

Linking Education and Employment: Certificate Programs at US Institutions 1980 – 2013

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This paper reviews the history of the link between education and employment in the United States and how that link came to be embodied in higher education certificate programs. Certificate, in this study, refers to a formal award that was made upon completion of either an academic or occupational/vocational program of study offered by a higher education institution. IPEDS data about the growth in certificate programs across 1,270 fields of study for the 7,313 Title IV US universities and colleges from 1980 to 2013 is then presented and analyzed. Finally, issues with and recommendations for certificate programs complete this study.

INTRODUCTION

A recent study has found that parents worldwide strongly link higher education to post-education employment. The Hong Kong and Shanghai Banking Corporation Limited (HSBC) commissioned Ipsos Market and Opinion Research International (MORI) to conduct the second in its series of studies on education. This second study was an online survey administered in March and April of 2015 to a nationally representative sample of a total of 5,550 parents from 16 countries and territories (Australia, Brazil, Canada, China, France, Hong Kong, India, Indonesia, Malaysia, Mexico, Singapore, Taiwan, Turkey, the United Arab Emirates, the United Kingdom and the United States). The families surveyed had to have one or more children 23 years old or younger who either were or would be receiving education.

The survey obtained parents' aspirations for their children and the parents' perceptions about the relationship or part their children's future education and future employment will play in realizing what parents want for their children. The desire of greatest importance to the majority of survey respondent parents (64 percent) was the hope for their children to be happy in life. The other four of the top five parent desires for their children were: to lead a healthy lifestyle (35 percent), to earn enough to enjoy a comfortable life (34 percent), to be successful in their career (30 percent), and to fulfill their potential (29 percent) (HSBC, 2015). Parents connected education and subsequent employment with achieving these five goals as 79 percent of parents saw "an undergraduate degree or higher qualification as essential to their child achieving important goals in their life, and 50 percent thought a postgraduate degree (master's or higher) was necessary (HSBC, 2015, p. 6)". In addition, 83 percent of parents wanted their children to enter a specific type of employment. The top three occupations parents desired for their children to work in were: medicine (19 percent), engineering (11 percent), and computer science (8 percent).

These findings show that, today, parents across nations and cultures anticipate that there will be a clear and efficacious link between their children's education and their children's subsequent employment. For many university degree programs in the United States, that link may not exist. In contrast, certificate

programs in the United States both historically and today embody that connection. To explore how certificates link education and employment, this paper first reviews definitions and types of certificates. Next, the history of the connection between US post-secondary education and employment is presented. Then, factors influencing the more recent expansion of certificate programs are discussed. Nationwide trends shown in the IPEDS data for certificate provision at US universities and colleges from 1980 to 2014 are then identified. Finally, best practices that foster the education/employment link for certificate programs and the policy implications of this study are presented.

DEFINITIONS AND TYPES OF CERTIFICATES

Goldsmith (2007) defined a certificate as a document that provides evidence that some type of quality, contribution, effort, work, learning, experience, expertise, training, or knowledge has ostensibly been acquired by the recipient. This author distinguished between:

certification which entails:

- job analysis to determine the job tasks and Knowledge, Skills, Attributes/Abilities (KSA) needed to perform a job,
- education/experience,
- objective demonstration of KSA beyond education,
- time limits,
- a monitoring mechanism, and

certificates that involve:

- education/experience,
- possibly an assessment mechanism,
- possible specific job requirements.

Goldsmith (2007) also provided example types of certificates which included: Certificate of attendance, Certificate of mastery of course content, Certificate for mastery of knowledge related to an occupation, Certificates for highly specialized segments of a certification based on mastery, education, experience, and Certificates meaning nothing at all.

From the 1940s, universities in the United States categorized certificate programs as credit or non-credit, referring to whether or not courses required for certificates could have been taken for university and college credit (Holt, 1991). Sykes (2012) presented the three definitions for academic certificates put forward by three different federal government agencies (Appendix A). One of these, the Department of Education's National Centre for Educational Statistics' (NCES) Integrated Postsecondary Education Data System (IPEDS) definition is:

Formal awards conferred as the result of completion of an academic or occupational/vocational program of study. The instructional activity completed as part of the program of study must be credit-bearing, but can be measured in credit hours, contact hours, or some other unit of measurement. Awards conferred by the postsecondary institution.

The origin of the Integrated Postsecondary Education Data System and criteria for inclusion in its database is presented in Appendix B. Certificates are formally categorized by IPEDS based on the level of prior degree achievement (sub-baccalaureate, post-baccalaureate, and postmasters). Also, within the sub-baccalaureate classification, three time-based categories of certificates are used and defined as follows:

Short Term

Less than 1 academic year (referred to in this report as short-term):

Less than 900 clock hours, less than 30 semester credit hours, or less than 45 quarter credit hours.

Mid-Term

At least 1 but less than 2 academic years (referred to in this report as moderate-term):

At least 900 but less than 1,800 clock hours, at least 30 but less than 60 semester credit hours, or at least 45 but less than 90 quarter hours.

Long Term

At least 2 but less than 4 academic years (referred to in this report as long-term):
1,800 or more clock hours, 60 or more semester credit hours, or 90 or more quarter hours
(Sykes, 2012)

At the post-baccalaureate level, the IPEDS categories of certificates are defined as:

Post-Baccalaureate certificate

An award that requires completion of an organized program of study equivalent to 18 semester credit hours beyond the bachelors. It is designed for persons who have completed a baccalaureate degree, but does not meet the requirements of a masters degree.

Post-Masters certificate

An award that requires completion of an organized program of study equivalent to 24 semester credit hours beyond the masters degree, but does not meet the requirements of academic degrees at the doctors level (Sykes, 2012).

For this study, certificate will be defined as a formal award that is made upon completion of either an academic or occupational/vocational program of study offered by a higher education institution.

HISTORY OF THE LINK BETWEEN POST-SECONDARY EDUCATION AND EMPLOYMENT IN THE UNITED STATES

The direct transmission of timely knowledge and skills from one person to another has occurred throughout history. Various types of apprenticeship systems formalized this transmission of specific knowledge and skills needed to accomplish specific types of work. However, knowledge and skills not directly applicable to any type of work were also developed in antiquity. This knowledge and skill set focused solely on the intellect and the development of expertise in reasoning, abstract concepts, and objective understanding.

The advent of Western universities in the 10th, 11th, and 12th centuries formalized both of these types of education: intellectual development not directly related to later employment and curriculum that prepared graduates to work in specific professions like law and medicine. Over time, university education continued to expand in the depth of subject matter, the number of subjects to study, and the number of institutions. The number of institutions increased to approximately 143 in Europe and Eastern Europe by the 18th century (Frijoff, 1996).

Building on this history, the colonial college founding phase (1730-1770) of the university system in the United States continued these traditions of emphasis on both general (classical liberal) intellectual development and specific coursework for certain professions. However, at the time, regardless which of the two educational paths was chosen, the elite members of society who attended these colonial colleges in the United States were already assured of post-college employment and income. The US university and college students of the day were sons of ‘prosperous merchants and wealthy planters’ who had jobs waiting in their families’ enterprises (Thelin, Edwards, Moyen, Berger, & Calkins, 2004). As a result, the demand that *all* university education directly equip *all* students for post-graduation employment was not a part of the founding of colleges and universities in the United States. In the first growth period of American universities (1800-1850), both the number of institutions increased (by 200) and the existing curriculum expanded to include engineering and science coursework that could be applied to post-graduation employment.

The second growth period (1870-1910) for US universities was also characterized by elements strengthening the link between higher education and employment. The first element was the proliferation of new undergraduate programs in more practical, applied subjects like agriculture, engineering, business, education, home economics, and military training. The second element was the establishment of a system of public junior colleges (Thelin et al., 2004). This growth period also brought into existence private, external, independent university ratings agencies. These agencies successfully used coercion and incentives on higher education institutions to develop more standardized admissions, instruction, and accreditation criteria to counter the lack of any existing academic standards (Thelin et al., 2004). Establishing standards and criteria to judge higher education fostered accountability for the value of the education provided.

As academe continued to develop in the United States over the subsequent decades, it has been chided, at least since the 1940s, to make degree programs and course content relevant to post-degree employability. However, perhaps because of the historical focus on general intellectual development in its founding years and the lack of need to be concerned about post-graduation employment on the part of the wealthy students it once exclusively served, the US university system has been and remains resistant.

“The challenge facing American educators then, as now, was to develop, institutionalize, and popularize a curriculum that was a balanced compromise between the study of relatively fixed cultural artifacts and values and technical training responsive to the needs of the day” (Levine, 1986, p. 112).

This student need/demand has been referred to using several terms (career enhancement, employability, marketability, employee skills gap) but is essentially the need to obtain, maintain, or advance in employment. While debate about the efficacy of a classical liberal arts education wore on at four year institutions, students found the applied practical knowledge they wanted and needed elsewhere.

For example, post World War II, junior colleges responded directly to this need. In the post war era, junior college growth included the new provision of: associates degrees with transferability of credits, advanced occupational and vocational instruction, and certification coursework. These changes culminated in the creation of certificate programs. Certificate, in this study, (as noted earlier) refers to a formal award that was made upon completion of either an academic or occupational/vocational program of study offered by a higher education institution. Certificate programs, in turn, went through their first major expansion in the 1970s (Smith, 1987; Holt, 1991). For example, the number of certified public accountants grew from an estimated 9,000 in 1929 to 150,000 in 1975 (Mayer-Sommer, 1980; Stettler, 1975).

In 1983 (as in 2015), university graduates had degrees but no jobs. At the time, university educated women found it even more challenging than today to obtain employment. Some chose to obtain post-baccalaureate certificates from what were then known as ‘secretarial schools’ like Katherine Gibbs. Through these schools, specific skills training oriented toward work in corporations was offered. Due to the high value placed on that training by corporations at the time, these certificate holders soon found employment that later led to promotion and actual careers (Charles, 1983).

A second expansion of certificate programs occurred in the 1990s. Irby (1999) suggested that several factors caused the increased student interest in certificate programs. The factors were: employees perceived the need to stay competitive in the marketplace; the advent of online instruction (enabling greater access and convenience for students); the failure of established degree programs to provide “additional specialization, demonstrated knowledge, and job-relevant know-how (p. 39)”; and a proliferation of certificate program suppliers (for the estimated \$100 billion dollar market).

FACTORS INFLUENCING THE EXPANSION OF CERTIFICATE PROGRAMS

The employee need to “stay competitive” (Irby’s first factor) is directly related to the need to maintain and increase income. In 2012, Shaw stated that:

“On average, getting a certificate increases wages by 20 percent above what a high school graduate would earn. And many certificate holders earn more than graduates who have associates or bachelor's degrees. In computer and information services, average earnings for certificate holders are \$72,498 per year for men and \$56,664 for women (p. 11a).”

A NCES (2012) report indicated that, in 2010, *field of study* was a determinant factor in the whether the economic returns for vocational education and training were significant or not. As shown in Table 1, the existence of significant economic return was denoted with a dollar sign before the type of certificate for this study. The report did not indicate how the economic return was measured. Among those providing economic return, health care certificates were the most popular type (chosen by 43 percent of the students). The report did not explain why the eight subject areas not providing economic return still garnered the proportion of students that they did. Perhaps it is related to the length of time required to obtain those certificates and the associated cost or debt students incurred as a result of the extended time period. As, in 2012, Shaw found that “nearly 40 percent of all university students fail to graduate even in six years (p.11a).” The length of time students are taking to finish post-secondary education is part of what is causing undergraduate education to not be cost effective.

**TABLE 1
ECONOMIC RETURNS OF US VOCATIONAL CERTIFICATES AWARDED 2010**

Highest to lowest	Percent of
Economic returns	Total Certificates
\$ Healthcare	43%
\$ Business management	10%
\$ Engineering, architecture, science & technology	5%
\$ Computer & information sciences	4%
\$ Business support	2%
Manufacturing, construction, repair, & transportation	13%
Consumer services	11%
Protective services	5%
Communications & design	2%
Education	2%
Public, legal, & social services	2%
Marketing	1%
Agriculture & natural resources	1%

\$ = provided economic return

Source: US Department of Education NCES IPEDs 2010-2011 Completion file and 2011-2012 Institutional Characteristics file

Rosenbaum and Rosenbaum's (2013) study found that private and non-profit institutions that award certificates and degrees in occupational fields (occupational colleges) employed non-traditional procedures that greatly increased the completion rate of students who were less likely to succeed than similarly situated students in public two year schools. The comparative completion rate difference was 56 percent at occupational colleges versus 37 percent for public two year community colleges.

The procedures employed by the two types of institutions that caused this difference were compared as shown in Table 2 (Rosenbaum & Rosenbaum, 2013). The authors asserted that the realization of the student goal of greater income in a shorter time frame was more likely to occur because completion

likelihood was greater at occupational colleges due to these more effective procedures. The occupational colleges' notable, established, regular practice of counting the same credits taken toward a certificate as credits toward both a later associate degree and a subsequent bachelor's degree codified their built-in student success strategy. At the occupational colleges studied, certificates were automatically part of the curriculum. As shown in Table 2, coursework and this accompanying scheduled reward structure were implemented to enable the award of first, certificates in one year and second, associates degrees in two years. This short term, relatively quick accomplishment of a formal, recognized achievement (certificate) was credited by the authors to incentivize further study.

TABLE 2
COMPARISON NONTRADITIONAL AND TRADITIONAL PROCEDURES

Community colleges:	Occupational colleges:
Traditional procedures	Nontraditional procedures
Deferred 6+ year payoffs	Quick payoffs
Early obstacles (remedial)	Postponed obstacles
Direct BA goal	Incremental success degree ladders
Complex choices & schedules	Package deal pathways & preset timeslots
Unassisted course choices	Mandatory advising & monitored progress
Self-directed job search	College-guided job choice & job search

Source: Rosenbaum & Rosenbaum (2013) p. 168

The need to shorten the education time period is also perceived in post-bachelors degree education. Bosner (2002) discussed how post-bachelor/pre-masters degree certificates require about the half of the coursework of a traditional master's degree. This fits with the current cutting back trend i.e. "Mini-cars, Mini-computers, and now a Mini-masters". In addition, Smith (1991) reported that students and working professionals share undergraduate expectations of substantial financial return from their investment in this type of additional education.

Turning now to accessibility, Irby's (1999) second reason for the expansion of certificate programs was the student need for 24/7 access to education. This need was satisfied by the advent of asynchronous online education. In the overwhelming majority of fields, greater physical access to education is enabled by the convenience of wholly online access. The accessibility of certificate programs through online venues is another feature that makes them easier to complete in shorter time periods. Certificate providers tout this aspect, noting that many certificate programs are available completely online, while not all associate, bachelors, and masters degree programs are.

Regarding the failure of established degree programs to provide knowledge relevant to employment, Irby's (1999) third reason for the expansion of certificates noted that certificates dynamically counter this lack of relevant knowledge. This explained their popularity in the 1990s and remains an important feature of certificate programs today. Chang and Yuan (2014) reported that students believed certificate coursework could be immediately applied and enhance job performance. Kenny, Watson and Watton (2014) comprehensively reviewed the literature on PhDs' lack of preparation for their roles as teachers in the future professoriate. The authors noted that, in contrast to the glaring lack of teaching training in PhD degree programs, most teaching certificate programs focus specifically on the acquisition of teaching skills to correct and compensate for this dearth in the preparation of future professors.

A second example of discipline-specific, applied, multi-disciplinary certificate coursework that fulfills the expectation of immediate applicability to employment and enhancement of job performance is an organizational and intercultural communication certificate for those in social work, business management, and health care careers (Taylor, 1999). Medical research skills training provided through a medical

research certificate is a third example. These certificates counter the limited or lack of formal research training provided by medical schools, residencies or fellowships (Trachtenberg, Umans & McCarter, 2010).

Other examples of certificates that satisfy the need for bleeding edge technology skills abound. For instance, because applicants lacked the specific computer skills (HTML5) wanted by its corporate clients, a global staffing company (Aquent) offered a massive online open course (MOOCs) in HTML5. Aquent was then able to ultimately place 200 of the class' best students in jobs with its clients (Kane, 2014). In graphic design, the technology shift from print, to web, to mobile devices created the need for web designers, mobile designers, and new jobs such as user-interaction specialists and information architects. Targeted certificate programs were then created specifically for each of the skill sets needed by each occupation (Bessen, 2014).

Regarding Irby's (1999) last factor causing the expansion of certificate programs, the quantity of certificate providers, there is money to be made in certificate provision (an estimated \$100 billion dollar market). Today, all post-secondary institutions face economic constraints and all sources of revenue are important to them. For example, prior to 2008, the rate of closure or acquisition of private four year colleges in the US was five per year. By 2011, the rate of closure had doubled to 10 per year. There are predictions that as many as half of these 4,000 plus universities and colleges may fail in the next 15 years (McDonald, 2014). In addition, Moody's Investors Service took note that the U.S. Census reported university and college enrolment declined for the first time in six years in the fall of 2012 (Reuters, 2013).

These financial considerations for higher education institutions are directly relevant to this discussion regarding certificates. To remain economically viable, the education industry must supply the products and services its customers want and need. Education customers (students, their parents and employers) want/need/demand for education to be closely linked to post-education employment. Certificates have repeatedly been shown to respond to education consumers' demand for this type of education. Yet, Title IV eligible institutions are not the primary source of certificate programs. Apparently 60 percent of the money spent of formal career training was garnered by other types of trainers and certificate providers. "Georgetown University Centre on Education and the Workforce, estimated that [only] 40 percent of the annual \$140 billion spent on formal career training nationwide was garnered by educational institutions (Marcus, 2012, p.2)."

As noted by Goldsmith (2007), Rosenbaum and Rosenbaum (2013), and Cellini and Goldin (2014) there are many types of certificate providers. The organizations that award certificates include: colleges and universities, vocational and postsecondary programs, high school programs, employer sponsored programs, professional/ trade associations/unions, independent for profit programs, independent not for profit programs, and bogus programs (Goldsmith, 2007). Certificates provided by unions, trade associations, professional associations, industry associations, management training and other non-profit and for-profit corporations that provide educational, management, or technical services but are not per se 'schools' and, therefore, they are not counted by the United States government IPEDS system.

Cellini and Goldin (2014) identified institutions that are missed in IPEDS enrolment counts based on Title IV eligibility (federal student aid programs). They found that the non-Title IV eligible programs were almost entirely certificate or non-degree. In addition, the certificates and training they provided were primarily concentrated in the following academic disciplines: business, computer, health, transportation, personal and culinary services. Those institutions that were Title IV eligible charged tuition for their sub-baccalaureate (mainly certificate) programs that was about 78 percent higher than that charged by comparable programs in non-Title IV institutions, an example of price inflation directly related to a government program and how colleges and universities may price their programs out of the certificate market.

NATIONWIDE TREND IN CERTIFICATES AWARDED 1980 – 2013

Turning now to certificate programs at Title IV colleges and universities in the United States, the IPEDS data file structure changed at least four times between 1980 and 2013. Due to these differences,

IPEDS staff recommended downloading the data for each year separately. In order to conduct a comprehensive examination of the trend in certificates awarded nationwide over the data collection time period, this was done for this study. The total number of certificates awarded across 1,270 fields of study was downloaded separately for each year from 1980 to 2013 for the 7,313 Title IV institutions IPEDS identified and tracked.

The overall trend in certificates awarded was one of steady increase (Figure 1). The average annual increase as the number rose from 77,224 in 1980 to 1,018,135 in 2013 was 11 percent. That rate appeared to have been fuelled by two distinct strong periods of growth. The first period was from 1995 to 1997 and the second from 2002 to 2003. However, more recently, the number of certificates awarded has decreased each year for 2011, 2012, and 2013 (Table 3).

TABLE 3
CHANGE IN GROWTH RATE OF CERTIFICATES AWARDED

year	1995	1996	1997	2002	2003	2011	2012	2013
percent growth	0.19	0.34	1.51	0.10	0.13	-0.04	-0.04	-0.03

From 1980 to 1996, males and females were obtaining certificates in approximately even numbers. However in 1997, there was a surge in the number of certificates awarded to females. This change has continued with females outnumbering males in certificates awarded through to 2013.

FIGURE 1
ALL CERTIFICATES AWARDED BY ALL US INSTITUTIONS

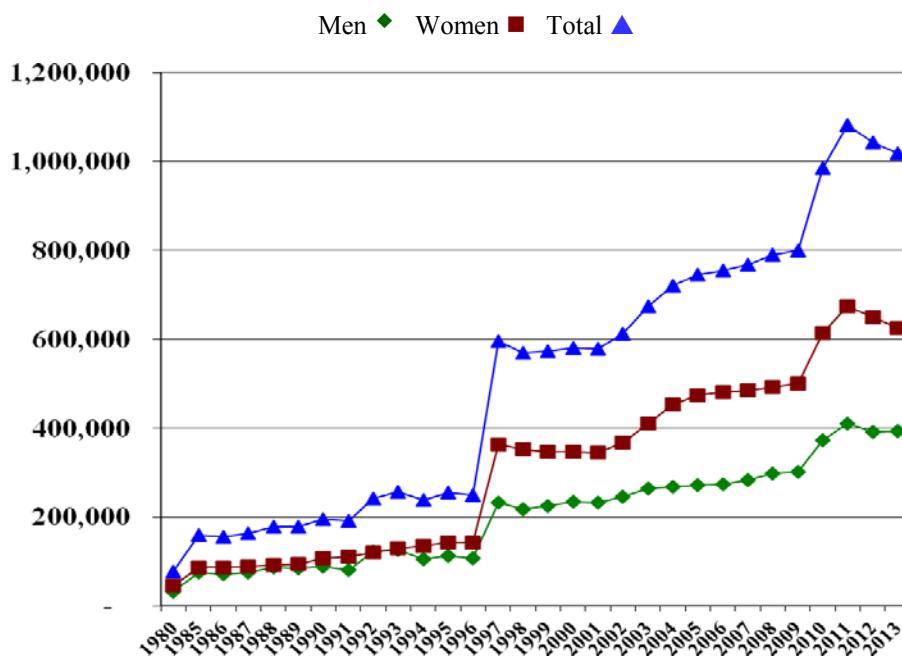
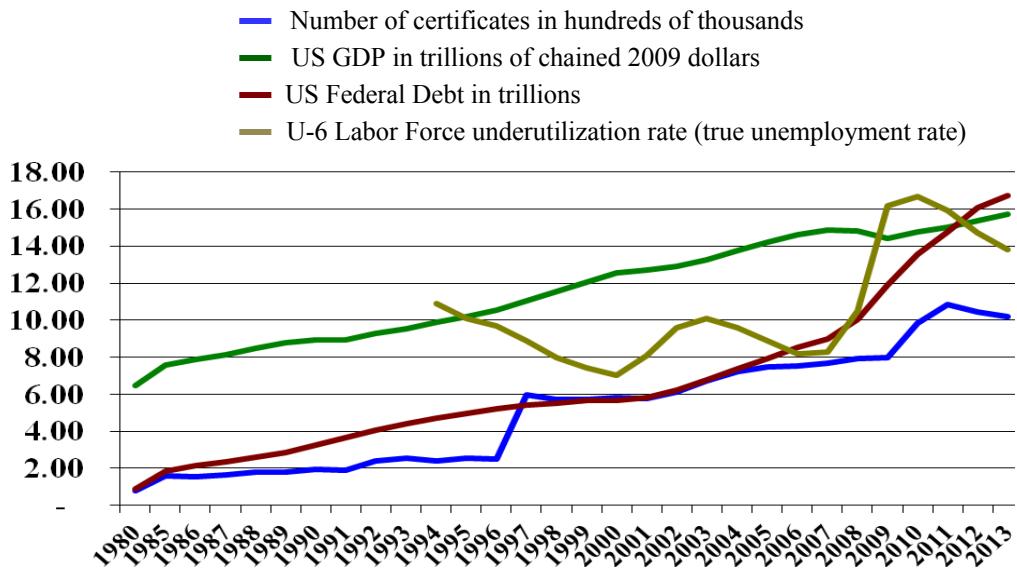


Figure 2 is a scaled model portraying the relative change in economic indicators over time with total certificates awarded. This figure appears to show a relationship between certificates awarded and the U-6 Labor Force underutilization rate (true unemployment rate).

FIGURE 2
SELECTED SCALED ECONOMIC MEASURES
WITH CERTIFICATES AWARDED 1980-2013



As shown in Table 4, there was a highly significant relationship between the total number of certificates awarded, the United States GDP and the US labor participation rate, with those two variables

TABLE 4
RELATIONSHIP BETWEEN CERTIFICATES AWARDED
AND SELECT ECONOMIC INDICATORS

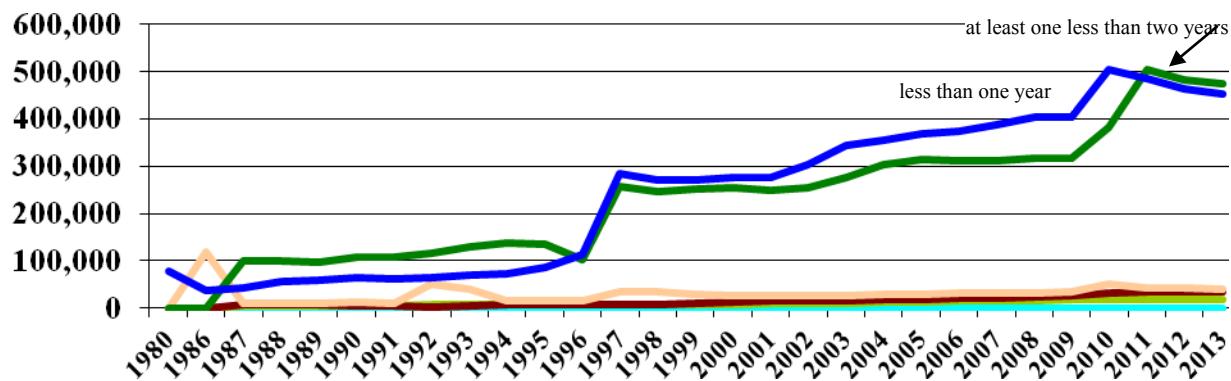
Dependent Variable: Total Certificates Awarded	R Square	Adj R Square	F	Sig.
Model	.893	.885		.000
	Standardized	Coefficients	t	Sig.
(Constant)			-2.559	.016
US Federal Debt		1.027	14.081	.000
US Civilian labor force participation rate 16 years and over		0.190	2.600	.015

explaining 89 percent of the variance in certificates awarded. From 2008, as the US economy has languished, real unemployment and the federal debt have remained high while the number of certificates awarded has declined. Examining the data by type of award (Figure 3), there were six types of time frames for the certificates awarded.

- Type 1:** Certificates that require less than one academic year
- Type 2:** Certificates that require at least one but less than two academic years
- Type 3:** Certificates that require at least two but less than four academic years
- Type 4:** Certificates with a Bachelors Degree prerequisite
- Type 5:** Certificates with a Masters Degree prerequisite
- Type 6:** Certificates with a Doctoral Degree prerequisite.

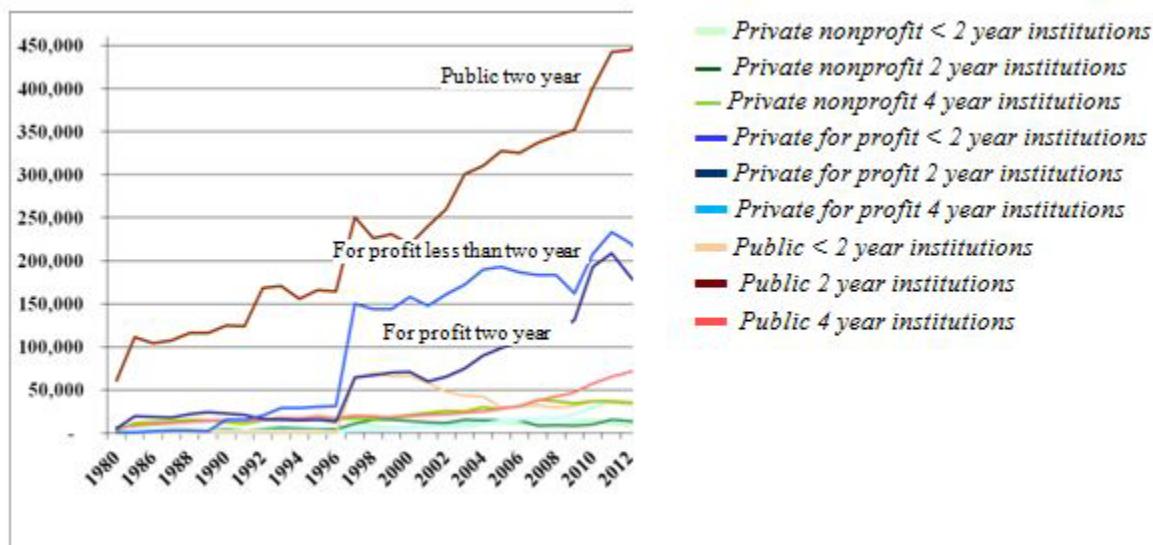
the majority of certificates awarded were acquired in either less than one year ([Type 1](#)) or less than two years of study ([Type 2](#)).

FIGURE 3
TOTAL CERTIFICATES AWARDED BY TYPE OF AWARD



The three types of institutions awarding the most certificates in order by total number of certificates awarded were: 1. [Public two year](#); 2. [For profit less than two year](#); and 3. [For profit two year](#) (Figure 4).

FIGURE 4
TOTAL CERTIFICATES AWARDED BY TYPE OF INSTITUTION



Public two year, for profit two year, and four year institutions dominate the provision of the three types of sub-baccalaureate certificates during the time period studied. Public and not for profit four year institutions award the overwhelming majority of post-baccalaureate and post-masters certificates. When they were reported and counted separately by IPEDS (1995 to 2009), post-doctoral (first professional) certificates were primarily awarded by non-profit four year institutions.

These IPEDS results suggest that the market response to the demand for timely knowledge and skills was steady growth in the supply of certificate programs at Title IV institutions. The enrollment increase of 11 percent possibly compensated for decreasing revenue from other sources during the period studied. Further research is needed to identify whether the slightly increased availability of jobs is the cause of the decrease in certificates awarded in more recent years or whether discouragement about job prospects has caused potential certificate students to delay or decide not to seek additional education to enhance their career prospects. Additional research is also warranted regarding the growing gender gap in certificates awarded. The field of study may be the determinant there, with females acquiring skill sets useful in traditional female occupations like health care, secretarial work, education, and food service.

The data did verify that the claim used to market certificates, that they can be obtained in relatively shorter periods of time, was true with the majority of certificate programs completed in less than a year or less than two years, unlike most degree programs. The absence of four year institutions in the provision of the two types of sub-baccalaureate certificates was notable. While the exploration of adding certificate programs in a time period of decreasing enrollments would need to be explored with caution by four year institutions, it may well behoove them, however, to identify in what type of fields that expansion might be warranted.

BEST PRACTICES

To ensure the quality and viability of these certificate programs, several authors have detailed best practices that their respective institutions implemented that others could emulate. To provide assistance in evaluating the costs of certificate programs for institutions, Hoopes (1991) published example budgets for both non-credit and credit certificates. She astutely advocated both the compilation and review of existing certificate programs' budgets on a continual basis and in-depth study of such budgetary data prior to university investment in new certificate programs.

Smith (1991) detailed the comprehensive approach George Washington University (GWU) had developed for certificate programs over a twenty year period. GWU started with the identification of which of fields of study to offer certificates for. It used systematic study of the geographic locale, state and region to identify those topic areas with an abundance of jobs and few qualified applicants. Next, GWU consulted with professionals in the organizations that would possibly be hiring GWU certificate graduates to identify the skill sets required for their jobs. The scope of all job opportunities in which the same skill set might be needed was then investigated. Next, GWU formally evaluated proposals for new certificate programs with market projections and budget analysis. Finally, GWU obtained detailed information about the career plans of graduates counseled by the university's career counseling service department to identify possible future certificate students.

Smith (1991) also relayed the GWU best practices developed for the administration of certificate programs to ensure quality and benefit to students and providers. Best practices for certificate program administration included: development of intensive coursework that could be completed in one year of evening classes; a five point comprehensive student applicant evaluation; and careful selection and evaluation of courses. The important features GWU ensured each certificate program had were: each part of the coursework had to be graded; students were required to maintain a B average; exclusive selection of instructors who were true experts in the topic area from a wide variety of types of organizations; and the requirement that the certificate coursework included development of student portfolios. The portfolios were then used by students to demonstrate mastery of the skills taught in the certificate program to employers. Other features also included were: a proactive placement service for certificate graduates; provision of financial aid (even if only in modest amounts); and admitting only cohorts of students sufficient in size to maintain financial viability of program with normal student attrition.

Van Rooij and Lemp (2010) evaluated 43 higher education e-learning certificate program websites, to identify how to improve online certificate programs. They found that US and international institutions made clear who offered the programs, the specifics of the programs, and who the programs were intended to serve. However, the programs neglected to inform the website viewer about the unique aspects of their

program, thus bypassing an opportunity to better their competitive advantage and further develop their institutional brand.

Finally, while Trachtenberg, Umans, and McCarter (2010) attempted to directly address the issue of quality by creating an evaluation/quality control structure as part of the certificate program for medical researchers they designed, their effort to establish a method to evaluate and improve the certificate program on ongoing basis was the exception, not the rule. Yet, potential students still need to identify which certificate programs best suit their needs and which ones will be worth the investment of time and money. Employers desire to use certificates to distinguish qualified from unqualified applicants. However, the proliferation of certificate programs, their variability in quality, and the range of types of institutions offering them, challenge employers and potential students to make efficacious assessments. The variability has been caused by three factors: no barriers to entry in the certificate provider market; no widely recognized independent review of certificate programs, and the demand for convenient and fast credentialing.

As in the early days of the founding of the university system in the US, the lack of standardization and evaluation in certificate programs was addressed by an organization outside the university system. In this case, the organization was one that had an established history in setting standards, whose history is presented in brief in Appendix C. While it may not be widely known in academe, there has been a standard for evaluating personnel certification and certificate programs for many years. In 2003, the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17024, Conformity Assessment - General Requirements for Bodies Operating Certification of Persons standard was established, focusing on the certification of personnel. The 17024 Checklist provides 46 pages of items to use to judge certification programs for personnel.

In 2009, ANSI established a second standard, ASTM International Standard E2659, whose focus is on providing a means for all types of certificate programs to be accredited. In its first pilot group of programs, a broad range of organizations with certificate programs sought accreditation, including Sullivan University, the U.S. Food and Drug Administration and the Federal Bureau of Investigation, and EdTrek Inc., a training and development organization (Enright, 2009). The pilot was successful and the ASTM E2659 standard was established. ANSI maintains a listing (that is kept current) of those organizations with ANSI accredited certificate programs. Certificate programs can, therefore, choose to become accredited so that students and employers will have an independent measure of their quality. In addition, governments can and have mandated that certificates will only be accepted from institutions whose certificate programs are ANSI accredited for employment in specific occupations. For profit and non-profit institutions could also institute this requirement.

The state legislatures in the states of Illinois and Arizona provide examples for organizations who hire those who handle food (ANSI, 2015c). In 2013, the Illinois legislature passed an amendment to an amendment of the Illinois Food Handling Regulation Enforcement Act. The amendment required that training providers issuing personnel certificates to food safety handlers in the state of Illinois must be accredited by the American National Standards Institute (ANSI) under the ANSI Certificate Accreditation Program (ANSI-CAP) (ANSI, 2015d). In 2014, Arizona House Bill (HB) 2436 was passed. It applied to all programs issuing certificates to individuals seeking to comply with Arizona counties' food handling training requirements, which would be food handling certificate programs. These certificate programs are now required to meet ASTM E2659, Standard Practice for Certificate Programs, an American National Standard. This provides an example of how quality education directly linked to employment can be provided that will serve both students and future employers well.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Certificates provide a template for education that is uniquely tuned to the current fast-paced world of technological advance. They potentially provide a way to train a workforce that is able to compete effectively in the global economy. In the US, they also might provide a means to increase educational attainment, especially for students in groups whose past record of attainment has been low. Post-

secondary institutions have varied widely in the extent to which they have explored how certificates can enhance the educational services they provide. Greater awareness of and participation in ANSI certificate program accreditation would enhance certificate program quality, removing one of the chief issues with variability in certificate quality.

The most ideal certificates will teach very applied, useful, and cutting edge knowledge, training, and skills that are highly valued in the workplace. Ideally, institutions offering certificates will seek to continuously improve the quality and timeliness of the certificate instruction provided. They will institute periodic reviews to evaluate the range of certificate topic areas offered to ensure the certificates they provide reflect the current and future needs of the workforce. Institutions can ensure sufficient attention is given to the success of non-traditional procedures that can enhance the educational experience and enable more successful outcomes for certificate students. In addition, they can explore: the use of certificates to cross-discipline train students at every academic level, the trial of new academic programs, and the investment of sufficient resources in marketing the certificate programs on offer to both prospective and current students. As with all educational initiatives, understanding the current, near-term, and long term economic prospects should undergird the thinking about and development of certificate programs, especially given the current declining rate of certificates awarded.

Particularly in times of economic constraint, several authors have noted that the provision of certificates is potentially lucrative for educational institutions through increased enrolments (Chang & Yuan, 2014; Gold & Jose, 2011). Taylor (1999) suggested an academic discipline could market the skills it teaches in the form of a certificate program to students in other disciplines. Patterson (2002) argued that certificate programs enable large, bureaucratic institutions to be more nimble in responding to a fast changing world that requires more specialized training (e.g. agroforestry, gaming management, identity theft prevention, financial regulatory compliance, multi-media design, survivability studies, etc.). This author also suggested that, through certificate programs, these institutions can be more responsive to potential students these institutions may not currently serve. These under-served potential students include: early learners needing remedial help to learn at all, those who have been out of school for an extended period of time and need to retrain, and recent graduates and highly trained professionals who lack/need a specific skill or knowledge.

Worldwide unemployment is predicted to increase from the present estimated 201 million to 212 million people by 2019 (ILO, 2015). Whether in economic constraint or prosperity, all resources invested to reduce unemployment should result in desirable outcomes. From a public policy perspective, it is imperative that private, public, and nonprofit sector leaders and organizations increase awareness about the type of education and training that can most quickly result in and sustain employment. Open-ended funding of post-secondary education to support obtaining knowledge and degrees that do not, will not, and cannot equip graduates to fill the available jobs that require specific knowledge and skills ill serves students, their families, donors, and the public. Particularly for education providers receiving public funds, it is imperative, that all levels and types of education supported by these tax revenues serve the societal need to train and equip graduates to be employed.

REFERENCES

- ANSI (2015a) ANSI website: Historical Overview. Retrieved from the Internet February 2015:
http://www.ansi.org/about_ansi/introduction/history.aspx?menuid=1
- ANSI (2015b) ANSI website: ASTM E2659 - 09e1 Standard Practice for Certificate Programs. Retrieved from the Internet February 2015: <http://www.astm.org/Standards/E2659.htm>
- ANSI (2015c) ANSI website: ANSI-Accredited Certificate Programs Fulfill Requirement of New Arizona Law on Food Handler Training. Retrieved from the Internet February 2015:
http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=2b4d8d93-0131-4ee4-9953-aad403f65787
- ANSI (2015d) ANSI website: New Illinois Law Requires that Food Handlers Receive ANSI-Accredited Certificate. Retrieved from the Internet February 2015:

- http://www.ansi.org/news_publications/news_story.aspx?menuid=7&articleid=ac1e099e-7238-45fd-9ad5-d771dd592fff
- Besson, J. (2014). Employers Aren't Whining, the skills gap is real *Harvard Business Review* August 25
 Retrieved from: <https://hbr.org/2014/08/employers-arent-just-whining-the-skills-gap-is-real>
- Boser, U. (2002). The new mini-degrees *U.S. News & World Report* 00415537 4/15/2002, 132:12.
- Cellini, S. & Goldin, C. (2014). Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges *American Economic Journal: Economic Policy* 6:4 174–206.
- Chang, W. & Yuan, J. (2014). Stepping Stones to Success: A Comparison of Stakeholder Groups on perceived benefits regarding professional certificates in gaming management *The International Journal of Organizational Innovation* 7:1 July 2014 149-160.
- Charles, E. (1983). Katherine Gibbs: More than Typing *New York Times* November 13, 1983. Retrieved from the Internet February 2015: <http://www.nytimes.com/1983/11/13/nyregion/katharine-gibbs-more-than-typing.html>
- Frijhoff, W. (1996) Patterns. In Hilde de Ridder-Symoens and Walter Rüegg (eds.) *A history of the university in Europe, Vol. 11, Universities in early modern Europe (1500-1800)* p. 43-113 Cambridge: Cambridge University Press.
- Enright, C. (2009). Ensuring the Quality of Certificate Programs *Standardization News* Nov/Dec 37:6 38-41.
- Gold, M. & Jose, S. (2011). An interdisciplinary online certificate and masters program in agroforestry *Agroforest Syst* 86 379–385.
- Goldsmith, S. (2007). ANSI Interest in Accrediting Certificate Programs presentation slides on ANSI website. Retrieved from the Internet 2015:
<https://www.ansica.org/wwwversion2/outside/documents/crt4.pdf>
- Holt, M. (1991). A rationale for certificate programs *New Directions for Adult and Continuing Education* v1991: n52 (Winter 1991) 3-10.
- Hoopes, J. (1991). The Economics of Certificate Programs *New Directions for Adult and Continuing Education* 52: 33-42.
- ILO (2015) Where will unemployment be the highest over the next five years? Retrieved from the Internet August 2015: http://www.ilo.org/global/about-the-ilo/multimedia/maps-and-charts/WCMS_336950/lang--en/index.htm
- IPEDS (2015). About IPEDS webpage. Retrieved from Internet February 2015:
<http://nces.ed.gov/ipeds/about/>
- Irby, A. (1999). Postbaccalaureate Certificates: Higher Education's Growth Market *Change* 31:2 (Mar. - Apr., 1999) 36-43.
- Kane, K. (2014). Aquent Launches MOOC Program to Transform Training for Creative Professionals *PRNewswire* Retrieved from the Internet February 2015: <http://www.prnewswire.com/news-releases/aquent-launches-mooc-program-to-transform-training-for-creative-professionals-214605151.html>
- Kenny, N., Watson, G. & Watton, C. (2014). Teaching Certificates in University Teaching *Canadian Journal of Higher Education* 44:3 1-19.
- Levine, D. (1986). The American College and the Culture of Aspiration, 1915-1940. New York: Cornell University Press.
- MacDonald, M. (2014). Small U.S. Colleges Battle Death Spiral as Enrollment Drops *Bloomberg* April 14, 2014. Retrieved from the Internet February 2015:
<http://www.bloomberg.com/news/articles/2014-04-14/small-u-s-colleges-battle-death-spiral-as-enrollment-drops>
- Mayer-Sommer, A. (1980). Public Accounting in 1929. *Accounting Historians Journal* 7:2 23-44.
- Marcus, J. (2012). The 'cash cow' of U.S. universities: Professional certificates instead of degrees *Hechinger Report* Retrieved from the Internet February 2015: <http://hechingerreport.org/the-cash-cow-of-u-s-universities-professional-certificates-instead-of-degrees/>

- NCES. (2012). U.S. Background Information Prepared for the OECD Postsecondary Vocational Education and Training ‘Skills Beyond School’ Study April. Retrieved from the Internet February 2015: <http://nces.ed.gov/surveys/ctes/pdf/PostsecVET.pdf>
- Patterson, W. (2002). Graduate Certificate Programs Pose Admissions Challenges Council of Graduate School's *Communicator*. Retrieved from the Internet February 2015: <http://www.gs.howard.edu/staffs-webpage/wayne-page/Graduate%20Certificate%20Programs%20Pose%20Admissions%20Challenges.htm>
- Reuters (2013) Dropping enrollment squeezes U.S. universities' revenues-Moody's *Reuters News Agency* Mon Sep 9, 2013. Retrieved from the Internet February 2015: <http://www.reuters.com/article/2013/09/09/usa-education-moodys-idUSL2N0H518G20130909>
- Rosenbaum, J & Rosenbaum, J. (2013). Beyond BA Bindlers: Lessons from Occupational Colleges and Certificate Programs for Nontraditional Students *Journal of Economic Perspectives* 27:2 Spring 153–172.
- Shaw, J. (2012). Boosting paychecks without a degree *USA Today* Section: News JUN 15, 2012 p. 11a.
- Smith, A. (1987). The relationship of age, sex, education, experience, income, and field of preparation to job satisfaction of university career certificate graduates Unpublished doctoral dissertation, School of Education and Human Development, George Washington University.
- Smith, A. (1991). An Institutional History of Certificate Programs at George Washington University *New Directions for Adult and Continuing Education* 52:63-75.
- Stettler, H. (1975). Certificate Programs: Certified Internal Auditor *The Accounting Review* 50:4 904-907.
- Sykes, A. (2012). Defining and Reporting Subbaccalaureate Certificates in IPEDS (NPEC 2012-835) U.S. Department of Education Washington, DC: National Postsecondary Education Cooperative Retrieved from the Internet February 2015: <http://nces.ed.gov/pubsearch>.
- Taylor, O. (1999). Should communication departments offer their students postbaccalaureate certificate programs? *Spectra* November p. 2.
- Thelin, J., Edwards, J., Moyen, E., Berger, B. & Calkins, M. (2004). Higher Education in the United States. Retrieved from: <http://education.stateuniversity.com/pages/2044/Higher-Education-in-United-States.html>
- Trachtenberg, R., Umans, J., & McCarter, R. (2010). A Mastery Rubric: guiding curriculum design, admissions and development of course objectives *Assessment & Evaluation in Higher Education* 35:1 January 17–35.
- Van Rooij, S. & Lemp, L. (2010). Positioning e-Learning Graduate Certificate Programs: Niche Marketing in Higher Education *Services Marketing Quarterly* 31 296–319.

APPENDIX A

Exhibit B-1. Comparison of certificate definitions in federal data collections Agency/Data collection	What is included in definition of certificate?	What to exclude?
NCES IPEDS Completions component	<p>Formal awards conferred as the result of completion of an academic or occupational/vocational program of study.</p> <p>The instructional activity completed as part of the program of study must be credit-bearing, but can be measured in credit hours, contact hours, or some other unit of measurement.</p> <p>Awards conferred by the postsecondary institution.</p>	<p>Awards earned, but not yet conferred.</p> <p>Awards conferred by branches of your institution located in foreign countries.</p> <p>Honorary degrees.</p> <p>Awards conferred by an entity other than the postsecondary institution (such as the state, or an industry certificate).</p> <p>Informal awards such as certificates of merit, completion, attendance, or transfer.</p> <p>Awards earned as the result of an avocational, basic skills, residency, or other program not recognized by IPEDS as academic or occupational/vocational.</p>

Department of Labor WIA Performance Measures	Certificates awarded by: A state educational (including vocational/technical education) agency. Postsecondary institutions eligible to participate in federal student financial aid programs. A professional, industry, or employer organization (e.g., National Institute for Automotive Service Excellence certification) or a product manufacturer or developer (e.g., Microsoft Certified Database Administrator). A registered apprenticeship program. A public regulatory agency (e.g., Federal Aviation Administration aviation mechanic certification, state certified asbestos inspector). A program that has been approved by the Department of Veterans Affairs. Job Corps centers that issue certificates. Tribal colleges.	Certificates awarded by workforce investment boards and work readiness certificates.
Bureau of Labor Statistics Educational/Training Classification System	Classifies certificates as ‘postsecondary nondegree awards’ and states that a ‘certificate is the result of the completion of formal postsecondary schooling awarded by the educational institution.’	Certification issued by a professional organization or certifying body.

Source: Sykes, A. (2012). Defining and Reporting Subbaccalaureate Certificates in IPEDS (NPEC 2012-835). U.S. Department of Education. Washington, DC: National Postsecondary Education Cooperative. Retrieved [date] from <http://nces.ed.gov/pubsearch>.

APPENDIX B

In the United States, the federal Department of Education was established in 1867 to collect education data. The Title IV of the Higher Education Act of 1965 mandated that information must be provided to the US Department of Education by all institutions participating in any federal student financial aid program (such as Pell grants and federal student loans) authorised by Title IV of the Higher Education Act of 1965, as amended (20 USC 1094, Section 487(a)(17) and 34 CFR 668.14(b)(19)). This specific mandated provision and collection of data began in 1966. As the collection continued, the Department expanded the type of information that had to be submitted by all the organizations to which the Title IV mandate applied.

In 1985, a subunit (Integrated Postsecondary Education Data System (IPEDS)) within the Department was established to collect and make available mandated postsecondary education data. The IPEDS began its collection in 1986 (IPEDS, 2015). The IPEDS tracking system only counts those certificate programs offered at institutions subject to the Title IV mandate. These institutions are categorized by IPEDS according to their sector (public, private, or not-for-profit) and their degree program time period (< 2 yrs, 2yrs, and ≥ 4yrs) as follows:

Public, less-than 2-year

Public, 2-year

Public, 4-year or above

Private not-for-profit, less-than 2-year

Private not-for-profit, 2-year

Private not-for-profit, 4-year or above

Private for-profit, less-than 2-year
Private for-profit, 2-year
Private for-profit, 4-year or above (IPEDS, 2015).

APPENDIX C

In 1916, five organizations (American Institute of Electrical Engineers (now IEEE) invited the American Society of Mechanical Engineers (ASME), the American Society of Civil Engineers (ASCE), the American Institute of Mining and Metallurgical Engineers (AIME) and the American Society for Testing Materials (now ASTM International)) joined together to bring into existence an organization that would be national in scope and impartial in its mission, outlook, and function to coordinate: “standards development, approve national consensus standards, and halt user confusion on acceptability (ANSI, 2015a).” At the time, these five organizations’ shared membership in another organization, the United Engineering Society (UES), joined with the U.S. Departments of War, Navy and Commerce to establish the American Engineering Standards Committee (AESC) that over time became the American National Standards Institute (ANSI). It was and has remained a private, non-profit (501C3) organization that “oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States (ANSI, 2015b).”