outcomes for their students. Students and workers will benefit from more transparent and successful career pathways, including new opportunities for economic mobility for low-income and disadvantaged youth and adults who have been increasingly left behind in the new economy. Also, it will help policymakers better align and achieve higher returns from their education, workforce, and economic development investments.

While USCCF's position is certainly in alignment with the position outlined in this essay, I feel they need to primarily embrace an alignment with industry associations while secondarily aligning with companies. After all, the associations represent individual businesses and their economic sectors, thereby embracing a far larger population that has the same or similar interests. This is far more efficient and effective than pursuing individual companies whose pool is typically relatively very small – regionally speaking.

The Manufacturing Institute (2013) conducted a survey of manufacturing firms

to assess the perceived value and the use of industry-endorsed certifications in the advanced manufacturing workplace. The goal was to gain an improved understanding of the use of industry certifications by manufacturers to validate the qualifications of both new hires and incumbent workers seeking advancement opportunities. The focus was on entry and middle-skill jobs that typically require at least a high-school diploma but less than a four-year degree.

… Questions were intended to get feedback on the following:

- Types of certifications used
- Degree to which they are used
- Perceived value
- Quantified value
- Partners

… When asked if certifications make a difference in validating the knowledge and skills of the workforce, over 90% responded positively. … The following chart

summarizes employers' assessment of the impact of certifications on specific metrics.

Impact of Certifications on Selected Measures

Measure	Significant Impact	Modest Impact	No Impact
Reduced recruiting costs			
Improved hiring practices			
Decreased on-the-job training time/cost			
Improved employee retention/reduced turnover			
More incumbent worker promotions			
Better promotion decisions			
Increased employee engagement			
Improved employee morale			
Enhanced workplace safety			
Enhanced quality practices			
Enhanced teamwork			
Increased productivity			
Improved company performance			

Of course, manufacturing is just one economic sector that utilizes certifications. All sectors benefit by them. Therefore, all industrialized nations should exert a great deal of energy and resources on their development.

Employers Need Skills, Not Necessarily Credentials

Credentials may serve to symbolize skills that have been acquired through an instructional regime, but as the contemporary college degree demonstrates, this is not true in many cases – many degrees have come to symbolize prestige rather than the acquisition of knowledge or skills. If credentials are to have any significance, there must be a close correlation between a credential and what it represents – in other words, the skills, knowledge, and abilities acquired. Otherwise, credibility erodes, as we are currently observing with college degrees.

(See *Competence Is The Best Credential*, Lane and Christensen (2015), also see *Skill Scales Companion Guide*. However, I would argue that the ability to transfer is the best credential.)

During the Obama depression, employers favored hiring those with bachelor's degrees since it was believed they would get more bang for their buck when they hire over-qualified individuals. During the depression, the education community declared that from now on, everyone will need a bachelor's degree to get ahead (this raises serious doubts about the cognitive abilities of the academic community as a whole). However, now that we are in the middle of a Trump recovery where the labor market has seriously tightened up, degrees and diplomas will have less significance and alternative credentialing will become the new norm. Companies are finding ways around the monopolistic educational leviathan that is infamous for graduating ill prepared individuals. The alternatives are

proving to be highly valuable to companies and individuals because they are based on competency rather than seat time.

Jenness et al. (Jan. 2021) offer a guide "to aid stakeholders in the task of researching assembling the appropriate knowledge base needed to design and communicate about career pathways experiences that are aligned with … markets.

> The graphic below portrays a sequence of career-focused experiences from grade 9 through a community college program for health careers…. However, curriculum mapping is a step that must be preceded by research on the regional labor market and an assessment of opportunities for advancement in particular sectors appropriate for young people.
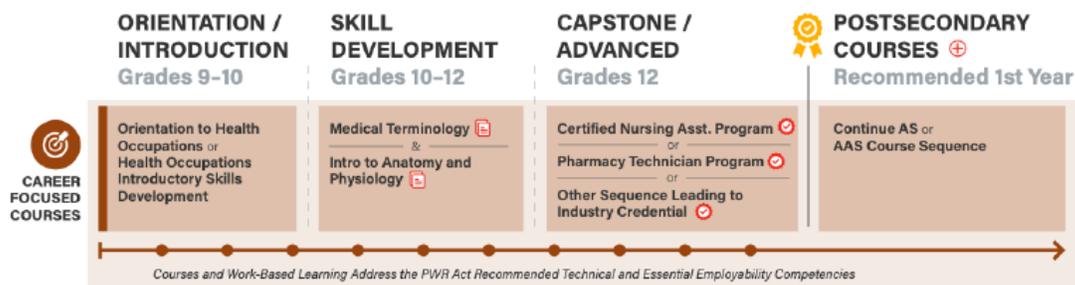
> Developing resources that speak to all of the elements of a pathway is a helpful way to document and share key information. (p. 1)

> When developing a resource for students, information should be communicated in a developmentally appropriate way. Students in grades 9 and 10 will be interested in information such as the range of career pathways, how much an entry-level or midcareer employee earns, and how many years of schooling it takes to be qualified for a career of interest. In grades 11 and 12, students are likely to ask additional question: *Why should I take this class? How do I know if this is a career I would like? Does this career require a college degree?* (p. 2)

> To develop the elements outlined in this document, intermediaries facilitate cross-sector stakeholder meeting to ensure that pathways are designed "backwards," or are reverse-mapped. This means connecting labor market needs to skills, competencies, and knowledge that youth must master, and to the education and work-based learning experiences that begin in high school or even earlier.

Key Design Elements of Career Pathways

1. Industry overviews help young people decide which pathways or credential program to enroll in.
2. Career ladders with in information about opportunities for advancement help young people build knowledge and understanding about the potential for advancement in a specific career field.

3. Learning about industry-recognized credentials with value in the labor market informs the decisions young people make about their education trajectories that are sensitive to regional or local labor market needs.
4. A curriculum that is reversed-mapped from industry-specific competency statements ensures that young people have the opportunity to develop and demonstrate in-demand skills.
5. Access to strategic course-taking guidance saves young people time and money as they work to complete a credential efficiently.
6. Work-based learning experiences provide young people with opportunities to gain professional experience and explore careers of interest.

Fully developing and implementing these pathways elements to support educational and work-based experiences that are aligned with local labor markets requires time and cross-sector input. Partners might sequence the work to develop one element across several promising sectors or develop all of the elements of one pathway to a high-demand industry. The ultimate goal is to fully lay out a range of pathways so that students are able to make choices about the experiences that will best meet their needs and aspirations. Ultimately, the choices young people make in their high school years will affect their ability to succeed in a first job and navigate or map additional education and work experiences that will ultimately impact their well-being as adults.

Industry Overviews
Why This Is Important
An industry overview outlines the projected economic health of an industry as a whole in a given region. Additionally, an overview lists a variety of popular occupations and employers within particular industries in the region. Listing employers that students may be familiar with or are curious about can lead to good discussions about work, kinds of careers, salaries, and the like.

How This Element Promotes Equity
Middle- and upper-class white youth are often advantaged through exposure to high-wage industries through their families' networks. Unless they are specifically taught about career options or learn about them on their own, youth of color and/or those who are experiencing poverty face a disadvantage in choosing high-demand, high-wage careers to explore. Industry overviews with information about the region's labor market and living wages provide all youth with the opportunity to learn about high-wage industries and to make informed decisions about their college and career pathways.

Other Considerations
Traditional labor market information (LMI) must be used with caution during a time of rapid economic upheaval, such as during the COVID-19 pandemic. Projections are based on past trends, which don't capture emerging occupations or skills. However, traditional LMI can provide big-picture and longer-term insights about industries in a given region.

Real-time LMI can provide helpful insights about current in-demand skills and credentials. However, real-time LMI is only as good as the data included on job advertisements, and it can generally be accessed only by purchasing a license from a proprietary software company, such as Emsi or Burning Glass. Learn more about traditional and real-time LMI in JFF's "Labor Market Information 101 Presentation."

Information to Include in This Element
• A list of the 10 occupations with the highest anticipated job growth
• A list of the 10 organizations that employ the largest number of workers in the region
• General descriptions of what each industry is, the kind of work involved, examples of occupations, and skills necessary to succeed in the industry
• Job growth data for each industry overall (growth patterns, anticipated retirements, the size and growth of the sector, etc.)
• Demographic information about the industry, including statistics about the race, age, and gender of the workforce (if available)
• Examples of occupations and median wages within the industry
• Links to easy-to-navigate sites like O*Net, Burning Glass, Emsi, and your state's labor market information and career guidance sites, as well as living wage data (JFF uses the living wage figure for one adult and one child, sourced from the MIT Living Wage Calculator.
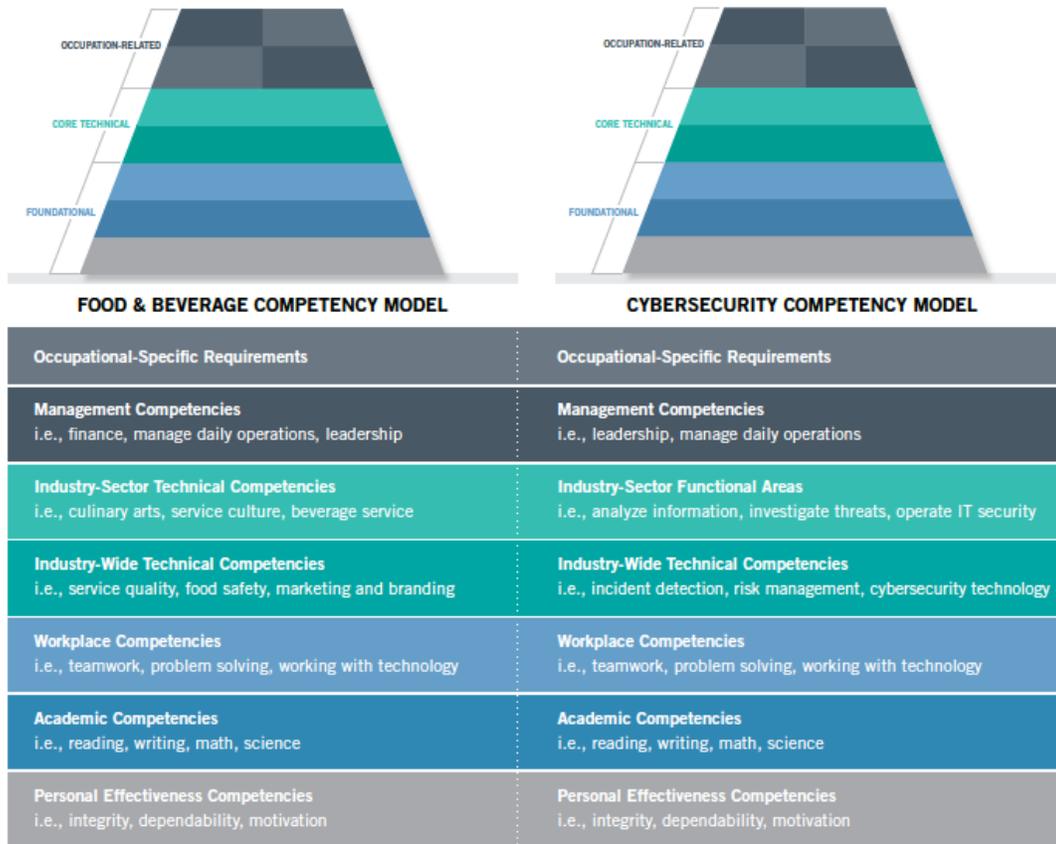
Career Ladders and Opportunities for Advancement
Why This Is Important
While most career pathways culminate in an industry-recognized and/or postsecondary credential that holds value at entry level in the labor market, young people should know that entry-level requirements and advancement opportunities differ among occupations. Some provide higher salaries as the years go on; others require additional education and/or training. Understanding what occupations and career fields provide advancement opportunities is crucial for entry-level positions that don't provide a family-supporting wage.

… Social capital and social networks are additional critical considerations. It is important for young people to understand the role professional networks play in learning about job openings, moving up, and moving into new opportunities in order to launch and advance in their careers. Internships provide great opportunities for network building and may result in full-time springboard or lifetime jobs.

Below, Lane and Christensen (2015) provide an example of an image of credentialing pathways through a competency model.

FOOD & BEVERAGE COMPETENCY MODEL

	CYBERSECURITY COMPETENCY MODEL
Occupational-Specific Requirements	**Occupational-Specific Requirements**
Management Competencies i.e., finance, manage daily operations, leadership	**Management Competencies** i.e., leadership, manage daily operations
Industry-Sector Technical Competencies i.e., culinary arts, service culture, beverage service	**Industry-Sector Functional Areas** i.e., analyze information, investigate threats, operate IT security
Industry-Wide Technical Competencies i.e., service quality, food safety, marketing and branding	**Industry-Wide Technical Competencies** i.e., incident detection, risk management, cybersecurity technology
Workplace Competencies i.e., teamwork, problem solving, working with technology	**Workplace Competencies** i.e., teamwork, problem solving, working with technology
Academic Competencies i.e., reading, writing, math, science	**Academic Competencies** i.e., reading, writing, math, science
Personal Effectiveness Competencies i.e., integrity, dependability, motivation	**Personal Effectiveness Competencies** i.e., integrity, dependability, motivation

Source: U.S. Department of Labor

While specific competencies will differ by sector or occupation, a similar model can be used for each, based on foundational competencies that are necessary for success in any job. As indicated in the figures above, these foundational competencies are personal attributes, such as dependability and integrity, and essential skills like literacy, numeracy and teamwork. Adapting the model to a specific industry is done by identifying the competencies that are specific to the industry and then the competencies specific to the job profiles with the industry. (p. 9)

… During the hiring process, a credential for specific competencies gives an employer confidence that a candidate has the ability and skills to "hit the ground running." From a workforce development perspective, a strong competency framework allows employers to assess performance against a well-defined set of behaviors, skills and knowledge.

Individuals about to enter the workforce are in a much stronger position if they can prove that they have the required competencies to do the job. Learning competencies can take less time than earning a traditional credential, such as a degree or a diploma. If a learner proves they have mastered a specific task, they are promptly awarded a credential for that competency. There is no waiting until the end of a program or course of study. In fact, learning does not have to take
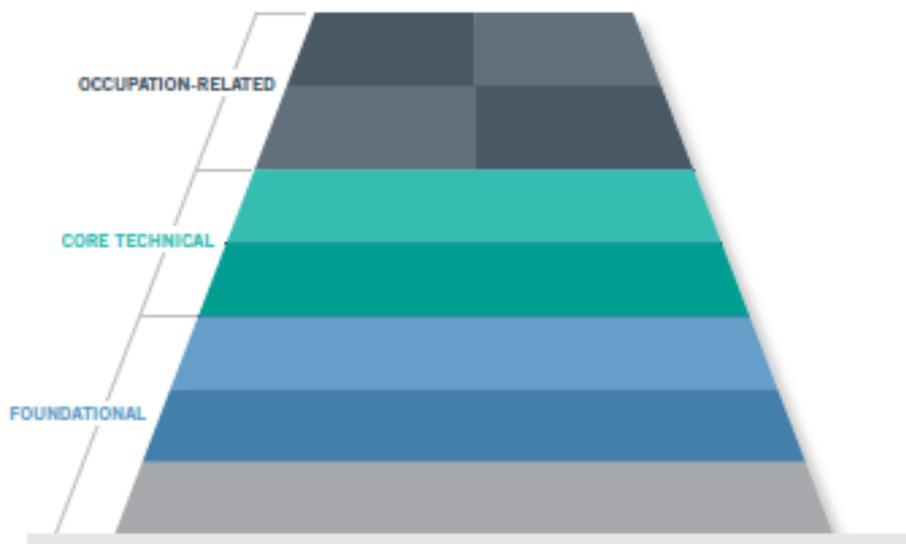
place in a formal setting. This means that training periods can be shorter and less costly, which enables a faster entry into employment.

… Competency frameworks support firm-level workforce development policies by better linking an employee's skills and competencies to organizational performance.

… Industry-approved competency frameworks … allow employers to choose from a pool of candidates who have independent, verified evidence that they have the skills to perform tasks required by a specific job. "The programs save companies money by allowing them to cherry-pick people with exactly the skills they need, rather than spending money on recruiting and training people who may not work out." (p. 10)

… In some cases, industry associations have created systems that identify, assess and certify the specific workplace competencies used in various positions within the industry. Research from The Manufacturing Institute in 2011 found 80% of U.S. manufacturers could not find the skilled workers they needed. Spurred by that, the U.S. manufacturing industry created a National Skills Certification System. the system "standardizes the skill sets required by manufacturing into an organized system that the entire industry has agreed to recognize," and is endorsed by the National Association of Manufacturers (NAM). The structure of this system can most easily be understood in the following way: "As the bottom of the pyramid is a basic credential – the National Career Readiness Certificate attesting to the core workplace skills, such as critical thinking and teamwork, that every worker is expected to have. At the top are a variety of "skills certifications," also organized by increasing levels of knowledge that workers can earn in specific jobs such as machining, welding, construction, and automation." (p. 11)

To support these efforts, the U.S. Department of Labor (DOL) created a general competency model for employers or industries to use if they do not fall under a previously established sector-specific model. There are several similarities between the DOL model and the sector-specific frameworks, particularly at the lower levels of the pyramids. In each case, while the job may be different, the basic workplace and academic competencies required are not. As an individual progresses up the workplace ladder, the same competencies from the lower levels of the competency framework appear in their job description – it is the level to which they have competency that changes. (p. 12)

**ADVANCED MANUFACTURING COMPETENCY MODEL**

▶ **Occupational-Specific Requirements**

▶ **Management Competencies**
i.e., manage daily operations, leadership

▶ **Industry-Sector Technical Competencies**

▶ **Industry-Wide Technical Competencies**
i.e., production, supply chain logistics, quality assurance

▶ **Workplace Competencies**
i.e., teamwork, business fundamentals, working with technology

▶ **Academic Competencies**
i.e., reading, writing, math, science

▶ **Personal Effectiveness Competencies**
i.e., integrity, dependability, interpersonal skills
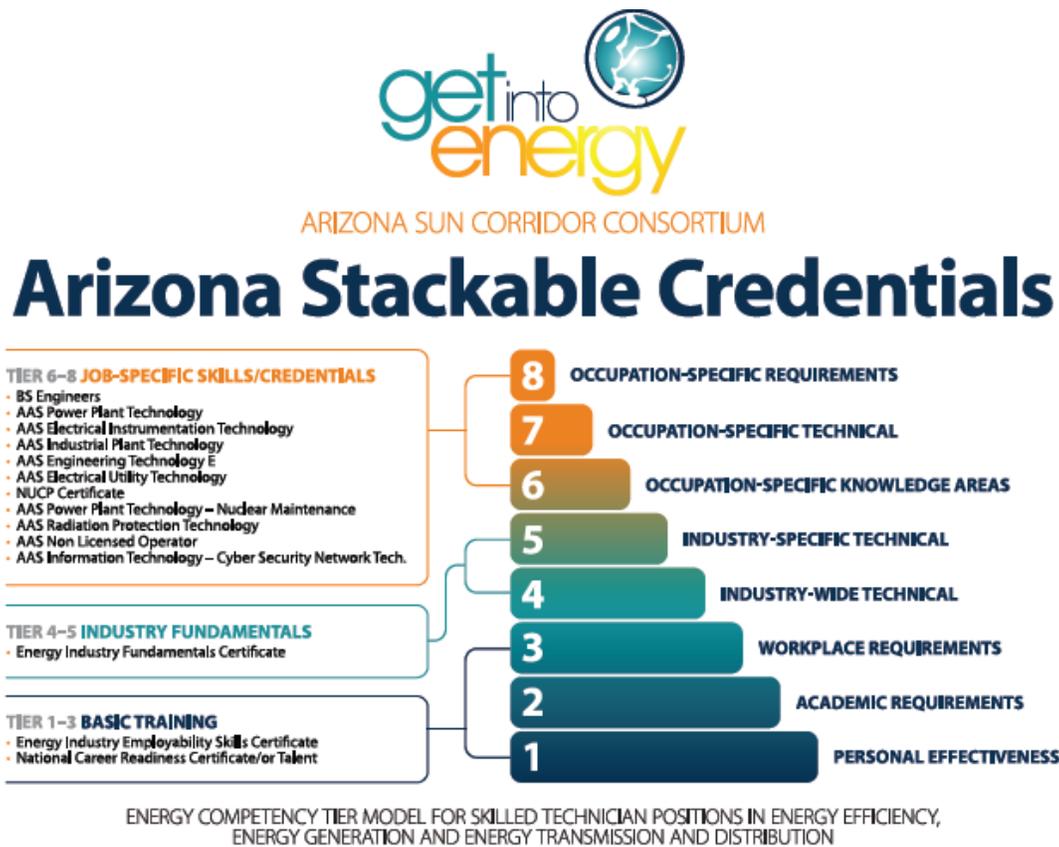
Source: U.S. Department of Labor

Ganzglass et al. (p. 40) provide a more detailed graphic for the Advanced Manufacturing Competency Model:

The Advanced Manufacturing Competency Model was developed by the U.S. Department of Labor's Employment and Training Administration, NAM, and other associations. The model "consists of nine tiers representing the skills, knowledge, and abilities essential for successful performance grouped into foundational employment, entry-level manufacturing, and specific manufacturing occupations. (Manufacturing Institute FAQ, downloaded March 3, 2011)

Advanced Manufacturing Competency Model
Updated April 2010
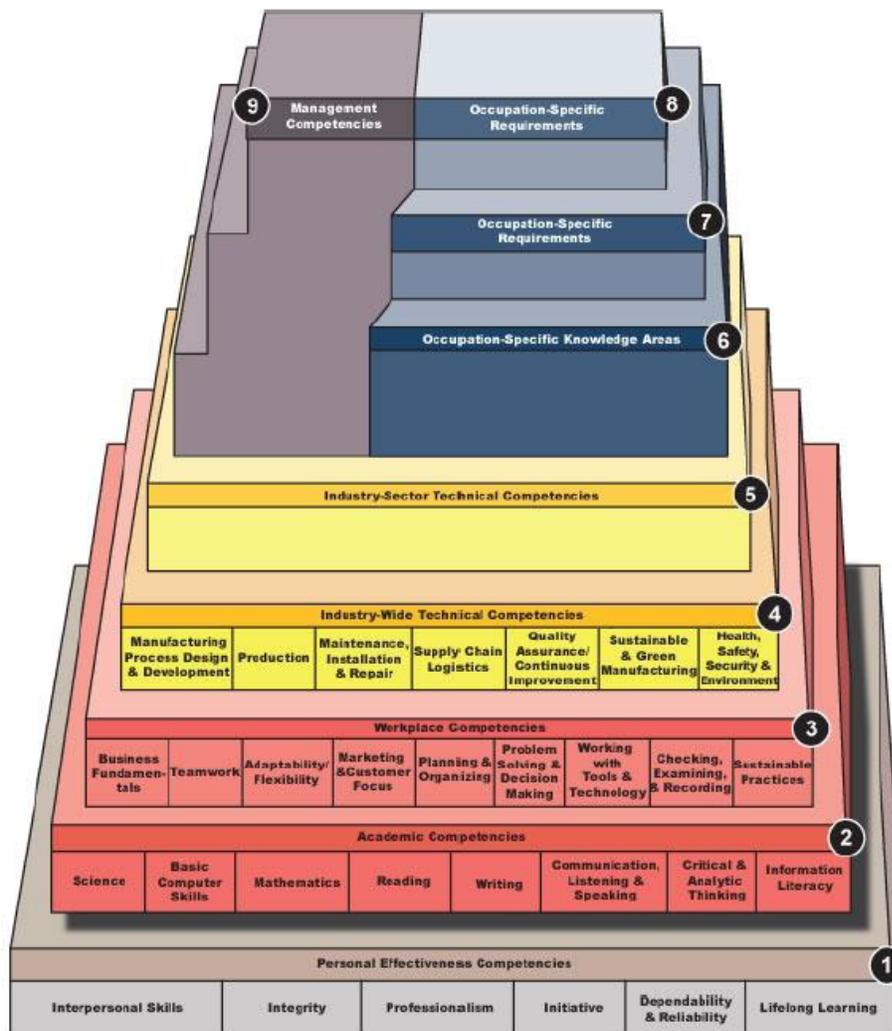
Goodman et al. (2015) offer the following as a suggestion for a model *stackable credential* structure:

ENERGY COMPETENCY TIER MODEL FOR SKILLED TECHNICIAN POSITIONS IN ENERGY EFFICIENCY, ENERGY GENERATION AND ENERGY TRANSMISSION AND DISTRIBUTION

Major Factors
• **Committed Employer Engagement:** The strength of the Competency Model is employer engagement in the development process to ensure that the skills taught to students meet the requirements for current and future employment demands in the region. …
• **Sustainability as a Common Goal:** The consortium has focused its collective efforts on building sustainable programs and pipelining strategies. … As a result, the consortium developed a supply and demand model, complete with industry hiring projections to allow for the appropriate number of students in each program of study to meet the hiring projects for each occupation.

* * *

I think the following graph developed by Jobs for the Future (2017) is well done. However, it is missing an extremely important ingredient: Acquiring the proper training to achieve substantive credentials, which are necessary to enter into a viable career path, during the secondary school years. We need to reverse the current cultural trend of perceiving postsecondary education as the only or primary level to acquire occupational

training. This needs to happen for the majority of people by age 18 before life's demands and responsibilities dramatically reduce the odds of achieving these goals.

Figure 11. Integrated Career Pathways
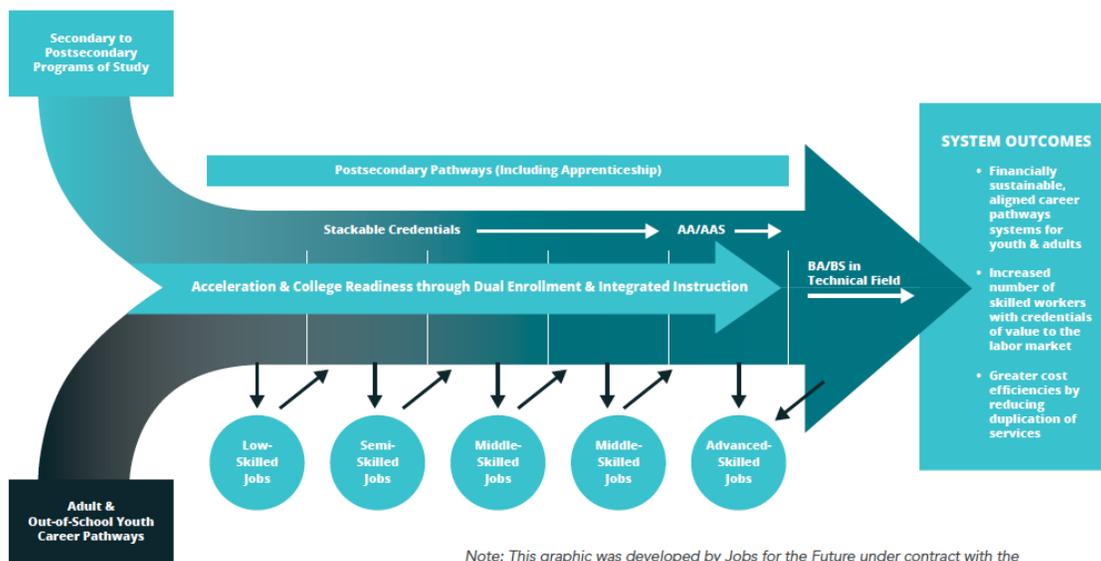
Note: This graphic was developed by Jobs for the Future under contract with the U.S. Department of Education on the Advancing CTE in Career Pathways project.

Clagett, M. and Barrett, L., Jobs for the Future, *Building Pathways to Credentials, Careers, and Economic Mobility*, 2017.

One high school in the U.S., Central High School in Philadelphia, PA, is one that has the authority to confer the Bachelor of Arts degree upon students who meet the prescribed requirements. So at 18 years old, there are those who currently finish "post"–secondary school at the end of their secondary school experience. In addition, there are those in dual enrollment programs that also graduate secondary school and a community college with an associate's degree simultaneously. This is proof positive that we **seriously** need to restructure secondary schools primarily as occupational training institutions for the vast majority of students. (See Edmunds et al., *How Early Colleges Can Make Us Rethink the Separation of High School and Postsecondary Systems*, 2020, as an analysis for contemporary considerations.)

* * *

Lumina has published some very insightful and comprehensive work on credentialing and competencies. "Connecting Credentials – *A Guide to Using the Beta Credentials Framework*" and "Connecting Credentials – *A Beta Credentials Framework*" offer guidelines for incorporating attributes that competencies need to embrace for them to

have real significance. The principles laid out in these papers should be referenced to guide curriculum writers in designing and connecting educational requirements.[31]

Also, Lumina has formed an organization that states the following for its purpose on its home page:

> Through an increasing array of credentials – degrees, certificates, industry certifications, licenses, badges, apprenticeships, and micro-credentials – job seekers, students, and workers have more options than ever to help them get ahead. But there has been no practical way to obtain relevant and comparable information about these diverse credentials. This information is of great interest to stakeholders in the credentialing marketplace.
>
> To help solve this problem, Credential Engine is … working to improve transparency in the credentialing marketplace by:
>
> Scaling and maintaining a web-based Credential Registry that – through software apps built on the registry's data – enables job seekers, students, workers, and employers to search for and compare credentials….
>
> Guiding the future development and use of the registry through stakeholder advisory groups representing the higher education, business, certification and licensure, quality assurance, and technical communities.

In addition, Lumina and the Corporation for a Skilled Workforce supports the efforts of the AACC in developing a new credentialing model that expresses the substantive meaning of a credential. The effort is called The Right Signals Initiative.[32]

The Organisation for Economic Co-operation and Development (OECD) report, *A Skills Beyond School Review of the United States*, by Kuczera and Field (2013)[33] provides an analysis of credentials in the U.S.; in particular, for certifications, and the path to development of training programs, their quality, and establishing meaningful standards to ensure individuals, employers, industry, and society are being well served. The authors state,

> To realize this objective students need assurance that … programs they are pursuing will be good value for [the] money, that they will obtain credentials with clear labor market value, and to see how to navigate their way through challenging transitions. Collectively this will provide the students with the assurance necessary to commit to postsecondary education, and provide the skills for the future. … [In addition] quality assurance measures need to address the

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[31] To find other reports Connecting Credentials offers, see http://connectingcredentials.org/resources-categories/research-reports/

[32] See https://www.luminafoundation.org/files/resources/competency-as-a-currency.pdf

[33] Unfortunately, the report focuses too much on postsecondary programs, with little attention given to expanding secondary programs where it is really needed.

specific requirements of CTE, which are different from those of academic programs.

…From the employers point of view also, if minimum standards are absent, they can have no assurance that someone possessing a credential has relevant competences, and they may therefore disregard the credential in recruiting staff, even if on average it signals competence. If employers disregard the credentials, then they will have no value for students either.

The authors list what is required for a good quality CTE program:

- "Curricula reflecting the immediate requirements of employers, but also involving sufficient general and transferable skills to support career development; credentials with clear labor market recognition in the relevant industry sector.
- Teachers and trainers who are well prepared, both in respect of pedagogical skills and in terms of up to date knowledge and experience of relevant industry practice.
- Substantial and good quality workplace training effectively integrated into the program. [Think of medical internships.]
- Good and readily available data on labor market outcomes, indicating that the program helps students to get good jobs.
- Arrangements to recognize prior learning, both in respect of formal credit transfer and the recognition of informal learning.
- Arrangements designed to provide targeted help to students who can benefit from the program but have particular needs – such as numeracy and literacy weaknesses.
- Articulation arrangements facilitating the transition of graduates from the program to further and higher education qualifications; the earned credentials should be "stackable."

From the list above, the criterion most commonly applied in the quality assurance process is that of labor market relevance."

To the list above, I would add the elimination of the need for a high school diploma or equivalent. I believe the second to last bullet point regarding numeracy and literacy weaknesses should cover the needs of those who quit school. This is particularly important for minority students who have the highest rate of quitting school[34] and have the greatest challenges in reaching the middle class income levels.

The authors point out the decentralization of American education – in particular, compared to other OECD countries – and how it allows for flexibility and innovation at regional levels. The authors provide,

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[34] I do not use the inappropriate and stigmatizing phrase "dropout" since it is so harmful to individuals. It is inappropriate since it stigmatizes them as "stupid" which is not accurate. I know plenty of people with college degrees from bachelor's to Ph.Ds. that are quite stupid! The term "They can't think their way out of a weight paper bag" is commonly used for them.

In many OECD countries there are gaps in provision – for example because it is difficult to pursue particular programs part-time while working, or because it is difficult to re-enter education after pursuing an initial career in another area. But in the United States, decentralization means that provision responds very flexibly to the needs of a wide range of students, employers and other stakeholders. The capacity for students to enter and re-enter postsecondary programs, with many modular options for full and part-time study, is stronger than in nearly any other OECD country. The community college system offers a wide geographical spread of sites of delivery, allowing most populations to be served. Diverse credentials are available. Local institutional autonomy, both in the public and in the independent sector, allows for a rapid and entrepreneurial response to employer and student demand including in the "not-for-credit" domain.

There is a rich field of policy development and innovation, partly because each state and sometimes each institution becomes a test-bed for new ideas and programs, but also because philanthropic foundations and policy think-tanks play a much more substantial role in policy development than in other countries. This allows many initiatives of potential value to be developed, piloted and evaluated….

Yet at the same time they point out the challenges encountered in the lack of standards across the country. This is a dichotomy since too much of either (that is, too few standards versus to much standardization) creates problems of their own. As they put it, "It would be unrealistic to propose the systematic creation of occupational standards. Instead we propose a more modest advance, by creating a [federal] quality standard for certifications." A Federal presence has its place in accumulating, organizing, and disseminating information, but not in controlling education and training. We must not be tempted to emulate European and Asian countries in this way.

Lang et al. (2015) point out that

the growth of online computing coupled with society's desire to prepare students for the workforce has meant parallel growth in the ways that credentials could be assessed, increasing the possibility that standardization might not in fact be either possible or desirable. The resulting dilemma essentially pits the desire to validate credentials through standardization against an explosion in the number of possible ways that this standardization could occur. (p. 139)

Lang et al. then discuss the lack of standardization in the U.S. to other parts of the world, such as Europe, pointing out the difficulty this entails in occupational credentials being transferable across State lines – which they frequently are not.

The cumulative impact of credentialing issues seems to make the U.S. a particularly fertile place for the development of alternatives. Dissatisfaction with a fractured system, high Internet connectivity and accessibility, and a mismatch between the needs of employers and the skills of graduates have created a flood of

alternate pathways to credentials not yet being replicated globally. This growth further complicates the notion that the U.S. will ever achieve standardization in credentialing, either in the manner that Europe has, or even in the manner the U.S. historically had.

On their website the Manufacturing Skill Standards Council provides

> As the leading certifying body for the nation's front-line manufacturing production and supply chain logistics workers, MSSC's two certification programs allow students and workers to document their knowledge. As the only certification organization in the industry accredited under ISO 17024, we also help provide employers with a pipeline of individuals with the core competencies of highly skilled *industrial athletes of the future*.

Yet another credentialing organization is the Corporation for a Skilled Workforce (CSW). Good and Zanville (2017) sum up the intention of this organization:

> Several red flags were signaling danger in the U.S. marketplace of credentials in 2013. Long-standing credentials (degrees) were being joined by rapidly growing use of newer entrants (e.g., certificates, industry certifications, digital badges). Few understood the full array of emerging credentials, and we lacked common language to describe the meaning of credentials. Little was going on to connect diverse types of credentials with one another, so students could stack them to move more easily through their educational and career pathways. We lacked information about the market place of credentials including the level of use, the value, and the trust of various credentials. College and university transcripts were not presenting a full picture of learning behind credentials to enable students to communicate all they'd learned to prospective employers.

Buckwalter (2017) voices the desire of academics where she addresses a lack of standardization:

> Even the language of credentialing is problematic and, in fact, poses a major challenge to the field. Nationally recognized, standard definitions for sub-associate[35] credentials can vary depending on the credential-granting body. Without the development of a common language for credentialing – and a shared understanding of different types of credentials – the field will continue to struggle to engage employers, scale successful approaches, and collect meaningful outcomes data. (p. 7)

Again, there is a dichotomy to contend with. While some common understanding is wanting, if too narrowly structured and defined, we will end up back where we are today, with credentials that are watered down with superfluous requirements. They are designed to fit the standardized highly regulated credentialing structure at the expense of the needs

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[35] A disparaging description of alternative credentials – as if being "sub" equates with an inferior position.

of real people, of real companies, of a real economy, in a real society. In other words, they are designed for failure.

* * *

CSW's website provides the following:

> All learning matters, wherever and however it's obtained. ***To that end, all learning should count toward a credential, whether a degree, a certificate, an industry certification, a license, an apprenticeship completion, or a badge.*** We can achieve that by focusing on competencies – what a credential holder knows and is able to do. In this way, a learner can collect competencies throughout a lifetime of work and learning.
>
> Corporation for a Skilled Workforce [CSW] is in the fifth year of **Connecting Credentials**, a **Lumina Foundation**-funded national campaign to create a better credentialing system – one that is student-centered and learning-based. ***We are partnering with 100+ cosponsoring organizations and 3000+ stakeholders from around the country, who share our commitment to ensure educational quality; increase access; align industry, education and issuers of credentials; multiply the benefits of increased attainment; reduce social inequity; and foster individual progress that results in market-valued credentials.***

To further define what Lumina is trying to achieve through its Connecting Credentials effort, Ashford (2017) sums it up well:

> Lumina partnered with the CSW to bring order to the chaotic credentialing marketplace through a tool called the Connecting Credentials Framework. The eight-level framework, currently undergoing beta testing[36], is a reference tool to build profiles of industry certificates, licenses and other types of credentials….
>
> Connecting Credentials aims to produce the process and tools that align a curriculum to job tasks; articulate pathways; create a common language; align programs, courses and assessments; develop instruction; validate credential quality; embed credentials in transcripts; reduce silos[37]; and enhance transparency.

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[36] Second level, external pilot-test of a product … before commercial quantity production. At the beta test stage, the product has already passed through the first-level, internal pilot-test (alpha test) and glaring defects have been removed. But (since the product may still have some minor problems that require user participation) it is released to selected customers for testing under normal, everyday conditions of use to spot the remaining flaws. http://www.businessdictionary.com/definition/beta-test.html

[37] An **information silo**, or a group of such silos, is an insular management system in which one information system or subsystem is incapable of reciprocal operation with others that are, or should be, related. Thus information is not adequately shared but rather remains sequestered within each system or subsystem, figuratively trapped within a container like grain is trapped within a silo: there may be a lot of it, and it may be stacked quite high and freely available within those limits, but it has no effect outside those limits. https://en.wikipedia.org/wiki/Information_silo

It allows for a way to think about connections. It's all about the skills human beings need in the workplace and it's based on the concept that competencies are currency. … "We're not interested in building six-lane highways into a swamp. We want to create real opportunities that lead to … a job."

… The idea is to start with the end in mind – the labor market or a university – and design a curriculum to get there. The most common outcome is the accumulation of credits and debt and no credential. Pathways is intended to fix that.

… The colleges also are working to identify a default set of courses for all students within a career cluster, or "meta-major," such as business or social science.

… In the design of pathways, [American Association of Community Colleges] is urging colleges to incorporate more opportunities for applied learning, such as internships, project-based learning, field work and clinical placements.

… In response to concerns that young people can't be expected to make a career decision that will affect the rest of their life, [AACC believes] it's better to get into a pathway and meta-major and stay in school to completion than to wander around decision-free and end up with nothing.

On their website, the American Council on Education College Credit Recommendation Service (ACE CREDIT) provides

With over 35,000 programs reviewed, CREDIT is the national leader in the evaluation process for education and training obtained outside the classroom including courses, exams, apprenticeships, and other types of nontraditional forms of training.

For 40 years, colleges and universities have trusted ACE to provide reliable course equivalency information to facilitate credit award decisions. Participating organization include corporations, professional and volunteer associations, schools, training suppliers, labor unions and government agencies….

These are examples of private entities doing the job of federal and national governments that do this type of oversight in Europe. These are perhaps good models to consider utilizing in expanding training and credentials to serve individuals, employers, and society better than we now have.

The term "social partners" refers to government, unions, employers, and industry associations who work together to create training programs designed to meet the needs of all stakeholders.

An Analysis of Short-Term Credentials

Buckwalter (2017) provides an exceptional analysis of the need for credentials and the path for their expansion in the educational establishment but which does not fit neatly into the long-term investment of postsecondary public programs that lead to "degrees." However, a major flaw in her analysis is its academic oriented bias (she's advocating for community colleges in this paper). Coming from academia herself, this is not unexpected, but it reflects the pervasive views of the academic community that has held America back when compared to countries like Switzerland that respect all skill requirements in a society. The idea that "degrees" are somehow different or superior to other forms of credentials reflects this bias and contributes to the public being misled by the arbitrary boundaries academia erects to protect its "aristocratic" turf.

Credentials, whatever their source or length of time to acquire them, should never be viewed as conferring status, prestige, or superiority, but, rather, they are a demonstration of the attainment of knowledge and skills in a given vocation, domain, or terrain – nothing more and nothing less! If this concept were to be accepted, the whole idea that a "postsecondary" credential is necessary to get a decent job would evaporate. Instead, we could focus on the needs of individuals, careers, and society and discard the artificial reputation "higher" education supposedly bestows upon its credential holders. The amount of education required – as opposed to desired – should be solely dependent on a vocation's necessary skills so that we may achieve public efficiencies and effectiveness which will allow our youth the greatest opportunity of success in their lives. We are currently **very far** from achieving this social responsibility and necessity.

The primary focus and flaw in academia's reasoning is the belief that credentialing is a postsecondary responsibility and that it must be driven and fundamentally controlled by postsecondary academics rather than by industry experts. First of all, there is nothing magical about postsecondary education that can't be handled, in most cases, at the secondary level with appropriately trained instructors. Secondly, academics do not possess the knowledge occupational training must entail. At the career education level (and all credentials, regardless of extent, require career training), academics should offer insight into delivery of training in an effective and efficient manner rather than based on content and context. Industry specialists should determine content and context, just as we see in healthcare education. Buckwalter alludes to this when she states, "it's essential to involve employers and industry associations much more in the curriculum development process. This would provide 'greater insight into the composition and value of the credentials themselves….'"

Perhaps we need to redefine what secondary versus postsecondary education should mean and entail as it relates to societal responsibilities versus personal choices citizens are free to make. Secondary education should encompass a broader perspective of the world in which we live to prepare individuals for participation in society during the early secondary years. Latter secondary years can encompass a narrower focus: either for career education or preparation for further education in the postsecondary years. Postsecondary education should focus primarily on a vocation.

An alternative perspective may be in order. Perhaps we should change the definition of *secondary* versus *postsecondary* time frames. Perhaps middle school years – 6th through 8th or maybe 9th grades – should be considered secondary education (which fits the "early secondary years" mentioned above) while all education thereafter should be considered postsecondary, regardless of the time required to acquire a vocation's credentials.

As far as content and context of general educational requirements, organized citizen groups and policy makers should be the force deciding what, overall, education is meant to achieve for the good of a community – such as literacy and numeracy levels, civics requirements, understanding of family dynamics, health related issues, etc. These are foundational skills that all citizens in a community may be asked to acquire prior to, and/or in tandem with, career education. Academics may assist in formulating the delivery, but again, not in development of the content or context curricula are to be delivered, since they would offer too narrow a perspective based upon their limited cultural biases. It's simply the nature of the beast and cannot be otherwise. This proposal means a one-size-fits-all approach is out of the question since any number of people can rarely come to a workable consensus. Certainly literacy, numeracy, and civics are foundational and required by all, but beyond that, education must be far more customized to individuals.

Let's analyze Buckwalter's exceptionally well-researched analysis on short-term credentials and from this, try to find ways to correct for the flaws inherent in our academic culture as it relates to credentialing and its tendency to try to monopolize it.

She points out that over the last decade, there has been a 33% increase in credentials – which we can call *alternative credentials* but which academics disparagingly refer to as *sub-associate credentials* – such as micro-credentials, certificates, certifications, badges, stackable credentials, etc. This trend reveals the disconnect between academia and the economic sector. Buckwalter states, "Employers told [her] that they believe colleges create too many credential programs without determining a true need. … Some employers expressed frustration that academia tends to award certificates based solely on 'seat time' or completion of a course, rather than on proven mastery of skills taught." Put another way, public postsecondary education is limited in what it offers citizens and employers, and therefore must be relegated to the margins as an institutional option for a small portion of the population who *desire* or *require* a more extended or more in-depth education.

An example of what might be *desired* is an education in the various liberal arts disciplines. This should be seen, from the public's perspective, as a choice for those with the luxury and/or financial wherewithal as a personal interest. Examples of what might be *required* for extended studies are medicine, law, finance, engineering, science, and perhaps a few more disciplines. However, the vast majority of careers require less investment of time and money and citizens are finally waking up and seeing academia for what it is: one of several choices, but not necessarily the best of choices. Of course such an idea terrifies academics since they believe their halls are sacrosanct and therefore must

be a destination that everyone should desire entry into for fear of being relegated to the margins of society.

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As a side note: Little do academics realize, but this elitist view they embrace is the primary force that keeps minorities marginalized; that is, their influence over society is the prejudicial force that harms blacks and Hispanics more than any other force. After all, being a professor, scientist, doctor or lawyer is not superior to any other career choice. These are simply a few choices amongst many individuals should choose from because they have a talent in one of those areas. But academics erect barriers, that are insurmountable by most people for a variety of reasons, in order to guard their fortifications. If seen from this perspective, perhaps minorities wouldn't perceive careers in other fields, such as the trades and manufacturing, as those of the "lower classes", but, rather, choices amongst many to think about. Also, if seen from this perspective, academics would be forced to tear down their protective barriers that are meant to keep most people out of their "hallowed halls." They would have to reshape accreditation institutions, turn the testing industry on its head, dramatically reduce the amount of superfluous and useless data required in programs, and eliminate the concept of "academic rigor" which is used solely as a method of destruction of those that do not learn in the same way academics believe to be the only way learning should be acquired. Academics have held hostage the definition of "intelligence" far too long and this destructive force needs to be completely eradicated from our culture.

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Another flaw in Buckwalter's work is the belief that community colleges should be focusing their efforts on getting businesses on board with a partnership of sorts. Connecting with employers will have limited success unless dealing with mega-companies – that is, corporate giants. However, this is only one small piece of the puzzle and doesn't begin to address the needs of the vast majority of citizens and companies. Substantive change will occur primarily through industry associations that represent companies. Industry associations may represent hundreds or thousands of companies that have identical or closely related interests. These associations know what their members need far better than what academics are capable of acquiring. Buckwalter provides the excellent example of Manufacturing Skill Standards Council as an industry educator that provides high quality credentials. Of course, there are many more examples to consider.

To her credit, Buckwalter does reference the benefits of cooperation with industry associations, but it appears to be considered as simply one of many partnerships to look to rather than the primary source of partnerships.

Yet another flaw Buckwalter addresses is the lack of standardization of credentials. Standardization is appropriate for individual industries, but it does not transfer well across industries. Here lies a fundamental flaw in the reasoning of those seeking to standardize credentialing language. Standardization makes things efficient but not

effective. The wholly failed one-size-fits-all college prep programs in high schools in the U.S. demonstrates the extent of this reality.[38] Where standardization makes sense, is useful, and doesn't inhibit or prohibit innovation, then it should be sought out, but it must be monitored closely for any signs of negative influences.

A very important point Buckwalter reports is the disconnect company human resource departments exhibit. She states, "Internal communication problems can … pose barriers to acceptance of credentials. Unless human resource staff actively participate in industry discussions focused on credentials, they tend to lack an understanding of which credentials provide value within the industry. Meanwhile, frontline managers and supervisors may be aware of these certifications and credentials, but struggle to get human resource departments to revise job descriptions to include preference for the credential." This demonstrates an arrogance and the protection of turf by human resource personnel. Human resource personnel erect barriers, such as requiring bachelor's degrees for jobs not really requiring them, in order to justify their jobs. That is, they are able to convince their superiors the need for their services by showing how rigorous they are in screening applicants. In so doing, they turn away fully qualified individuals in exchange for fellow travelers of the superficialities of academia.

Something Buckwalter should have been aware of, but may not have been, given her connection to larger institutional structures, is the fact that human resource departments fit larger corporations or institutions. A very large portion of the economy is made up of small businesses which are too small to afford human resource departments. Instead, they look to industry associations for guidance and support.

Next, Buckwalter addresses the problems within academia in implementing change. College leaders expressed the barriers they face as it relates to the limitations of the college system. One of the barriers is, "Faculty resistance and rigid institutional protocols … affect the ability of colleges to promote their credential offerings." She continues:

> Faculty who do not believe in the value of a credential or oppose making changes to their curriculum can hinder efforts to introduce courses that lead to sub-associate credentials. Administrators mentioned that preference for the status quo among tenured staff can be very difficult to overcome, and can ultimately impact both marketing efforts and the quality of instruction. This is particularly true when faculty are asked to implement these changes without being involved in the process. College staff we spoke with agreed that buy-in from faculty and motivation to update or revamp the curriculum are critical to making a credential offering successful.

Here is a perfect example why tenure is an unacceptable component in an education system - it inhibits innovation as well as inhibiting the social good.

Buckwalter further provides:

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[38] Gallup's survey (April 25, 2018) finds that only 3% of adults say high school graduates are very well prepared for college and only 5% say very well prepared for the workplace.

The curriculum development and review process for credit-bearing programs can be cumbersome and extremely slow at community colleges. For technical programs, where technology and skill needs change frequently, programs that are slow to respond to industry needs are likely to lose the trust and confidence of their employer partners.

Hence the need for industry associations to write curriculum. Bureaucracies are out of touch and too slow to respond and adapt to change. However, Buckwalter recommends expending extensive resources on communicating primarily with employers. Rather than promoting to employers, which would be a daunting task, industry associations are the channels to pursue. This is where curricula should be designed for the various employers within an association and it is the association that can inform the various employers of sources for trained employees.

Buckwalter makes the appropriate recommendation for community colleges to "Engage local high schools to help educate parents and students about the value of credentials." Secondary schools are the best place to begin educating students on career choices, since it is age appropriate, there is a captive audience, and the educational establishment's very purpose is limited to a few duties – one of which is career training. However, educating youth in career options for very broad economic sectors must begin in middle school.

In her section *Shake Up Institutional Culture*, Buckwalter addresses the challenges postsecondary institutions face regarding change. She states,

> As with any attempt to change the status quo in a large, tradition-bound system, developing high-quality, high-value alternative credentials can disrupt the culture at a community college and cause some discomfort. It is important to acknowledge that alternative credentials both challenge and enhance traditional degrees and programs. Similarly, it is helpful to recognize the time, resources, and dedication required to implement cultural changes.

> … **Speed up program approval processes**: The development and review processes for new credit-bearing programs at community colleges can be complex and inefficient. To the extent that colleges can remain within accreditation guidelines, they should explore the following strategies to create new policies to keep credentials up to date….

An entirely different accreditation system needs to be applied to non-academic type credentials. Academic accreditation is a world unto itself, disconnected from real-world forces citizens are faced with. It serves academia, and academia serves it in a closed loop relationship. That is, academics serve their own interests and they expect students to serve their interests as well. Academics will typically take a training program that serves a particular vocation and then expand it to incorporate all kinds of academically oriented requirements that provide jobs to those instructors unrelated to the vocational field.

A good example of this is medicine and academe, though here we see these institutions mutually benefiting one another rather than being a one-way street for academics. To enter medical school, an individual must acquire a bachelor's degree that is not a medical degree before being considered as a candidate to be accepted into a medical college. All kinds of excuses are used to justify this, but it reveals to trends: 1) Colleges want students for as long as they can keep them (it's good for their business); and 2) the medical profession wants to protect its turf by erecting high barriers to warrant high demand, high pay, and be showered with status and prestige. It's a symbiotic relationship that extracts wealth from the majority of citizens.

Buckwalter continues with a bullet point:

> Develop a curriculum update protocol that would prioritize the review of urgent or critical curriculum updates, such as those required for newly enacted industry regulations or to provide training or credentials to employees of new companies that have just moved into the region.

This should be the responsibility of industry associations since they are more up to date on such issues than anyone in society. Besides, since they should design the curriculum, they should make the timely changes to it. If training is prerecorded, it must be designed flexibly so that changes can be incorporated into it very easily.

In her section *Remember All Stakeholders*, Buckwalter, again, displays the academic bias when she refers to them as "external stakeholders" as "valuable allies in helping community colleges to promote sub-associate credentials to employers" as if the employers must be convinced that they need what the community colleges produce. She then references "business entities" such as industry associations, small-business associations, chambers of commerce, and economic development organizations. As it relates to businesses, industry associations, and small-business associations, the education establishment is the external stakeholder that serves the interests of businesses and individuals who work for them. Whereas chambers of commerce and economic development organizations fall into the same category as educational institutions in that their function is to serve businesses and individuals.

Educators typically believe it is their duty to design curricula and for industry to accept what they've designed. This is backwards. Industries need to design curricula with educators' input to ensure that it is thorough, substantive, and deliverable, which is, after all, educators' responsibility – to deliver what has been handed to them rather than what they believe to be needed. Academics are coming from the wrong side of the equation. Industry associations should be the promoter of training programs with education institutions being more of a passive servant.

Buckwalter certainly has identified many issues needing resolution, but it is a narrowly focused approach and therefore provides narrowly focused answers that are to be dominated by academia. As I've pointed out, this is a big mistake given the extreme

limitations of academia as a monolithic giant and because of the narrow mindedness of academics themselves.

Her conclusion begins with "If all of the suggestions were boiled down to one key takeaway, it would be this: colleges need to take seriously their responsibility for engaging employers in meaningful partnerships to inform credential development." Communicating with employers is a nice idea and may contribute to helpful dialogue, but industry associations are the more appropriate avenues to pursue. Actually, industry associations should pursue educational institutions in serving the needs of industry. There are far too many "employers" in a given community that rarely offer enough commonality and a large enough population to the degree a training facility requires to organize a program an industry needs. Industries are spread across large geographic regions which, in many cases, is way beyond the abilities of education institutions' wherewithal to organize coherent programs.

Buckwalter's Appendices B and C are well worth examining for their analysis of the appropriateness of a community college taking on the development of curricula that leads to credentials – addressed in Appendix B – and *real-time labor market information* (real-time LMI) found in Appendix C. Real-time LMI compares job postings and credentials called for in job descriptions.

She does point to a weakness with real-time LMI analysis however: "A recent nationwide analysis of real-time job posting data by Burning Glass shows that only 9% of manufacturing and production job listings reference any type of skills certification or credential." A lack of credential postings for job applicants may signify the incompleteness and incompetence of our education system far more than a lack of required skills that may need to be credentialed.

She continues, "Indeed, employer engagement relies on old-fashioned in-person human interaction, building relationships gradually over time, and growing to trust one another." This is unrealistic except for the largest of employers. There are far too many employers and far too few in the education community who have the wherewithal to communicate or connect in the manner the author is suggesting. It would be a full time job for an army of highly qualified career education professionals to accomplish this to any substantive degree. But educators like to pick certain industries that they believe to be "hot" and therefore pick the "winners" – such as the tech and medical industries for example – while ignoring all others.

I don't mean to disparage Buckwalter. I see her as a product of the environment in which she lives. Besides the bias she has inherited, I think her analysis is outstanding and if the bias is removed, much can be learned from her research and applied to credentialing.

*   *   *

Estes (2018) speaks to the problem of credentialing in the U.S.:

Confusion and lack of transparency prevent learners and employers from taking full advantage of industry-recognized credentials. The universe of earnable credentials – which includes certificates, certifications, licenses, and degrees – is vast, and students and employers often lack information about which credentials actually have value in the labor market…. [Estes] believes **this lack of data transparency often contributes to the emphasis on two-year and four-year degrees in hiring decisions, which skews the market for both students and employers**. (Emphasis added.)

… Louisiana is … working to align credentialing opportunities with industry demand, primarily through its statewide high school accountability system. In Louisiana, the school report card, which is used to hold high schools accountable for student success, recognizes students who earn industry-recognized credentials that have been approved by the state in high school. Under the "Strength of Diploma" indicator, these credentials carry the same weighted [sic] as Advanced Placement or International Baccalaureate exams, **incentivizing schools to graduate more students with these state-approved credentials**. (Emphasis added.)

Here is an example of how the high school years can be used far more efficiently and effectively to acquire marketable skills that have tangible value – unlike the high school diploma which has lost all value other than illusory institutional value.

Conclusion

Bishop's (1993) economic analysis of education, considers the circumstances of over- or under-education in a society. One very important bit of information his research reveals is the benefits that a high competence in language and math provide individuals. Those whose literacy and numeracy abilities exceed the norm, are more productive than coworkers. This informs us that the continuing development of applied literacy and numeracy abilities is at the core of education. After all, with a mastery of these two fields, individuals are more than capable of learning on their own.

Bishop reports:

"Overeducation" is a term which implies a judgment that a society (or an individual) has more education than is "required" or desirable. It's not a new idea, it can be found in Ecclesiastes (1:18) "*He that increaseth knowledge, increaseth sorrow*"[39]…. "Undereducation" implies the opposite judgment. This view is also not new; a Chinese proverb says "*The schools of the country are its future in miniature.*"

"… [I]n most jobs, measures of the quality and output of schooling – reading, vocabulary and mathematical achievement test scores – are better predictors of

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[39] This correlates with the maxim, "The more I know, the more I realize how little I know."

job performance than interviews, references, ratings of training and experience, personality tests and comprehensive background questionnaires.

This literature further demonstrates that a core assumption of the manpower requirements framework – that specific jobs "require" particular minimum levels of basic reading and mathematical skills and that once those thresholds are reached, further improvements in basic skills yield sharply diminishing productivity benefits – is invalid. The hypothesis of diminishing returns to basic skills has been tested many times and about 95% of the time, it has been rejected.

Bishop considers supply and demand forces of educational access:

Rates of return will tend to be low if schools are free and easily accessible. If tuition is high, loans unavailable and admission requirements difficult to meet, high rates of return and substantial wage differentials will be necessary to attract enough students into university to supply future needs for college graduate workers. Deviations from this standard occur when large shifts in demand for or supply of graduates push the market into temporary disequilibrium, when barriers to entry (e.g. limits on the number of university places) or market failures prevent enrollment decisions from equalizing rates of return and when non-pecuniary benefits are particularly large or small.

Such economic understanding is lacking in public educational policy discussions. "College for all" dominates with no understanding of ramifications for such policies.

Bishop explains how specialized training in a firm or economic sector historically has shifted to public schools as the industry matures:

The switch of training functions to schools is a natural part of the life cycle of a technology and its associated skills. As a technology matures and its use grows, the technology and its associated skills become standardized (i.e. general rather than firm specific), the demand for formal training grows and schools enter the market as training providers. Once skills become standardized, schools have natural advantages as competitors in this market: (a) they offer students flexibility in scheduling and the choice of courses, (b) hourly costs of training are lower because teaching staff are specialized and economies result from spreading the cost of developing courses over many students, (c) school certification of skills makes them more portable, and (d) schools and students have access to public subsidies not available when training takes place at a firm. When schools become major training providers, barriers to entry into the occupation and the industry fall, the supply of skilled workers grows, the costs of employing people with the skill fall, and expanded use of the technology is facilitated. Almost every medium and high-level occupation (e.g. typists, computer programmers, lawyers, plumbers) has been through this evolution.

This demonstrates that industry associations provide the primary source of educational requirements and materials for their particular industries.

Bishop ponders our current educational social structure:

> By compelling attendance, subsidizing instructional costs, building schools in convenient locations and providing financial aid, society induces students to choose more years of schooling than they would choose on their own. In the absence of such interventions, we would clearly live in a world of chronic underschooling. Is the current level of government support for schooling the correct level? That is much more difficult to say. Some of the spillover benefits of schooling – the tax and social insurance effects – are measureable, most are not.

Next, Bishop reflects on individual achievement:

> Spending too few years in school is only one of the ways students may underinvest in education. How much he learns, how expert he becomes depends as much on the student's study effort, as the number of years spent in school. Society tries to encourage students to study harder by recruiting inspiring teachers, by conditioning access to higher levels of schooling and well paid fields of study on performance in school, by awarding credentials only to those who achieve a minimum level of competency in their field and by providing references for graduates who are entering the labor market. Expertise is notoriously difficult to measure, however, and the credentials that schools award do a poor job of signaling it (particularly the kinds of expertise that employers are seeking). Credentials are well rewarded by the labor market. Holding credentials constant, however, greater expertise is under rewarded. The incentives facing students are thus to put sufficient effort into their studies to get the credential, but to do little more. This is the outcome in the U.S. where the high school diploma signals time spent in school, not educational achievement. Such an outcome can be legitimately characterized as chronic undereducation.

> When educational systems provide finely graded certifications of academic accomplishment but ignore accomplishments relevant to employment such as computer literacy, teamwork and occupational skills, the likely result is chronic miseducation – students studying subjects which schools think are important but the labor market does not.

Bishop concludes "overeducation can occur only when government gets too aggressive in promoting and subsidizing it." The "college for all" clarion call is a perfect example. But Bishop points out that without government involvement, "society will be both underschooled and undereducated." Therefore, a balance must be pursued. Once again, the Swiss model is the primary system that should be seriously analyzed to discover the proper balance.

To return to the question posed in the Introduction of this essay, "What is the purpose of credentials": A credential is the pinnacle of an individual's educational experience. All roads traveled lead to this point, which is why each road must be navigated correctly and tie in well to this final purpose for every individual. It is the peak of the pyramid (the capstone) and all stones under the peak must be shaped correctly and placed neatly upon one another to provide the wherewithal to continue learning on one's own; to succeed in life in its various manifestations; and to weather all storms until one reaches the final port of call. If education fails in this effort, then the education system is failing the society for which it was established. This then requires the recall of the enduring principle Jefferson immortalized in the Declaration of Independence: "…That whenever any form of government becomes destructive of these ends, it is the right of the people to alter or to abolish it, and to institute new government…." Given the failure of our educational institutions, it is time to institute a new system by "laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their safety and happiness."

A final issue needing serious correction is the 1971 Supreme Court case *Griggs* v. *Duke Power*, in which the Court prohibited employers from testing employees for job suitability. Bryan O'Keefe and Richard Vedder address this case's ramifications on marginalizing high school graduates and benefiting postsecondary education institutions. This has been accomplished due to the inadequate education our youth receive from high schools and where the college degree is the default test for literacy. The paper by O'Keefe and Vedder is *Griggs v. Duke Power: Implications for College Credentialing*. https://www.jamesgmartin.center/acrobat/Griggs_vs_Duke_Power.pdf. In support of the authors' position, see *The State of Entry-Level Employment in the U.S.: A Study Examining the Potential Effectiveness of Impact Hiring on Youth Unemployment*, Rockefeller Foundation, March 2017: https://www.rockefellerfoundation.org/report/impact-hiring-survey-results/. Also see *"Upcredentialing": Jobs Report Shows Limited Career Options for Workers Without a Bachelor's Degree*, by Terri Williams, GoodCall, May 20, 2015: https://www.goodcall.com/news/upcredentialing-jobs-report-shows-limited-career-options-for-workers-without-a-bachelors-degree-0789

This Court case should be overturned by the Court, or by Congress and the President, in order to return balance to our society. There are those who may believe that the Supreme Court has the final say on law, but this is a falsehood that also needs remedying. The three branches are coequal and were meant to balance power so no single branch gains dictatorial powers. The damage this case has wrought, and the Court's blatant disregard of the intent of legislators who wrote the Civil Rights Act, proves the point of the checks and balances concept. Otherwise, usurpation goes unchecked.

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