Giving Credit Where Credit is Due:

Creating a Competency-Based Qualifications Framework for Postsecondary Education and Training

CLASP
policy solutions that work for low-income people

APRIL 2011 | EVELYN GANZGLASS, KEITH BIRD & HEATH PRINCE

Executive Summary

Incomes, job security, and economic growth increasingly depend on postsecondary credentials with value in the labor market.

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. With the inexorable shift in the global economy toward a demand for higher-order skills, this labor market maxim is more relevant than ever, leading economist Anthony Carnevale to refer to access to postsecondary education and training as the "arbiter of opportunity in America."[1] Success in the labor market increasingly requires workers to demonstrate competencies in thinking critically and applying new skills to ever more complex technology, as well as to demonstrate the ability to learn wholly new skills in short order—in short, workers must have the sort of preparation provided through postsecondary education.

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The need for a workforce that is better prepared to compete in the global economy has not gone unrecognized by policymakers and advocates. For evidence of this, we need only look as far as the current administration's emphasis on dramatically expanding the number of high-quality postsecondary credentials awarded over the near term, or at the rapidly increasing foundation investments devoted to ensuring postsecondary and economic success. At the same time, the chaos in the nation's current credentialing system and the lack of clarity over the consistency and market relevancy of degrees or other credentials that lack third-party validation confuses employers and consumers alike.

A vast number of adults in the labor market engage in creditworthy occupational education and training, but, in the absence of a system that can equate noncredit occupational education and training to educational credit, they cannot translate their education and training into postsecondary credit.

Often overlooked in discussions of increasing the number and quality of postsecondary credentials awarded is that a great deal of credit-worthy education and training is taking place, but it is often disconnected from educational pathways that could lead to postsecondary certificates or degrees. Noncredit occupational education and training

are estimated to make up nearly half of all postsecondary education. Often, it is provided by faculty or instructors who are subject-matter experts, and, in many cases, it is academically equivalent to credit-bearing instruction.

Despite this potential parity in instructional rigor, workers and students who persist through demanding noncredit occupational education and training programs too often must repeat their coursework when they attempt to pursue postsecondary credentials, primarily because the credit hour, and not competency, is the dominant metric for assessing learning.

A major roadblock in creating such a system is a continued reliance on the credit hour, or seat time, as the metric for learning. What is needed is a system that assesses competency to measure learning.

The postsecondary education system lacks a standardized method of determining the worth of occupational education and training that takes place outside or on the margins of postsecondary institutions. However, given the growing importance of postsecondary credentials to economic success, this disconnect of high-quality, noncredit education and training from education that can be counted toward a degree suggests a gaping hole in education policy and in employment and training policy.

National Challenge

There is a wide variety of credentials, but without common metrics or quality assurance mechanisms, they are not portable and their value is not clear to employers, educators, or students.

Awarding educational credit simply for the sake of increasing the number of workers with credentials would be counterproductive—and it would likely undermine the legitimacy of postsecondary occupational certificates and degrees. The challenge for the U.S., then, is to devise a competency-based framework within which states and institutions can award educational credit for academic-equivalent competencies mastered through formal and informal occupational education and training. Educational credit based on competence, rather than on time, would result in a postsecondary credential that is portable, accepted by postsecondary institutions, and recognized across industry sectors.

Such an outcome-focused framework would bridge the gulf between credit-bearing and noncredit-bearing workforce education and training programs, and make occupational credentials more transparent and relevant to employers, workers, and educational institutions. Such a framework could also drive higher education toward industry-responsive curricula, with the potential of creating better employment and career outcomes for students. With the ability to earn postsecondary educational credit by demonstrating competencies, it becomes irrelevant whether a student obtains competence through a noncredit or credit-bearing path.

There are national, state, and institutional efforts to address this problem, but they are insufficient compared to the scale of need.

A competency-based framework for noncredit occupational education could be used to create a common language to describe outcomes of any learning, whether credit-bearing or noncredit, and thereby provide a metric for valuing noncredit learning and its applicability to postsecondary educational credentials with value in the labor market.

State-level policy and institutional-level innovation have led to a variety of approaches to awarding educational credit for learning achievements in noncredit workforce programs. However, these are limited in scale and vary widely in methodology and cost. A nationally adopted competency-based framework for converting noncredit occupational education and training to credit-bearing would not only help bring state-level innovations to scale but could also introduce some uniformity into a chaotic certifications arena.

Giving Credit Where Credit is Due

This report seeks to contribute to the conversation about how to move the postsecondary and employment and training fields toward a qualifications framework for awarding educational credit for occupational education and training based on demonstrated competencies. It begins with a brief overview of sub-baccalaureate education, looking specifically at disconnects in the current system—disconnects between credit and noncredit programs, as well as disconnects between education and training provided by educational institutions and that provided by employers, the military, community-based organizations, and a host of others. The report then examines federal, state, and institutional efforts to better assure the quality of credentials and to bridge noncredit and credit-bearing instruction.

Next, the report looks at a consensus-building process developed among European countries for creating more consistent expectations regarding postsecondary learning outcomes, as well as at efforts underway to apply this process to the U.S. postsecondary education system. This process suggests an approach to creating a qualifications framework that would enable postsecondary institutions to reliably and consistently award educational credit for noncredit workforce education and training, regardless of where and how the training occurred.

Recommendations

Our recommendations build on the best elements of these examples in order to create a competency-based system for measuring learning and awarding postsecondary credit.

Creating a qualifications framework that can incorporate noncredit instruction will be a significant undertaking, made all the more complicated by the highly decentralized system in which U.S. institutions offer noncredit instruction. To reach the scale necessary to achieve the numbers of credentials called for by the Obama Administration, we recommend that the federal government, foundations, and states take the following steps:

- **Create a national, competency-based framework for U.S. postsecondary education that includes certificate-level workforce education and training.** We recommend that this framework focus on one-year certificates and be modeled on Lumina Foundation's initiative to establish learning outcomes for multiple levels of academic credentials. It should be constructed with the input from multiple participants, including education, workforce, and employer stakeholders.

- **Reduce institutional barriers between credit- and noncredit-bearing education.** We call on the federal government, states, foundations, and educational institutions to support the implementation of policies and practices that will dramatically increase the linkages between credit and noncredit education in the short-term, both to meet current need and to lay the groundwork for longer-term reforms.

- **Link data systems to provide a more comprehensive picture of student learning outcomes.** We recommend that the federal government, states, foundations, and educational institutions support efforts at

all levels to improve and link data collection systems within a national framework, particularly efforts related to tracking noncredit students as they advance through the postsecondary education system.

Introduction

The national goal of increasing postsecondary credentials, to improve both equity and economic competitiveness, requires a fresh look at how to recognize learning in noncredit workforce education and training. The credit hour[2] has long been the standard academic currency in postsecondary education. Despite its weakness as a measure of learning, in most institutions it is the building block that students collect and accumulate in order to earn their degrees. It also is the metric governments use to allocate funds to educational institutions.

However, there is no standard way of valuing *noncredit* learning and assessing and documenting its equivalence to credit courses and programs. This is despite a growing recognition of alternative ways for students to learn, including competency-based learning. As a result, noncredit learning leads to no credential at all, rather than to an industry-recognized or postsecondary credential.

Determining a method for validating noncredit learning is increasingly important as the proportion of skills developed by workers outside credit-bearing channels grows. Yet discussions about the number and quality of postsecondary credentials awarded often overlook the amount of education and training, worthy of educational credit, which is disconnected from educational pathways that could lead to a postsecondary certificate or degree. Noncredit occupational education and training—whether affiliated with an educational institution or not— is estimated to make up nearly half of all postsecondary education. A great deal of this instruction is demonstrably equivalent to credit-bearing instruction, and it is provided by a wide range of institutions, including postsecondary institutions and non-educational organizations, and by faculty and instructors who are experts in their fields.

This disconnect between noncredit workforce learning and postsecondary credentials sets up barriers for workers seeking to advance in the labor market or along an educational pathway, and it also contributes to the difficulties employers face when trying to find workers with the appropriate sets of skills and knowledge. A number of reports, including ETS's *America's Perfect Storm*[3] and the Workforce Alliance's *America's Forgotten Middle-Skill Jobs,*[4] document the gap between the skills of the workforce and those that employers seek, along with the need to address that gap in light of both demographic changes and the new skills that will be required in the next decade and beyond to help the U.S. compete globally. Even at the height of the recession, 32 percent of surveyed companies reported moderate to serious shortages in the hiring pool. Increasingly, global competitiveness and employability are advanced by an accurate assessment of competencies, up-to-date and certified education and skills standards, and appropriate learning content and training methods.

As the labor economics literature has reported for decades, "credentials count" for individuals in terms of lifetime earnings, labor market mobility, and family well-being. While earnings vary widely across various types of educational and industry credentials, based on such factors as occupation, industry, gender, and duration of program,[5] it is clear that the "sheepskin effect" holds. Students completing sub-baccalaureate occupational degree programs generally earn significantly

Why Credentials Matter. . .
We will never be able to clean up the general mess of the U.S. labor market without a stronger commitment to credentials and a system of common standards that supports them. A competency-based credentials system reduces employer search and transaction costs, increases worker security, and can guarantee quality work and quality jobs.
From *Greener Skills: How Credentials Create Value in the Clean Energy Economy*, Center on Wisconsin Strategy, 2010

more than those who participate in an equivalent amount of postsecondary education and training but do not earn the degree or certificate (although these earnings gains are limited primarily to female students).[6]

With increasing frequency, the federal government is emphasizing the importance of determining how to scale up the practice of awarding educational credit for currently noncredit education. In its Solicitation for Grant Applications for the Trade Adjustment Assistance Community College and Career Training grants program, the Department of Labor specifically calls for increased attainment of market-relevant credentials. One of the SGA's four priorities is to "improve retention and achievement rates and/or time to completion" by, among other things, "developing an articulation process or agreement that grants academic credit for participants' coursework (credit and non-credit), prior work experience, internships and/or Registered Apprenticeship."

The disconnect between noncredit workforce preparation and postsecondary credentials is a potential barrier to innovation and to effectiveness and efficiency within institutions. The incentive to award credit on any metric other than credit hours is potentially undermined because the credit hour is also the primary metric upon which faculty pay is based, an especially important consideration given the trend toward reliance on part-time faculty paid solely based on the number of classes and students they teach. Innovation and efficiencies gained through, for example, team teaching and interdisciplinary courses, are sometimes hindered out of fears that faculty will not get full credit for their work.[7] Further, the disconnect between the credit and noncredit sides of community colleges hinders the sharing of best practices and takes some pressure off the credit side to be responsive to diverse employer and student needs.

Credit Hours or Competencies?

While many employers use educational credentials as proxies for competence when making hiring decisions, they often complain that these credentials are based on inputs (e.g., hours of class time) rather than outcomes representing the specific competencies they seek.[8] The general lack of consistency between what educational credentials purport to represent and the expected competencies possessed by those who earn them has contributed to the proliferation of industry and professional-based certificates and certifications, particularly in the health care, high-tech, and emerging "green energy" industries. The institutions providing these certificates (which are typically one year or less and include industry-recognized or professional association certifications) assert that their graduates have the competencies that industry requires—although with varying degrees of validity as to such claims.

Policies and practices that can begin to standardize the process for awarding credit for noncredit courses, and otherwise help students earn credits leading to postsecondary credentials, are likely to produce better labor market outcomes for these students. In a December 2009 report, the Business Roundtable Commission reached the same conclusion, noting that granting educational credit for earning sub-baccalaureate, industry-recognized credentials is a vital component of assisting workers as they seek to gain postsecondary degrees and certificates of value in the labor market, and also of assisting employers to make the best hiring and promotion decisions.[9]

Moving the Field

The challenge for the U.S. is to devise a competency-based framework within which states and institutions can award credit for competencies mastered through noncredit occupational education and training, and ensure those credits will be accepted by postsecondary institutions and recognized across sectors. Such an outcome-focused framework would bridge the gulf between credit-bearing and noncredit workforce education and training programs

and make occupational credentials more transparent and relevant to employers, workers, and educational institutions. Such a framework could drive the higher education system toward industry-responsive curricula, potentially improving employment and career outcomes for students. With the ability to earn postsecondary educational credit by demonstrating competence, it becomes irrelevant whether a student obtains this competence through a noncredit or credit-bearing path.

A competency-based framework for noncredit occupational education could be used to standardize the language for describing learning outcomes of credit-bearing and noncredit courses. This would provide a metric for measuring noncredit learning and its applicability to postsecondary educational credentials with value in the labor market. With a well-developed and efficient methodology for determining the competencies required for a specific program and career path, and for measuring and assessing student achievement, the system could also maintain the flexibility and responsiveness associated with noncredit programs.

State-level policy and institutional-level innovation have led to a variety of approaches to awarding educational credit for learning achievements in noncredit workforce programs. However, these are limited in scale and vary widely in methodology and cost. A nationally adopted competency-based framework for converting noncredit occupational education and training to credit-bearing would not only help bring state-level innovations to scale, but could also introduce uniformity into a chaotic certifications arena.

The Disconnects Between Credit and Noncredit Programs[10]

The need for a competency-based framework is made all the more compelling when considering the systemic disconnects within the highly diverse sub-baccalaureate education and training sector. There are disconnects between credit and noncredit educational programs, as well as between education and training provided by educational institutions and that provided by employers, the military, community-based organizations, and a host of others organizations. These disconnects comprise the operational and financing disincentives that have to be overcome in creating in a new system.

The State of the Noncredit Field

Recent research by the Georgetown Center on Education and the Workforce estimated that 20.8 million students are enrolled in noncredit programs, representing nearly half of the nation's overall postsecondary enrollment of 43 million postsecondary students. Approximately 13 million of the students in noncredit programs are enrolled in two- and four-year public and for-profit institutions; approximately 7.8 million are enrolled in occupational programs outside of educational institutions, including apprenticeships and formal and informal training provided by employers, professional associations, labor unions, labor management partnerships, the military, community-based nonprofit organizations, and a variety of for-profit vendors. Looking just at the nation's 1,173 two-year colleges in 2009, these institutions served over 6.5 million students in credit programs and an estimated 5 million students in noncredit education and training. The offerings included customized programs for employers and incumbent worker workforce programs for advancement in existing jobs or new careers, English as a Second language instruction, and other employability skills and courses for personnel enrichment.[1112]

Despite their increasing presence in postsecondary education, noncredit occupational programs are generally accorded very low status in the community college program hierarchy. This results in less funding and less influence over institutional decisions related to curriculum approval.[13] Twenty-eight states provide some institutional support for noncredit occupational programs, but it is substantially less than for credit-bearing programs. Only three states (Maryland, Oregon, and Texas) provide formula funding for noncredit education at a comparable rate to credit-bearing courses; eight states provide formula funding at a lower rate.

Disconnects Between Credit-bearing and Noncredit Programs

Noncredit programs have diverse purposes, serve diverse customers, and are commonly administered by different administrative units than credit-bearing programs, which typically also have different policies, practices, and funding arrangements. As colleges and other organizations have developed programs to serve employers and more "nontraditional" students, including working adults, they have frequently relied upon the flexibility of noncredit offerings to provide innovative, contextualized, modularized courses and programs linked closely to labor market needs.

While this flexibility improves the ability of noncredit education to respond to diverse purposes and diverse customers, it suffers by comparison to credit-bearing instruction along several fronts, including:

Inconsistent and incomplete data on programs and students. Since noncredit postsecondary education operates largely outside the traditional discussions of postsecondary policy, most federal and state data collection systems exclude these programs. The federal *Integrated Postsecondary Education Data System* (IPEDS) collects data only

on students enrolled in credit-bearing programs. It does not even count students enrolled in for-credit but non-degree programs. State and institutional data systems use different metrics for counting credit and noncredit programs, and they differ in their metrics for counting noncredit education (e.g., hours of training, unduplicated enrollment, type of programs, outcomes). Neither the federal government nor the states collect data on certificates and certifications offered outside education.

Inconsistent metrics and processes for assuring quality. There are no consistent measures or processes for assessing program effectiveness. Noncredit education is not subject to academic or faculty protocols associated with securing approval to offer courses for credit. Moreover, noncredit programs offered by community colleges use diverse measures of quality, reflecting their diverse purposes and customers. For example, the accountability measures for training low-income adults and dislocated workers funded through the Workforce Investment Act focus on students' employment and earnings outcomes, while the effectiveness of training customized to employers' specifications may be measured in terms of improved worker performance. Other training may be measured in terms of students' success in passing industry certifications or earning professional licenses.

Further, there is a clutter of private-sector certifying and accrediting bodies, each with its own protocols and quality-assurance mechanisms. While some employer-financed education leads to postsecondary credentials or degrees—for example, through tuition reimbursement programs—most employer-sponsored and employer-funded technical training is noncredit, and offered either by the employer directly or by educational institutions or private vendors.

Limited transferability between noncredit and credit-bearing programs. Although two-thirds of states have enacted policies and practices, such as common course numbering, to make it easier to transfer credit from one institution to another, most such decisions rely on faculty determinations about equivalencies. Similarly, although about 60 percent of institutions have policies making it possible to award credit for prior learning, this option is vastly underutilized. In part, this is because credit-transfer rules are applied inconsistently and because faculty members disagree about what should constitute articulation agreements.[14]

Lack of transparency about what credentials represent. The credential landscape is crowded, chaotic, and confusing to individuals, institutions, and employers who are trying to navigate through the education and training system and make choices that will give them access to the appropriate programs and credentials. The credential marketplace includes credit and noncredit certificates, educational degrees (e.g., diplomas, Associate's degree, Bachelor's degrees), registered apprenticeship certificates, and other credit and noncredit certifications of skills attainment. In some cases, students receive industry-approved certifications based on standardized tests; in other cases, they earn industry-approved licenses; in many cases, individual institutions offer certificates for completion of courses or programs with or without third-party validation. Some certificates target general learning outcomes; others reflect specific occupational competencies.

Critics of the current state of affairs in the U.S. also note that credentials are not always transferable across programs and geographies, and many pathways to credentials are expensive. These pathways are not always available in all locations and competencies. And analyses of job task analyses and knowledge, skills, and abilities are sometimes defined or assessed inconsistently in key areas such as field capabilities.

The lack of common definitions and standards underlying the myriad occupational credentials in the marketplace contributes to confusion about which ones represent value, and how they relate to academic credentials. Moreover, the paucity of industry-recognized credentials for lower-skilled jobs makes it difficult to build on ramps to good jobs for low-skilled workers.

Efforts to address these problems and disconnects have taken on a variety of forms. The following section examines recent attempts, at the federal, state, and institutional levels, to better assure the quality of credentials and bridge noncredit and credit-bearing instruction.

National Efforts to Assure the Quality of Credentials

The U.S. is one of the few industrialized countries in which a public-private partnership promotes and facilitates the development of voluntary industry standards, conformity assessment systems, and the safeguarding of their integrity. Through an open and transparent consensus process involving key stakeholders, the American National Standards Institute (ANSI) is involved in everything from the size of screws to the quality of credentialing systems. Other organizations perform similar functions—the Institute for Credentialing Excellence, American Council on Education, and the Association of Test Publishers, to name only a few, work to ensure the quality of assessment and credit transfer. However, ANSI is perhaps the best illustration of the sort of broad-based, voluntary national standards organization that could serve as a model for creating a competency-based framework for noncredit occupational education.

The ANSI Federation is the sole U.S. representative to, and is active in governing, the International Organization for Standardization (ISO). ANSI is made up of nearly 1,000 U.S. businesses, professional societies and trade associations, standards developers, government agencies, institutes, and representatives of consumer and labor interests. It encompasses 125,000 companies and 3.5 million professionals. Through its members, staff, constituents, partners, and advocates, ANSI responds directly to the standardization and conformity assessment interests and needs of consumers, government, companies, and organizations.

ANSI accredits organizations whose standards-development process meets all of its requirements to develop American National Standards. This accreditation is favorably recognized by government because it is open and transparent and requires public comment, somewhat analogous to the Federal Register process for inviting comments.

In the education arena, ANSI accredits certification organizations and, since 2009, educational certificate programs based on American National Standards or ISO International Standards. To date, ANSI has accredited 30 certification bodies, and is in the process of accrediting 18 more. Most applicants for accreditation of certificate programs have been associated with noncredit courses, are in professional associations, or are in industries not associated with a formal educational institution.[15]

To assure the quality of certificate programs for both employers and individuals, the ANSI certificate accreditation process uses these criteria:[16]

- The overall quality of the educational process, requiring that:
  - Learning outcomes are based on industry input and have market value; and
  - The content taught is in alignment with measureable learning objectives.
- Assessment tools measure learning outcomes.
- Infrastructure assures the continual success of the certificate program.
  - A process ensures the continuous improvement of the course/training in regard to:
  - Maintaining the currency of the content;
  - Effectiveness of the teaching methodologies;
  - Student success in the workplace; and Student satisfaction.

National, State, and Institutional Innovations in Crosswalking Credit and Noncredit Learning

In response to the urgent need to award educational credit for occupational instruction that takes place outside traditional, credit-bearing venues, a number of states and institutions have begun to move away from relying primarily on the credit-hour and toward including demonstrable competencies, or mastery of skills or knowledge, as the defining standard or "currency" by which to measure instruction and award credentials.

Much of this innovation in matching noncredit learning to credit-bearing courses in the two systems falls into three broad categories:

- Evaluation of prior learning through assessments of life and work experiences to document learning that is equivalent to college-level courses or competencies;
- Preapproval of courses through an articulation process or agreement that permits "crosswalks" or the determination of equivalencies between credits and industry certifications and other noncollegiate learning; and
- Integrating noncredit learning into credit-bearing courses of study.

Credit for Experiential and Prior Learning

Evaluation of experiential or prior learning includes a variety of methodologies, including portfolio assessments, standardized exams, and credit recommendations based on institutional or third-party evaluators of credit using nationally recognized criteria to recommend credit equivalencies for noncredit learning. Below, we provide three examples of national efforts to help adults earn "credit where credit is due" by promoting the use of prior learning assessments (PLA) in college. These national resources are used at the state and institutional levels to crosswalk credit and noncredit learning.

- *LearningCounts.org*, a two-year pilot program designed to bring prior learning assessments to scale;
- The American Council on Education's *College Credit Recommendation Service* (CREDIT) and Military Evaluations Program, which evaluates and validates noncredit instruction for the purpose of helping adults gain educational credit for workplace learning;
- *National Program on Noncollegiate Sponsored Instruction*, which reviews formal courses and educational programs sponsored by noncollegiate organizations and makes postsecondary-credit recommendations on behalf of program participants to colleges.

LearningCounts.org. Since 1974, the Council for Adult and Experiential Learning (CAEL) has established and disseminated standards for awarding credit through prior learning assessment. It has also trained faculty evaluators and conducted research on the outcomes of these efforts (see box). CAEL encourages institutions to offer a range of PLA options—including standardized exams, challenge exams, and formal evaluation of noncredit instruction—but it places special emphasis on the portfolio method of assessment.

PLA is receiving renewed interest as a means of saving students time and money and accelerating and assisting the attainment of postsecondary credentials. A recent CAEL study of more than 62,000 adult students at 48 institutions nationwide reported that students with PLA credit had higher graduation rates, better persistence, and lower time to

degree, compared with students without PLA credits. According to the study, student advisors believe that earning PLA credit can motivate students to persist in their studies and complete their degrees. It also serves as a motivating factor for students to know that they have already learned at the college level.[17]

However, institutions often under-promote and underutilize PLA programs. In 2006, CAEL found that while 66 percent of higher education institutions offered the portfolio method of assessing experiential learning, many of these serve very few students annually. A 2010 CAEL survey of 88 institutions demonstrated that PLA had limited use in community colleges and served few students. When asked about these low usage rates, respondents stated that PLA offerings were often inconsistent across colleges and departments, not promoted or advocated by advisors or faculty, or too narrow in scope or availability to meet students' needs.[18]

Many postsecondary institutions offer the portfolio method of assessment. Typically, students can prepare a portfolio by writing about their learning, making a video of themselves performing a task, providing a product of their work, or having a third party verify their knowledge. College faculty evaluate the documentation—or portfolio. If what the student has submitted is at the same level as what a successful student in a traditional college-level course could produce, a college faculty member recommends that the student receive college credit. While this option is available to many students, faculty evaluators must be trained to do the assessments according to nationally accepted standards like CAEL's. Therefore, institutions often find it difficult to offer the portfolio option to many students or across a range of disciplines.

CAEL's focus on PLA is motivated, in part, by the findings from a recent study, *Fueling the Race to Postsecondary Success.* CAEL examined data on 62,475 adult students at 48 colleges and universities across the country, and found that students with PLA credit completed degrees at much higher rates than students without it. PLA students also had higher persistence rates and a faster time to completion.[19]

CAEL has developed a program to scale up PLA and the number of adults who would benefit from access to these programs to achieve

CAEL's 10 Standards for Assessing Learning

1. Credit or its equivalent should be awarded only for learning, not for experience.
2. Assessment should be based on standards and criteria for the level of acceptable learning that are both agreed upon by key stakeholders and made public.
3. Assessment should be treated as an integral part of learning, not separate from it, and should be based on an understanding of learning processes.
4. Appropriate subject matter and academic or credentialing experts should determine credit awards and competence levels.
5. Credit or other credentialing should be appropriate to the context in which it is awarded and accepted.
6. If awards are for credit, transcript entries should clearly describe what learning is being recognized; the credit awards should be monitored to avoid giving credit twice for the same learning.
7. Policies, procedures, and criteria applied to assessment—including provision for appeal—should be fully disclosed and prominently available to all parties involved in the assessment process.
8. Fees charged for assessment should be based on the services performed in the process and not on the amount of credit awarded.
9. All personnel involved in assessing learning should pursue and receive adequate training and continuing professional development.
10. Assessment programs should be regularly monitored, reviewed, evaluated, and revised to reflect changes in the needs being served,

a credential. *LearningCounts.org College Credit for What You Already Know*™ is a two-year pilot program funded by the Lumina, Kresge, Joyce, Walmart, and State Street foundations. Utilizing faculty experts nationwide to teach on-line portfolio development courses and review student portfolios, CAEL works with the American Council on Education to send credit-recommendation transcripts to colleges, as well as to refer students to ACE and the College Board for training-program evaluation and standardized-exam services. CAEL has designed LearningCounts.org to serve enrolled and unaffiliated students, military personnel and veterans, low-income and unemployed, individual employers and industry groups, unions, and the public workforce system. These services are not intended to replace existing PLA programs offered by individual institutions, but rather to augment services at institutions or provide the resources for institutions that have not developed these programs.[20]

The American Council on Education's College Credit Recommendation Service (CREDIT) and Military Evaluations Program. ACE's CREDIT program, serving adults, educational institutions, and organizations, connects workplace learning with colleges by helping adults gain educational credit for formal courses and examinations taken outside traditional degree programs. CREDIT evaluates and validates credit recommendations from organizations providing "non-collegiate sponsored instruction" including job training, apprenticeship, and workforce-readiness programs provided by employers, unions, CBOs, and business or professional associations. Since, 1945, ACE's Military Evaluations Program has used subject-matter experts and academic faculty to review courses and conduct site visits to analyze course and program content, and it has relied on evaluator consensus in determining the learning outcomes and appropriate educational credit recommendations. CREDIT provides guidance to service members, civilians, military education centers, and colleges interpreting military transcripts and documents.

National Program on Noncollegiate Sponsored Instruction. Similar to the CREDIT program, since 1973 the Board of Regents of the University of the State of New York has operated the National Program on Noncollegiate Sponsored Instruction.[21] National PONSI, as it is known, reviews formal courses and educational programs in a wide variety of subjects sponsored by noncollegiate organizations, makes college-level credit recommendations for the courses and programs evaluated, and promotes academic recognition of these learning experiences to the nation's colleges. Over 1,500 institutions have said they are willing to consider awarding credit for learning experiences evaluated by National PONSI, and additional institutions use these credit recommendations in conjunction with individualized portfolio assessments for adult learners.

State and institutional innovations in preapproving crosswalks or equivalencies between credits and industry certifications and in permitting third-party credit recommendations of noncollegiate learning

Taking advantage of their considerable flexibility to innovate with the design and delivery of postsecondary education and training, a number of states and institutions have adopted practices designed to facilitate the awarding of educational credit for noncredit learning through preapproval of an institution's noncredit courses. For example:

- In Indiana, *Ivy Tech's "certification crosswalk"* uses a faculty-driven process to determine academic equivalence for industry certifications and apprenticeship programs.
- The *Wisconsin Technical College System* awards postsecondary educational credit for participation in apprenticeships and career pathways "bridge" programs.

- Ohio's *Career Technical Credit Transfer*—$(CT)^2$—is a statewide process for awarding postsecondary educational credit for career and technical instruction provided through the state's Adult Career Centers.

Ivy Tech's "certification crosswalk." Indiana's Ivy Tech Community College system uses a certification crosswalk to award a consistent amount of educational credit for a wide range of industry certifications, including apprenticeships, provided through third-party certification organizations. Eight years ago, a faculty-driven process developed the crosswalk, and faculty continue to be involved in expanding and keeping it up to date as certifications and licenses change. The crosswalk has advantages for both individuals seeking credit for prior learning and institutions asked to award credit. It helps students who have proper documentation avoid the lengthy review process, and they can receive credit without having to pay a fee for a portfolio assessment of prior learning. Institutions save time and money because they do not have to review each student's prior learning. The consistency achieved through the crosswalk also facilitates the transfer of credit across institutions. Ivy Tech's 23 campuses also reached agreement on a more consistent approach to how students and faculty develop and document their portfolio assessment for determining the awarding of credit for prior learning. Further, they agreed on consistent cut scores on standardized tests that measure prior learning, such as DANTES and CLEP, and the equivalent Ivy Tech courses.

Wisconsin Technical College System (WTCS): Credit for apprenticeship and career pathways "bridge" programs. Wisconsin's technical colleges consider apprenticeship-related instruction as approved academic programming with full program status. Students can earn 39 credits through an apprenticeship program, which can be applied toward the 60-credit Journeyworker Applied Associate in Science (AAS) degree.[22] While initially focused on the construction trades, Wisconsin's Department of Workforce Development and the WTCS have taken steps to expand this practice to include health care apprenticeships and skilled apprenticeship programs in green construction and energy-related occupations.[23] In addition, the WTCS has implemented a career pathways approach in which colleges offer "bridge" courses that include contextualized basic skills curricula with occupational content that prepare and connect adult education students with specific postsecondary occupational programs. Significantly, WTCS requires that a career pathways bridge generate postsecondary credits and connect as part of an embedded credential within a career pathways "chunk" (an embedded technical diploma or career pathway certificate).

Ohio's Career Technical Credit Transfer—$(CT)^2$. Begun in 2005, the $(CT)^2$ initiative evolved out of the Ohio Board of Regents' efforts to improve the ability of students to transfer across the state's postsecondary institutions. $(CT)^2$ is a collaborative effort among the Ohio Board of Regents, the Ohio Department of Education's Office of Career-Technical Education, public secondary/adult career-technical education institutions, and state-supported colleges. The goal is to help ensure that workers can earn educational credit for technical instruction. What began as an effort to ensure that postsecondary credits can transfer has led to a process for awarding educational credit for occupational and technical instruction provided through the state's Adult Career Centers (state-supported providers of career and technical education). $(CT)^2$ establishes criteria, policies, and procedures whereby students receive college credit for agreed-upon technical knowledge and skills in equivalent courses or programs that are based on industry-recognized standards.

Critical to the early success of Ohio $(CT)^2$—16 different certifications awarded in 11 different occupations—is the process by which faculty and other stakeholders determine which types of occupational and technical instruction merit educational credit.[24] The process involves several steps:

- Defining learning outcomes based on industry-recognized credentials;
- Coming to agreement among members of faculty from Ohio public institutions of higher education and career-technical education institutions and content expert panels on these learning outcomes;
- Matching course and learning materials based on the learning outcomes using the state's Course Equivalency Management System;
- Submitting course and learning materials for approval; and continuously reviewing course and learning materials for equivalency.[25]

Integrating Noncredit Learning into Credit-bearing Courses of Study

States and institutions are creating "stackable" credentials, and embedding industry-recognized credentials in credit-bearing courses of study. These efforts rely on mapping the appropriate curriculum pathways, building upon any demonstrated skills, licensure, certificates and certifications, and validating those certifications through a recognized assessment process. When combined with an academic credential, this approach is proving effective in advancing workers along career pathways. Two such efforts are:

- *The Kentucky Community & Technical College System's Information Technology Program* recognizes company training programs and apprenticeships and incorporates them into Associate's degree programs as "embedded credentials."
- *Oregon's Career Pathway* initiative relies on employer input and the demonstration of competencies when awarding credit-bearing certificates that count toward postsecondary credentials.

Kentucky Community & Technical College System's Information Technology Program. The developers of curricula for the new Kentucky Community & Technical College System (KCTCS) built Associate's degree programs on multiple credentials, certificates, and diplomas, thereby creating multiple entry/exit points for students. In addition, they implemented fractional credit (minimum 0.2 credit hours) and modularization for both classroom and on-line education. And they evaluated corporate and apprenticeship training programs for credit and incorporated them as "embedded credentials," leading to higher levels along a career pathway within a particular field of study. For example, The KCTCS Information Technology Program enables students who complete and pass an industry's standard certification examination (e.g., CISCO Certified Network Administrator, A+ certification), administered by an industry-authorized certification testing center, to earn up to 24 credit hours toward an Associate's degree. The alignment of KCTCS workforce programs to its academic programs has created state-of-the-art training for Kentucky's workforce, as well as ongoing collaboration between employers and faculty in the design of curriculum.

Oregon's Career Pathway initiative. This initiative is built around stackable credit certificates that are designed to increase credential attainment in demand occupations. Career pathways rely on partnerships among employers, educators, and workforce agencies. The pathways are constructed on a series of connected education and training programs and student services, which together enable students to both secure a job and advance in a demand industry or occupation. The criteria for Career Pathway Certificates are designed with employer input and based on competencies tied to in-demand occupations. Oregon has made these career pathways and stackable credentials transparent to students through the use of visual roadmaps that depict the certificates, credentials and degrees, competencies, skill progression, and wages needed for a series of related occupations in an industry sector.[26]

The innovations described here are examples of various ways to build competencies into the credit-hour framework. They are commendable and important intermediary steps on the way to a competency-based system. However, these approaches are mostly time-consuming, expensive, and, despite years of effort, difficult to scale up to a level adequate to address the needs of the large numbers of employers or students seeking to gain postsecondary credentials to advance their careers.

Also, the ability to replicate some of these approaches depends considerably on how states govern their higher education systems. Although state higher education coordinating bodies can encourage linkages to prior learning, it is up to institutions to decide what levels of credit, from either their students or those seeking to transfer prior learning credits, can be applied institutionally and programmatically. Institutional limitations on recognizing credit from other institutions can mean that students have to repeat courses.

Shifting the Measure of Learning from Credit Hours to Learning Outcomes and Competencies

The barriers to scaling up state and institutional-level innovations have contributed to a widening acknowledgement among policymakers and practitioners that the U.S. needs a competency-based, national qualifications framework for credentials. This framework would need to define those learning outcomes and competencies that enable employers and students to be explicit about what specific knowledge and skills need to be taught and learned.

In its 2010 report on the importance of credentials in the "clean energy" industry and the broader implications for education and training, the Center on Wisconsin Strategy says that to be meaningful in the labor market, transparent to students and employers, and portable, occupational credentials should reflect common measures of competence and a system of common standards. The center recommends achieving "national agreement on skills standards and building a system for the certification of their attainment," including a federal role in supporting the quality of current standards.[27] The center report also recommends coordinating funding across federal agencies to ensure a consistent standard among sector-based strategies. Finally, the center recommends integrating these standards into training and education systems, and it calls on states to collaborate with regional sector partnerships, which could be linked to national efforts.

Writing in *The Journal of College and University Law*, Tim Birtwistle and Holiday Hart McKiernan reach a similar conclusion, coming at the issue from the perspective of higher education. "It is counterproductive to increase degree attainment without regard to what type of learning a degree represents and what opportunities are afforded to an individual based on a degree or credential," they argue. They call for the U.S. to consider a framework that defines curricula learning outcomes—knowledge, the application of acquired knowledge, reasoning capacities, and skills—that are the object of a wide variety of educational programs, and that can be assessed regardless of where and how they are learned.[28] If applied to the one-year occupational certificate, the framework Birtwistle and McKiernan describe could serve as the starting point for creating shared definitions of quality. It would make pathways to further education and employment clear and facilitate the connection of credit and noncredit learning.

A variety of efforts, both internationally and in the national, state, institutional, and private sectors, actually move beyond the credit framework to a competency-based system. They provide models to build on, as well as lessons for stakeholder engagement and quality assurance that could guide future efforts to achieve more coherence in articulating workforce-related learning outcomes and credentialing.

Creating a National Qualification Framework to Defining Postsecondary Learning Outcomes

The increasing emphasis on skills, along with the need for a consistent framework that can inform students of what they should be expected to know and be able to do once they earn any credential, has been informed by studies of several European educational reform processes. These include the "Bologna Process" for Higher Education (1998), the Copenhagen Process for Vocational Education and Training (2002), and the Maastricht agreement integrating all approaches for an overarching, cross-sector qualifications framework for lifelong learning (2004).

The Bologna Process, like many U.S.-based efforts, is motivated by the need of stakeholders to ensure the quality and portability of degrees across institutional and geographical lines. Such a framework would define the achievement of competence and allow for evidence of learning acquired in a wide variety of settings.

When the designers of the Bologna Process took on the task of developing a common learning metric, they built it around a set of descriptors that define the concept of a competency-based framework for higher education. Participants in the process undertook the work of aligning, or "tuning," curricula to help ensure that the outcomes identified in the framework were met. Tuning is the process of "harmonizing" higher education programs and degrees by defining curricula learning outcomes by subject area, consistent with the national and international *European Qualifications Frameworks* (EQF) that undergird the Bologna Process.[29] Harmonizing involves gaining agreement among countries on the need for greater consistency and tuning curricula to meet commonly agreed upon outcomes.

The Bologna Process began the process of moving Europe toward a competency-based framework for higher education. The final result of the various steps involved in harmonizing higher education is the European Credit Transfer and Accumulation System. The system's standard for awarding credit links to student learning outcomes, and it provides a mechanism for comparing student attainment and performance across the European Union and other partners.[30]

The *European Qualifications Framework* provides an overarching, cross-sector reference tool for describing and comparing levels in qualifications systems developed at the national, international, or industry-sector level. The EQF's main component is a set of eight reference levels described in terms of learning outcomes (a combination of knowledge, skills and/or competence, and mechanisms and principles for voluntary cooperation). The levels cover the entire span of qualifications, from those recognizing basic knowledge, skills, and competencies, to those awarded at the highest level of academic and professional and vocational education. The EQF serves as a translation device for national and sector qualification systems.

The development of the EQF for lifelong learning, as well as national qualification frameworks, facilitates transparency, comparability, and portability of all credentials and noncredit learning outcomes across the European Union.

The Lumina Foundation's "Tuning USA" Project. While the U.S. has nothing similar to the EQF, Lumina Foundation's *Degree Qualifications Profile*, a product of the foundation's *Tuning USA* initiative, proposes specific learning outcomes for the Associate's, Bachelor's, and Master's degrees.

Tuning USA is the most comprehensive effort to create an outcome-focused, rather than time-based, national qualifications framework for postsecondary education. In 2009, Lumina Foundation began the *Tuning USA* pilot, informed by the *Bologna Process. Tuning USA* aims to create a new framework for the higher education system that:

- Awards comparable degrees based upon defined, criterion-referenced learning outcomes;
- Promotes college access and student mobility; and
- Embraces the need for increased degree attainment.[31]

In January 2011, the foundation issued *Degree Qualifications Profile for Associate's, Bachelor's and Master's Degrees*.[32] The *Degree Profile:*

> highlights specific student learning outcomes that should define associate's, bachelor's, and master's degrees in terms of what students should know, understand and be able to do upon earning these degrees. As the *Degree Profile* defines competencies in ways meant to emphasize both the cumulative *integration* of learning from many sources and the *application* of learning in a variety of practical settings, it seeks to offer benchmarks for high quality learning. . . . It is meant also to provide a common vocabulary to encourage the sharing of good practice, to offer a foundation for better public understanding, and to establish reference points for accountability far stronger than those now in use.[33]

The *Degree Profil*e begins to define the *overarching* student outcomes, rather than subject-specific learning outcomes and competencies, a student must demonstrate in order to be awarded a degree at the Associate's, Bachelor's, and Master's levels in the U.S. For each degree level, the profile identifies core competencies that collectively define the requirements for a specific degree. These cores grow progressively larger as students build on their knowledge, and the growth in learning is expected to be predictable and transparent to all involved.

> And yet, predictability and transparency do not lead to rigid standardization. In fact, though certain core learning outcomes are expected in all programs, the range of course content can vary widely—by institutions, by discipline—even by individual class section. . . . Though clarity is certainly the goal, this effort is in no way an attempt to standardize degrees. Nor does the Degree Profile define what should be taught or how instructors should teach it. Instead, the Degree Profile describes student performance appropriate for each degree level through clear reference points that indicate the incremental and cumulative nature of learning. Focusing on conceptual knowledge and essential competencies and their applications, the Degree Profile illustrates how students should be expected to perform at progressively more challenging levels. Students' demonstrated achievement in performing at these ascending levels creates the grounds on which degrees are awarded.[34]

If applied to one-year certificates, this approach could enable the U.S. to cut through the complexity of establishing a competency-based framework of learning outcomes for certificate-level workforce education and training, as well as bring more consistency and transparency to the chaotic occupational credential marketplace.

Industry-Driven Efforts to Support Competency-Based Development of Industry-Standard Curricula, Assessments, and Credentials

Industry-driven partnerships with education, particularly through sector initiatives, are another model for how competency-based frameworks can be established on a national basis. Three examples represent different approaches to establishing standards for critical sectors and garnering significant employer engagement:

- *The Automobile Technical Education Collaborative* is an industry-driven, international partnership to identify and standardize the assessment of competencies related to specific occupational tasks.
- *The Center for Energy Workforce Development* is a utilities-sector partnership with private philanthropy to provide training for credit-bearing, competency-based certificates.

- The National Association of Manufacturers' *Manufacturing Skills Certification System* is an employer-association initiative to align public and private investments in education and training to industry-driven postsecondary credentials.

Each of these is also an example of efforts to build a pipeline of workers who can enter the workforce equipped with the education and skills required to not only succeed on the job but also to advance through the labor market.

The Automobile Technical Education Collaborative (AMTEC). AMTEC, a consortium of American, Asian, and German auto manufacturers and 24 community colleges in 9 states, has identified 170 tasks in 26 "duty areas" for the occupation of maintenance technician. The consortium and industry co-developed assessments to be used globally throughout the sector. Credit can be earned on a fractional credit (modularized), then "rolled up" to a larger course and applied to the program's various levels of credential.

AMTEC's process to identify needed competencies involves subject-matter experts from industry working with college faculty.[35] It focuses on identifying the tasks and skills required for a specific job.

Among the lessons of AMTEC is the need for intensive collaboration between employers and their college partners to transform educational delivery methods and reduce the time of learning. Just as important is the need to make instruction rigorous, relevant, and standards-based, so that students can demonstrate their ability to translate their learning to the workplace.

The AMTEC educational model represents a shift from one driven by academic expectations to one driven by employer needs. AMTEC's systematic, methodical, and detailed process focuses on the actual work done for a specific job and can be quickly and efficiently tuned among employers, students, and colleges. This helps ensure that a curriculum standardizes common metrics—local, regional, national, and international—for assessing student performance and student outcomes. Students receive highly targeted instruction that accommodates many learning styles. They finish their education ready for the modern workplace—and they have portable, marketable skill sets that they can transfer to other businesses and industries. Students also gain access to ongoing technical education to continually learn and adjust to rapid changes in technology or their industry. Most important, they receive credit they can apply to reaching other educational goals.

The Center for Energy Workforce Development (CEWD). CEWD is a nonprofit consortium of electric, natural gas, and nuclear utilities and their associations, with support from the Bill & Melinda Gates Foundation. CEWD partners with contractors, unions, and education and training providers to create career pathways and stackable credentials that help low-income young adults, military, women, and dislocated workers enter careers in the energy industry. The model thus meets the needs of a variety of audiences.

The basis for credentials is a career-pathways competency model that CEWD developed in collaboration with the U.S. Department of Labor, Employment and Training Administration, and the model incorporates DOL's O*Net occupations and information within a customized career ladder.[36] Eight stacked tiers of competencies and certifications increase in specificity and specialization for skilled technician jobs in energy efficiency, energy generation, and energy transmission and distribution:

- Tiers 1-3: Essential knowledge and skills and foundational academic expectations considered as a prerequisite for entering the pathway to employment in the industry. The noncredit credentials for these tiers are ACT's National Career Readiness Certificate, Skills USA's Energy Industry Employability Skills Certificate (for youth ages 16-26), and ACT's Talent, Applied Technology, and Business Writing (for dislocated workers, the military, and other adult populations). ACT's passing levels are benchmarked to the skills of incumbent workers in the industry.
- Tiers 4-5: Industry fundamentals resulting in an ANSI-accredited Energy Industry Fundamentals Certificate. An instructor's guide and other materials are being developed for use by community colleges, unions, and other training providers.
- Tiers 6-8: Job-specific skills and credentials for jobs such as power plant operator, mechanical and electrical technician, welder, line worker, pipefitter, and pipelayer. These tiers include apprenticeship training for college credit (based on credit recommendations by the American Council on Education) as well as traditional and accelerated associated degrees.

In 2011-2012, CEWD will pilot the program in eight states, targeting low-income young adults ages 16-26. In addition, the process will be used with veterans and personnel who are soon to exit the military through a "Troops to Energy" Jobs initiative. This program will incorporate college credit for military training and other prior learning and the ability to earn the Energy Industry Fundamentals credential online.

The National Association of Manufacturers' "Manufacturing Skills Certification System."In response to persistent employer demand for a highly-skilled workforce, the National Association of Manufacturers (NAM), and its affiliate, The Manufacturing Institute, has been one of the strongest advocates for the development and implementation of competency-based manufacturing educational pathways. Its Manufacturing Skills Certification System is a system of stackable credentials applicable to all sectors in the manufacturing industry. These credentials are nationally portable and industry-recognized, and they validate both the education and training needed to succeed in entry-level positions in manufacturing.

The system is aligned to the Advanced Manufacturing Competency Model, developed by the U.S. Department of Labor's Employment and Training Administration, NAM and other associations. The Manufacturing Institute's model is nationally portable, third party validated (ISO/ANSI), industry-driven and data based and supported. The Advanced Manufacturing Competency 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."

The essential elements of the Skills Certification System are: 1) collection of competencies that together defines a successful high-performance manufacturing workforce; 2) the industry-driven certifications that align to the competencies; and 3) best-in-class curriculum to articulate into for credit education pathways that will ensure students achieve the competencies necessary to achieve industry-driven credentials.[37]

The Manufacturing Skills Certification System's overarching goal is to align public and private investments in education and training to industry-driven credentials in postsecondary education. The Manufacturing Skills Certification System is not an accreditation system, but instead encourages all participating organizations to achieve accreditation by ANSI, to ensure the proper process and validated instruments are in place to differentiate

those who have acquired the essential knowledge and skills from those who have not (see ANSI description above).

State Drivers for a Competency-Based Framework and Standards

The competitiveness strategies of many states use some combination of industry-specific approaches, such as those based on industry clusters, sector partnerships, business networks, career pathways, centers of excellence, or career clusters. Two states, in particular, are supporting and aligning those strategies to a focus on standards and credentials.

- *The Arizona Skill Standards Commission:* State leaders engage employers around validating industry skill standards and assessments for the purposes of defining competency and awarding educational credit.
- *Washington State's Industry Skill Panels:* State leaders convene employers, workers, postsecondary institutions, and state agencies around meeting industry needs for higher skills.

Project Arizona Skill Standards Commission. The Arizona Skills Standards Commission was established by the state Department of Education Career and Technical Education Section in collaboration with University College at Arizona State University in order "to positively impact human capital for economic development in Arizona and to prepare students for successful transition to employment and continuing postsecondary education." 2006 state legislation called for students to demonstrate competency in a given vocation or industry. This would be part of an education leading to an industry-recognized certificate; it would also meet the requirements of the federal Carl D. Perkins Career and Technical Education Improvement Act of 2006, which mandated that students attain "career and technical skill proficiencies including student achievement on technical assessment, that are aligned with industry recognized standards if available and appropriate."[38]

The commission's role is to engage Arizona business and industry employers in collaborative efforts with other community and national organizations to:

- Certify industry-recognized standards;
- Validate assessments;
- Award credentials to students who pass the assessment;
- Create a brand for value-added credentials; and
- Align efforts with existing credential systems by professional groups and trades.

Washington State's Industry Skill Panels. Since their introduction in 2000, Washington's Skill Panels have attracted great deal of attention. The panels are regionally based, industry-focused partnerships of employers, labor, education, and public and nonprofit-sector services and systems to improve the workforce skills and talent pipeline and increase the global economic competitiveness of key Washington industries. They have been highly effective at catalyzing investments and increasing collaboration within and across the public and private sectors, as well as at meeting industry demand for skills.

As of fall 2009, Washington had funded over 50 Skill Panels in 16 industries. Each is convened by a Workforce Investment Board or a community college. Each panel:

- Acts as a focal point for an industry's critical workforce needs;
- Serves employers in an industry, workers in a region, and organizations whose missions relate to education, training, and economic growth;
- Identifies skill gaps and skill standards for targeted occupations;
- Customizes training for new workers and addresses the training needs of incumbent workers;
- Identifies and pilots promising approaches to meeting critical skills need; and
- Shares promising practices for adoption and replication by employers and public systems.

Relevant to the creation of a competency-based qualifications framework, Skills Panels serve as neutral, knowledgeable intermediaries between employers and key stakeholders on the supply side of the labor market. The process for engaging employers is particularly instructive:

- **Survey workers and utilize subject-matter experts**, typically managers with knowledge about the occupations being studied, to identify critical work functions and key activities, define key activity performance indicators, and identify technical knowledge, foundation skills, and personal qualities.
- **Develop work-related scenarios** to place the skill standards in the context of the work environment. Scenarios highlight the connection between the standards and routine, emergency/crisis, and long-term situations that typically arise in the occupation.
- **Verify the data gathered from the subject matter experts**, often involving a survey to the targeted industry that asks workers and the SMEs to indicate the importance of each identified critical work function.
- **Disseminate skill standards information** to industry, education, and labor for their review and comment in order to ensure that nothing is overlooked before the panel publishes the final skills standards assessment.

This process helps ensure that Skills Panels are viewed as objective, neutral intermediaries, which deepens employer engagement.[39] The competencies that emerge from this process are grouped into three broad tiers, addressing: basic skills; technical skills; and industry-specific skills.

Federal Efforts to Support a Competency-based Framework and Industry Standards

In the U.S., in contrast to most industrialized countries, the private sector and states set industry standards. For example, ANSI, a membership-based organization, develops the American National Standards. Although ANSI is a quasigovernmental organization, the role of the federal government is limited to facilitating the standard-setting process by convening stakeholders and acting as an information clearinghouse.

Examples of a more active role played by the federal government in setting skills standards and defining competencies and credentials include:

- *U.S. Department of Labor initiatives: The Occupational Information Network (O*NET)* is a database of occupational requirements and worker attributes developed by the U.S. Department of Labor; and the *Industry Competency Model Clearinghouse*, a U.S. Department of Labor project that convenes industry stakeholders to develop industry competency frameworks.

- *The National Voluntary Residential Retrofit Guidelines* derive from multi-stakeholder engagement around establishing voluntary national guidelines for high-quality skill development.
- *The National Skills Standards Board* is a federal initiative to create a voluntary national system of skill standards, assessments, and certifications.

U.S. Department of Labor Initiatives: The Occupational Information Network (O*NET), and the Industry Competency Model Clearinghouse. O*NET is a database of occupational requirements and worker attributes. Developed by the U.S. Department of Labor's Employment and Training Administration over the course of the 1990s, it is continuously upgraded and improved.

O*NET describes occupations in terms of the skills and knowledge required, how the work is performed, and typical work settings. It is designed to assist firms, educators, jobseekers, human resources professionals, and the broader workforce development system in identifying the transferable skills and other occupational requirements needed for a competitive economy.

The O*NET system relies on a common language and terminology to describe occupational requirements, superseding the *Dictionary of Occupational Titles*, and can be accessed online or through a variety of public- and private-sector career and labor market information systems. O*NET provides a framework for describing jobs in terms relevant to addressing the evolving needs of workers and employers. Instead of relying only on task descriptions, as in the *Dictionary of Occupational Titles*, O*NET describes each job by using domains of worker and occupation characteristics, such as abilities, work styles, generalized work activities, and work context.

O*NET contains crosswalks between the O*NET-SOC (Standard Occupational Classification) and the Classification of Instructional Programs (CIP), Dictionary of Occupational Titles (DOT), Military Occupational Classification (MOC), Registered Apprenticeship Partners Information Data System (RAPIDS), and the previous version of the Standard Occupational Classification (SOC). There are also three O*NET Career Exploration Tools: O*NET Interest Profiler, O*NET Work Styles Locator, and O*NET Ability Profiler. The O*NET Career Exploration Tools were developed and organized so users can identify occupations that fit their interests, work styles, or abilities, respectively.[40]

The O*NET system has been significantly upgraded and improved since its introduction and is continuously updated as education and skill requirements change. Specific competency requirements and characteristics for over 900 O*NET-SOC occupations are disseminated through O*NET OnLine (www.onetonline.org); My Next Move (www.MyNextMove.org) and via a downloadable O*NET database (http://www.onetcenter.org/database.html) that can be incorporated into other tools.

The U.S. Department of Labor, Employment and Training Administration has worked with industry, education, and labor partners to develop and disseminate a total of eighteen industry competency models through the *Industry Competency Model Clearinghouse Initiative*, which also provides interactive tools that partners can use to adapt or customize competency models and build career ladders and lattices, including citation of relevant credentials. This standardized O*NET and industry competency information can often serve as a starting point for job analyses or other curriculum or assessment development activities, such as DACUM, as well as being a framework against which to align stackable credentials.

National Voluntary Residential Retrofit Guidelines. The U.S. Department of Energy's National Renewable Energy Laboratory initiated a multi-stakeholder process to develop voluntary national guidelines for high-quality work and workforce development related to residential energy-efficiency retrofits. The National Residential Retrofit Guidelines specify quality standards for the industry and learning outcomes for training programs that prepare people for this field.

The guidelines were developed collaboratively by weatherization practitioners and trainers, home performance contractors, building scientists, organized labor, and other technical experts in the building trades and retrofit industry. ANSI facilitated the process for developing the guidelines, following its *Essential Due Process Requirements for American National Standards*.

The guidelines include four interrelated components:

- **Job task analyses** that training providers can use in developing their curricula and course content;
- **Essential minimum knowledge, skills, and abilities** that workers should possess to perform high-quality work and that provide a basis for developing harmonized and strengthened credentialing programs and certification assessments nationwide;
- **Technical standards**, developed by industry or third-party organizations, that define safety, materials, installation, and application standards; and
- **Standard specifications** defining the requirements for high-quality work.

The guidelines are intended to lay the foundation for a stronger federal weatherization program that includes robust worker certification and training and program accreditation systems. These systems are intended to expand the opportunities for underemployed and dislocated workers who have relevant skills to move up career ladders and across career lattices, and to enter this growing industry.

National Skills Standards Board (NSSB). Federal efforts to articulate work-related learning outcomes are not new. The 1994 National Skills Standards Act mandated the creation of the National Skills Standard Board to promote the development of a voluntary national system of skill standards, assessments, and certifications. The act defined skill standards as the level of knowledge and competence required to perform work-related functions with an occupational cluster. The NSSB then created a common nomenclature, criteria for skill standards, assessments, and certifications, and funded a number of voluntary partnerships to develop standards, but it essentially failed to create a system that was widely embraced by industry, educators, unions, and federal and state government agencies.[41] In 2003, the board as a federal entity became the National Skill Standards Board Institute, a membership foundation that would continue R&D related to the development and use of industry skills requirements, skills assessments for learning or selection, and certifications.

Allum notes that a key factor behind the NSSB's failure was that it failed to build on the many preexisting industry standards and credentials or to establish strong relationships with the education and training community. The board also tried to address many potential purposes for skill standards, such as creating content and outcome standards for job training and K-12 education in addition to assessment and certification processes for all major industries. As a result, it sent confusing and conflicting messages to various stakeholders.[42]

Lessons Learned

Institutional and employer-led initiatives, state and federal government-led initiatives, and those pursued by Lumina Foundation provide valuable lessons, pointing toward essential building blocks of a competency-based system. The primary lessons of the various strategies employed both to improve the quality of credentials and to award educational credit for noncredit instruction include:

- **Bringing exemplary policies and practices to a wider scale is a challenge.** Institutional inertia and low levels transparency and trust among key stakeholder inhibit the spread of promising approaches. Further, given the highly diverse and fragmented nature of postsecondary workforce education and training and variations in the governance of higher education, moving the field forward requires the use of multiple strategies and policy levers.
- **Ensuring broad stakeholder involvement is essential.** Given the diversity of the postsecondary workforce education and training enterprise, stakeholder involvement can and should occur at multiple levels. While there is no one model for bringing stakeholders together, effective engagement requires intensive collaboration, with employers and their college partners at the center, to make delivery and credentialing methods responsive to the diverse needs of students and employers in a changing economy.
- **Strengthening quality assurance is the linchpin for moving to a more flexible and responsive system.** There is a persistent and growing recognition that skills standards need to be relevant to current demand in the labor market, and that the processes for validating skills standards and assessments of learning based on these standards need to be of high quality. Consistent metrics and processes for assuring quality across the postsecondary education and training landscape are essential in order to validate the quality of prior learning assessment and credentials and to ensure the portability of occupational credentials within and across the labor market and the world of education.
- **Curricula and instruction must be aligned with expected learning outcomes to transform delivery methods and reduce the cycle time of learning**. Agreement on learning outcomes and quality assurance mechanisms creates opportunities for more flexible and responsive curricula and instructional approaches, such as modularized programs, stackable credentials, e-learning, and ways for students to apply what they learn. It is important to maintain the current flexibility and responsiveness afforded by noncredit instruction, while closing the disconnect between noncredit and credit-bearing occupational education.

Findings and Recommendations

Findings

In summary, our major findings are:

- Economic growth and personal income and job security and increasingly depend on postsecondary credentials with labor market value.
- A vast number of adults engage in creditworthy occupational education and training, but they cannot translate their education and training into postsecondary credit in the absence of a system that can equate noncredit occupational education and training to educational credit.
- A major roadblock to creating such a system is reliance on the credit hour as the metric for learning. What is needed is a system that assesses competency, rather than seat time, to measure learning.
- There is a wide variety of credentials, but without common metrics or quality assurance mechanisms, they are not portable and their value is not transparent to employers, educators, or students.
- Current national, state, and institutional-level efforts to address this problem are insufficient compared to the scale of need.

Our recommendations build on the national, state, and institutional-level examples cited in the paper in order to create a competency-based system for measuring learning and awarding postsecondary credit.

Consistent with the lessons from efforts to bridge the disconnect between noncredit and credit education, the creation of a more coherent, responsive, and flexible system must involve employers, unions, industry associations, community colleges, and other stakeholders in workforce education and training, including state and local workforce investment councils. This is key to ensuring that learning outcomes are well defined and transparent in terms of clear pathways to employment and further education and training. Employers, institutions, and students need to be confident that the curricula and the competencies to be developed reflect the education needed to perform at the levels required, and that the learning outcomes have been achieved. The process must build on and draw lessons from the current rich, if confusing, fabric of standards, credentials, and quality assurance and crosswalking processes.

The time has come for institutional, state, local, and national actors to mount a broad, multiyear initiative to:

- *Create a competency-based framework* within which states and institutions can award educational credit for academic equivalent competencies mastered through formal and informal noncredit occupational education and training;
- *Accelerate the wide adoption of quality assurance, articulation, and other polices, programs, and practices* that break down barriers between credit- and noncredit-bearing workforce education and training; and
- *Develop a national framework* to address today's fragmented, incomplete data and metrics to provide a comprehensive picture of the scale and effectiveness of credentials and noncredit education and training.

Recommendations

We recommend that the initiative support state, local, and institutional actors to pursue large-scale efforts to build the infrastructure for adopting a competency-based framework that would remove barriers between noncredit to credit-bearing instruction. Such an initiative would have three overarching goals and activities:

1. *Create a national competency-based framework.*
2. *Reduce institutional barriers between credit and noncredit-bearing education.*
3. *Link the data systems of federal and state governments and educational institutions to provide a more comprehensive picture of student learning outcomes.*

1. Create A National Competency-Based Framework.

Improvement in the quality and transparency of occupational credentials is needed to assure employers and individuals that education and training providers are teaching competencies needed in the labor market, and that students can demonstrate their learning no matter where and how they learn it. This requires further articulation; it also requires awareness of the case for using competencies as the basis for determining the achievement of industry-validated learning outcomes and replacing the credit hour as the measure of learning.

Creating a competency-based framework will involve these steps:

- **Industry and professional organizations, education and workforce development organizations, and state and federal governments** agree on the criteria and processes for assuring the quality of credentials and the methods for assessing learning outcomes. Such agreement is needed to increase transparency in the chaotic credential marketplace and thereby:
  - Improve the portability of education- and industry-based workforce credentials;
  - Assure the creditworthiness of workforce education programs;
  - Increase the relevance of program content to labor market requirements; and
  - Make it possible to develop a voluntary national registry of quality credentials, including third-party validation aligned to the varied needs of workers, employers, educational institutions, and others.

  ANSI provides one approach for bringing key public- and private-sector stakeholders together for this purpose; other organizations, including the American Council on Education, serve this function as well.

- **Employers** in the same industry collaborate with the educational community and other public organizations in building cluster/sector partnerships to meet workforce and labor market challenges. The partnerships will support the skill development of the workforce, as well as contribute to ongoing evaluations of industry standards and competencies to ensure that curricula and credentials remain relevant.

- **Private foundations** support an inclusive, bottom-up process for defining learning outcomes for one-year, certificate-level occupational credentials as part of the emerging National Competency-Based Framework. This effort will build on Lumina Foundation's Tuning USA initiative. It will focus initially on developing a qualifications profile for formal and informal learning and a tuning process related to the specifics for certificate requirements in different occupational fields, focusing on what students are expected to know, understand, and be able to do at the one-year-certificate level.[43] The specific knowledge and competencies associated with a one-year certificate in different fields could then be used as the reference point for

evaluating noncredit learning and industry-based certifications in these fields and recognizing them toward formal educational awards.

- **Private foundations** convene further discussions to determine where such an effort might be housed and how it should proceed. Foundations could also support research to:
  - Identify how a competency-based framework can affect the return on investment for employers and labor market gains for workers;
  - Identify the role of business engagement in building a national competency-based framework;
  - Inventory existing national standards and the organizations engaged in these efforts and identify gaps that should be addressed in order to create a more coherent national framework; and
  - Identify methodologies for developing job-task analyses and related knowledge, skills, and abilities for employers and educators to use in developing curricula and credentials and determining the attributes of a model that would ensure that credentials are industry-recognized and validated.

2. Reduce Institutional Barriers Between Credit And Noncredit-Bearing Education.

Given the magnitude of noncredit workforce education and training, the relatively limited use of existing prior learning and crosswalking mechanisms, and the need for new ways to award credit for noncredit education and training regardless of where it takes place, we recommend expanding the use of best practices in linking noncredit to credit as an interim step to moving to a competency-based approach based on student achievement of industry- and market-relevant curricula and credentials. We call on states and the federal government to play the following roles:

- **The federal and state governments** should use their policymaking authority and discretionary resources to promote the adoption of workforce policies and practices that dramatically reduce barriers between noncredit and credit-bearing education in the short term, both to meet current need and to lay the groundwork for the longer-term reforms we have recommended.

- **States** should partner with postsecondary educational institutions to implement policies that:
  - Pre-approve equivalencies between credits and industry certifications and learning that takes place outside of postsecondary institutions;
  - Streamline course approval and the development of more comprehensive and detailed curricula based on competencies developed directly with employers;
  - Combine credit and noncredit learning through co-enrollment and embedded industry recognized credentials, certificates, and stackable credentials;
  - Streamline processes for assessing prior learning and determining equivalencies to college-level courses or competencies; and
  - Support the development of competency-based curricula in conjunction with employers.

- **The U.S. Department of Labor** should build on the valuable guidance it has provided to the public workforce system on the importance of credential attainment and:
  - Require local Workforce Investment Boards to report to the federal government on the extent to which youth, adults, and dislocated workers who enroll in training provided with Workforce Investment Act Title I resources are in credit-bearing courses;

  - Require the state plans of the state and local Workforce Investment Boards to address how they will improve articulation between credit and noncredit workforce education and training in their jurisdictions; and
  - Encourage state workforce agencies to track whether courses are for credit and result in an educational or occupational credential with value in the regional labor market in state Workforce Investment Act Eligible Training Provider lists so that staff and customers can see the outcomes to be expected from participation in the courses.

- **The U.S. Department of Labor and the U.S. Department of Education** should use discretionary funds (e.g., those under the Trade Adjustment Act Community College and Career Training Grant Program and the Workforce Innovation Fund) to support innovation and the greater use of exemplary policies and practices.

3. Link The Data Systems Of Federal And State Governments And Educational Institutions To Provide A More Comprehensive Picture Of Student Learning Outcomes.

Finally, it is difficult to get a comprehensive picture of the scale and effectiveness of this country's workforce development enterprise because data and accountability systems are fragmented and uneven, reflecting the disconnect between the differing metrics used in credit and noncredit-bearing education and the diversity of goals, providers, and funders of workforce education.

To improve transparency and accountability and to facilitate the sharing of best practices across education and training providers and industry sectors, we urge the federal government, states, educational institutions, and foundations to support the following data-system improvements:

- Develop a national framework for collecting key data elements for credit and noncredit programs and credentials, including data on courses, programs, providers, credentials, and the skills and competencies represented by these credentials.

- Collect noncredit course and program information by postsecondary educational institutions, in addition to the credit courses and programs.

- Include noncredit courses and related credential attainment in state longitudinal data systems, making it possible to observe the progression of students from noncredit to credit instruction and to incorporate the full range of credentials obtained by students into the data system.

- Include data on courses taken, program enrollments and completions, and credential attainment for students participating in workforce programs under the Workforce Data Quality Initiative, including students enrolled in employer-based, community-based, and proprietary settings.

- Track student outcomes by program and provider, including course and program completion, credential attainment, and labor market success.

Appendix 1: Current State of Postsecondary Workforce Education and Training

For-credit Postsecondary Workforce Education and Training

Data and Metrics. National data on students enrolled in credit-bearing programs are collected by the federal instrument: the *Integrated Postsecondary Education Data System.* Individual institutions report student enrollment and retention and completion rates based on the annual cohort of students who are first-time, full-time students and enrolled in degree/certificate programs. This leaves out the many students, especially working adults, who attend part time. According to IPEDS data, about 750,000 credit-based certificates were awarded in 2007-08, the most recent year for which data are available. More than half of these certificates (54 percent) reflect one year or less of instruction, and 42 percent are for certificates requiring from one to two years of instruction. About four in ten certificates awarded are in health care and related fields.[44]

For-credit postsecondary workforce education is traditionally delivered in semester-long courses measured in credit hours, usually reflecting seat time, although an increasing number of colleges offer courses in a modularized format, offering fractional credits, flexible scheduling, and alternative delivery formats, particularly e-learning.

> Although the credit hour was originally developed as a measure of faculty workload and time spent in the classroom, this construct is being used not only to determine when a student has earned a degree, but also the unit upon which financial aid and formulas for state institutional funding are calculated. The credit hour also forms the basis for articulation and transfer agreements, and determines price and resource allocation within institutions, among other things.[45]

The continuing education unit is perhaps the nearest analog of the credit hour for noncredit programs. Created by the International Association for Continuing Education and Training as a standard measure of continuing education participation, the CEU enables learners to transport noncredit work among multiple providers and employers in the same way that credit hours are documented in a transcript.[46] However, the CEU's originators never intended its unit—one "contact" hour equals one CEU—to be converted to credit, although some postsecondary institutions accept CEUs as credits toward degrees. CEUs remain largely controlled by professional organizations and their boards, even if they are offered cooperatively with postsecondary institutions.

Providers. The primary players in credit-bearing workforce education and training include public and private community and technical colleges, as well as proprietary institutions and other community organizations approved to offer credit-bearing courses and programs at the postsecondary level. Public degree- and non-degree-granting institutions awarded a little more than half (53 percent) of these credentials, of which 41.6 percent were awarded by institutions granting two-year-degrees. Private, for-profit, non-degree-granting institutions awarded 30 percent of these certificates. Private, for-profit institutions granting two-year degrees awarded 10.4 percent.[47]

Funding. State funding formulas (or community funding where available) of for-credit programs are largely based on per-credit enrollment and subsidies. Students pay tuition based on credits; in some cases, employers reimburse employed students. Other federal and state programs, such as the Workforce Investment Act, may also provide tuition for students as well as financial aid and scholarships from private sources.[48]

Quality assurance. If their students are to be considered eligible for federal financial aid, credit-granting institutions must be evaluated and accredited by national or state accreditation bodies recognized by the U.S. Department of Education and the Council for Higher Education Accreditation (a nongovernmental organization) as a "reliable authority as to the quality of postsecondary education."[49] The accrediting agencies evaluate institutions by peer review and based on evaluation criteria (e.g., financial standing, faculty qualifications, library holdings, and processes for determining institutional effectiveness and conducting strategic planning). An institution can receive national or regional accreditation, although a number of academic programs have access to program-level accreditation. Recently, accrediting bodies have begun emphasizing student outcomes, quality assurance, and evaluations in their decisions. In addition, states may have other educational coordinating bodies (e.g., a Council for Postsecondary Education) that regulate program approval and offerings. In addition, institutions or systems governing community colleges may have regulations and procedures that dictate how programs are developed and approved (or discontinued).

Credentials. Accredited postsecondary educational institutions award Associate's degrees and other sub-baccalaureate credentials primarily based on completion of an organized program of study calibrated by credit hours or equivalent contact or clock hours. A growing number of educational institutions also provide credit for prior learning, using a variety of methods to assure quality. Workforce education-related certificates awarded by educational institutions or training providers are typically based on completion of required coursework calibrated by credit hours (or on equivalent contact or clock hours) and often on an assessment demonstrating mastery of the required content (often a narrow range of specialized knowledge and skills).

While Associate's degrees are generally portable and, except for some applied degrees, designed to articulate (i.e., to be eligible for credit to be applied toward other educational credentials), the portability of occupational certificates within an institution or to others is limited. Much of their portability within education depends on institutional articulation and transfer policies and on their value in the labor market, which, in turn, depends on the relevance of the coursework to employer requirements for hiring and promotion. The most valuable certificates are often those developed in close partnership with employers.

Noncredit Postsecondary Workforce Education and Training

There are two major strands of noncredit education. The first is instruction provided in educational institutions. The second is that provided by professional associations and societies, employers, unions, the military, and a variety of community-based organizations and for-profit and nonprofit organizations.

The various types of noncredit education include workforce instruction, contract training, developmental education, recreational courses, Adult Basic Education, and English as a Second Language. Noncredit workforce education and training programs include health and safety training, programs that enable skilled workers to update their skills, instruction related to apprenticeship programs, programs designed for targeted groups (e.g., dislocated workers or welfare recipients), and customized training programs sponsored by employers or others to meet specific training needs of new and incumbent workers. College noncredit offerings also typically include developmental education to prepare students for college-level work and English as a Second Language classes.

Educational Institutions

Data and Metrics. Noncredit postsecondary education operates largely outside of traditional postsecondary policy discussions; as a result, it receives few calls for data collection. While some state-level data are available, no

national data are collected consistently, and research on what does exist is limited. The Georgetown Center for Education and Workforce recently estimated that noncredit programs represent most of the nation's postsecondary training and education system, with almost 20.8 million participants. It includes nearly half of the system's enrollment (42 million) and provides more than three times the attainment of traditional education programs. With a total expenditure of nearly $500 billion, noncredit workforce postsecondary education and training represents at least 65 percent of the nation's total annual expenditure on education and training (figures are approximate and obtained through correspondence with researchers at CEW).

Federal policy and IPEDS reporting requirements do not count the amount of noncredit education provided by colleges or the credentials associated with noncredit work. Nor are there uniformly accepted and implemented methods of assessing and recording noncredit and prior learning among postsecondary institutions. A 2009 survey found that close to 40 percent of postsecondary institutions collect no data on their noncredit programs.[50]

The available evidence indicates that noncredit postsecondary education is becoming increasingly common. For example, the National Household Education Survey indicates that the number of noncredit students grew from 90 percent of the credit-student headcount in 1995 to exceed the number of students enrolled in credit-bearing courses by more than 8 percent in 1999. At many community colleges, noncredit education now enrolls more students than credit programs.[51]

Funding. Community college noncredit occupational programs are generally accorded a lower status than nearly all other programs, resulting in less influence over institutional decisions related to funding and curriculum processes.[52] Twenty-eight states provide some institutional support for noncredit occupational programs, but this support is substantially less than funding for credit-bearing programs. Only three states (Maryland, Oregon, and Texas) provide formula funding for noncredit education at a comparable rate to credit-bearing courses, and eight states provide formula funding at a lower rate. For example, Indiana provides formula reimbursement to its statewide Ivy Tech Community College system to cover the cost of apprenticeship training that counts toward an applied Associate's degree. (See later discussion of Ivy Tech's approach to awarding credit for apprenticeship training.) Another seven provide a fixed amount of funding, and ten states provide general funds that colleges can use for noncredit workforce education.[53] The remaining 22 states provide no state funding.[54]

Just nine states (Alaska, Massachusetts, Mississippi, Montana, North Carolina, Pennsylvania, Texas, Virginia, and Wisconsin) have guidelines for listing noncredit courses on a transcript, with most states leaving the decision up to institutions. This lack of portability of skills earned in work-based and other noncredit programs costs individuals time and money; they must repeat courses that teach competencies they have already attained.

The limited funding to noncredit programs represents a significant challenge, especially considering funding shortfalls and the dramatic increase in enrollment in recent years. Typically, open-enrollment courses are cancelled if they do not reach a minimum enrollment. Noncredit programs also typically offer fewer student support services (unless services are provided through external funding such as federal or state workforce or welfare programs).

At the same time, colleges increasingly recognize noncredit programs that can maintain enough enrollment as a significant source of revenue: often, the noncredit divisions of community colleges are expected to subsidize a college's credit side. In part, this is because noncredit courses can be priced to the market, depending upon the

customer (e.g., individual students, employers, other funding sources). In many cases, the price tag on noncredit courses, particularly those paid for by employers, is higher than for comparable credit-bearing courses.

Students in noncredit postsecondary programs can be eligible for federal financial aid if they meet certain eligibility requirements specifying a certain number of credit or clock hours[55] or weeks of instruction, as well as if they are in programs preparing them for "gainful employment in a recognized occupation."[56] Programs must be accredited and be approved by the U.S. Department of Education for Title IV financial-aid eligibility. For example, at institutions of higher education, a credit or noncredit program can be eligible for aid is it is "at least 1 academic year in duration [and] leads to a certificate, degree, or other recognized credential and prepares students for gainful employment in a recognized occupation."[57] Certificate or diploma training programs that are shorter than one-year long or that are offered at proprietary or postsecondary vocational institutions can be eligible for aid if they provide instruction for at least a specified number of clock hours over a specified number of weeks and prepare students for gainful employment in a recognized occupation. Connecticut, Washington, and West Virginia provide aid for students who are not in degree or certificate programs in order to support adult students in basic skills education courses and short-term occupational training programs.[58]

Many community colleges are eligible to receive federally funded Individual Training Accounts (vouchers) for their students and, to a lesser extent, the can contract with local Workforce Investment Boards to provide training for Workforce Investment Act-eligible participants. However, in Program Year 2008 fewer than one in seven individuals exiting the WIA Adult Program received training, and a little over half of these adults earned a credential (roughly 8 percent of WIA adult completers).[59] There are no national data on the extent to which WIA funding supports credit-bearing or noncredit training. In December 2010, recognizing the importance of credential attainment to employability, the Employment and Training Administration issued a Training and Employment Guidance Letter encouraging state and local workforce agencies and their partners to adopt policies and practices that increase the rate of credential attainment among workforce program participants and improve the quality of those credentials.[60]

In addition, as of 2006, ten states delivered state-funded employer-customized training programs (some of which are financed through state general funds) through their community and technical college systems. For example, Kentucky uses customized training funds allocated to the community college system to cover credit-bearing programs leading to a credential. Without general fund or grant support, programs that serve nontraditional students are typically discontinued once funding runs out.

Quality assurance. The lack of consistent measures for assessing the effectiveness of community college noncredit training programs prevents an accurate assessment of their value or quality. This limits opportunities for institutions or systems to improve through innovation and flexibility in responding to employer or other community needs. On the other hand, the most frequently noted advantage of noncredit offerings is their flexibility relative to the traditional academic approval process. Many noncredit offerings are developed closely with business and industry and frequently draw upon the specialized expertise of adjunct faculty, brought in from employers or other external organizations.

Credentials. The noncredit occupational credentialing process is chaotic and confusing. The certificates earned by students who complete noncredit courses have varying degrees of value in the labor market. Noncredit programs may also prepare students for industry certification and licensure (see below). The lack of common definitions and

standards underlying the myriad occupational credentials, especially related to middle-skilled jobs, contributes to considerable confusion about value and how these credentials relate to academic credentials. The paucity of industry-recognized credentials for lower-skilled jobs makes it difficult to build on ramps to good jobs for low-skilled workers.

Employers, the Military, and Other Providers

The noncredit programs offered by employers, professional associations, government, the military, and other training providers or vendors include a number of types of effort, including certifications, apprenticeship training, adult education, job readiness and dislocated worker training, and other government-subsidized training. These include both formal and informal employer-provided training as well as on-the-job training. Neither formal nor informal employer-provided training readily correlate to academic courses and credentials, but finding ways to assess learning in these settings could enable workers to receive credit toward credentials that lead to advancement in their jobs and in the labor market.

Data and Metrics. According to the American Society for Training and Development, in 2008 about 480,000 workers were in apprenticeship programs registered with the U.S. Department of Labor, and between 500,000 and 1 million workers were in unregistered apprenticeships.[61] Apprenticeship programs combine productive work with on-the-job leaning and classroom-based instruction. More than 32,000 registered apprenticeship programs, in over 900 occupations, are sponsored by employers and more than half of the time by joint labor-management partnerships. Community colleges and for-profit colleges sometimes provide related classroom instruction. While most apprenticeships do not offer credit, some, such as several sponsored by the Utility Workers Union of America, are structured to lead to an Associate's degree in addition to the journey worker industry certification.[62] Also, the American Council on Education evaluates apprenticeship programs and makes credit recommendations, which a number of colleges accept toward a degree.

Funding. Employers invest significantly in education and training, although they direct a disproportionate share of those investments to higher-skilled more educated workers. The American Society for Training and Development estimates that employers spent $134.1 billion on employee learning and development in 2009.[63] While some of this is for education leading to postsecondary credentials—for example, through tuition reimbursement programs—most employer-sponsored and funded technical training is noncredit, offered either by the employer directly, by educational institutions, or by private vendors.

Quality assurance. Education and industry measure quality with metrics and methods that differ significantly. Employers measure the quality of training in terms of worker productivity on the job and the quality of service provided to customers. Industry and occupational certification, and, where it exists, licensure, provide additional quality assurance.

Credentialing and certification in the private sector is often an industry's self-regulated response to the possibility of government regulations.[64] However, concerns about what these credentials represent have led to efforts to set standards for them. One of the leading organizations in accrediting certifications, and, as of 2009, certificates, is the American National Standards Institute. ANSI provides a process for evaluating requirements within a standard. The standard associated with certifications is an American National Standard and an ISO/IEC Standard 17024. It addresses the requirements of a certification program that looks at the structure to ensure it is a third-party assessment firewall, away from education/training, quality of the assessments, the recertification process, and

policy and procedures for taking a certification away from an individual. It is a testing model. The American National Standard that looks at education/training certificates is ASTM 2659 – Standard Practice for Certificate Programs. It addresses the source of learning outcomes, the educational/training process, and the measurement of learning outcomes.

Credentials. Industry relies primarily on two formal processes—certification and licensure—for assuring that workers have the knowledge and skills required to perform on the job. These are used to varying degrees for hiring and promotion in different industries.

- **Industry or occupational certifications** that are awarded by a third-party nongovernmental certification body, such an industry or occupational association, based on an individual's demonstration that s/he has mastered the required competencies (knowledge, skills, and abilities). The standards against which mastery is assessed must be set through a defensible, industry-wide job analysis or role-delineation process. Competencies must be demonstrated through a standardized written, oral, or performance-based examination process that meets psychometric rigor to assure that it is fair, valid, and reliable. A certification is typically a time-limited credential that may be renewed through a recertification process and rescinded for ethical violations and incompetence. Certification is often voluntary but may be mandatory when tied to state licensure.[65] Contributing to the proliferation of certifications is the fact that many are awarded by specialty organizations within industries. For example, there are multiple certifications for dental technicians and separate certifications for food service manager, residential building manager, and retirement housing manager.[66]

- **Licenses to practice**, granted by federal, state, or local government agencies for a time-limited period (subject to renewal) to set professional standards, provide for a level of consumer protection, and ensure safety and quality of work. Licensure requirements are defined by laws and regulations; violation of the terms of the license can result in legal action.[67]

In addition, the U.S. Department of Labor and state apprenticeship agencies certify registered apprenticeship programs, which award interim credentials and certificates upon completion of these programs.[68]

Appendix 2: Glossary

Academic Program
An instructional program leading toward an Associate's, Bachelor's, Master's, Doctor's, or first-professional degree or resulting in credits that can be applied to one of these degrees.

Accrediting Agencies
Organizations (or bodies) that establish operating standards for educational or professional institutions and programs, determine the extent to which the standards are met, and publicly announce their findings.

Assessment
Any systematic procedure for obtaining information from tests or other sources that can be used to draw inferences about characteristics of people, objects, or programs.

Certification
A credential awarded by a certification body based on an individual's demonstrating through a standardized examination process that he or she has acquired designated knowledge, skills, and abilities. Exams can be written, oral, or performance-based but must meet psychometric rigor to demonstrate fairness, validity, and reliability. Certification is time-limited and renewed through a recertification process. A certification can be taken away from an individual for ethical violations or incompetence. Key attributes of certifications include: examination; skills assessment; maintenance; suspension/revocation; and industry-recognized.

Certificate
A credential awarded by a training program or educational institution based on completion of coursework. *Knowledge-based certificates* recognize a relatively narrow scope of specialized knowledge used in performing duties or tasks required by a certain profession or occupation. They are issued after the individual passes an assessment. *Curriculum-based certificates* are issued after an individual completes a course or series of courses and passes an assessment limited to the course content. A certificate is awarded once and carries no requirements for continuing education or repeated demonstration of knowledge. Key attributes of certificates include: awarded by an educational institution; comprised of a program of study; and level of effort (hours/credits).

Credit
Measure of attendance or performance in an instructional activity (course or program) that can be applied by the recipient toward the requirements for a degree, diploma, certificate, or other formal award.

Credit hour
The amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

- One hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks of one semester or trimester hour of credit, or ten to twelve weeks for one-quarter-hour of credit, or the equivalent amount of work over a different amount of time; or

- An equivalent amount of work for other academic activities as established by the institution, including laboratory work, internships, practicums, studio work, and other academic work leading to the award of credit hours.[69]

While there is some controversy regarding this definition, it explicitly recognize approaches other than seat time to measure the amount of work in intended learning outcomes.

Competency
The possession of required skill, knowledge, qualification, or capacity, as well as the ability to meet complex demands, by drawing on and mobilizing psychosocial resources (including skills and attitudes) in a particular context (OECD 2005).

Noncredit courses
Courses that do not result in credit toward a degree.

Prior learning assessment
A process used by educational institutions to evaluate learning acquired outside the classroom for the purpose of assigning academic credit.

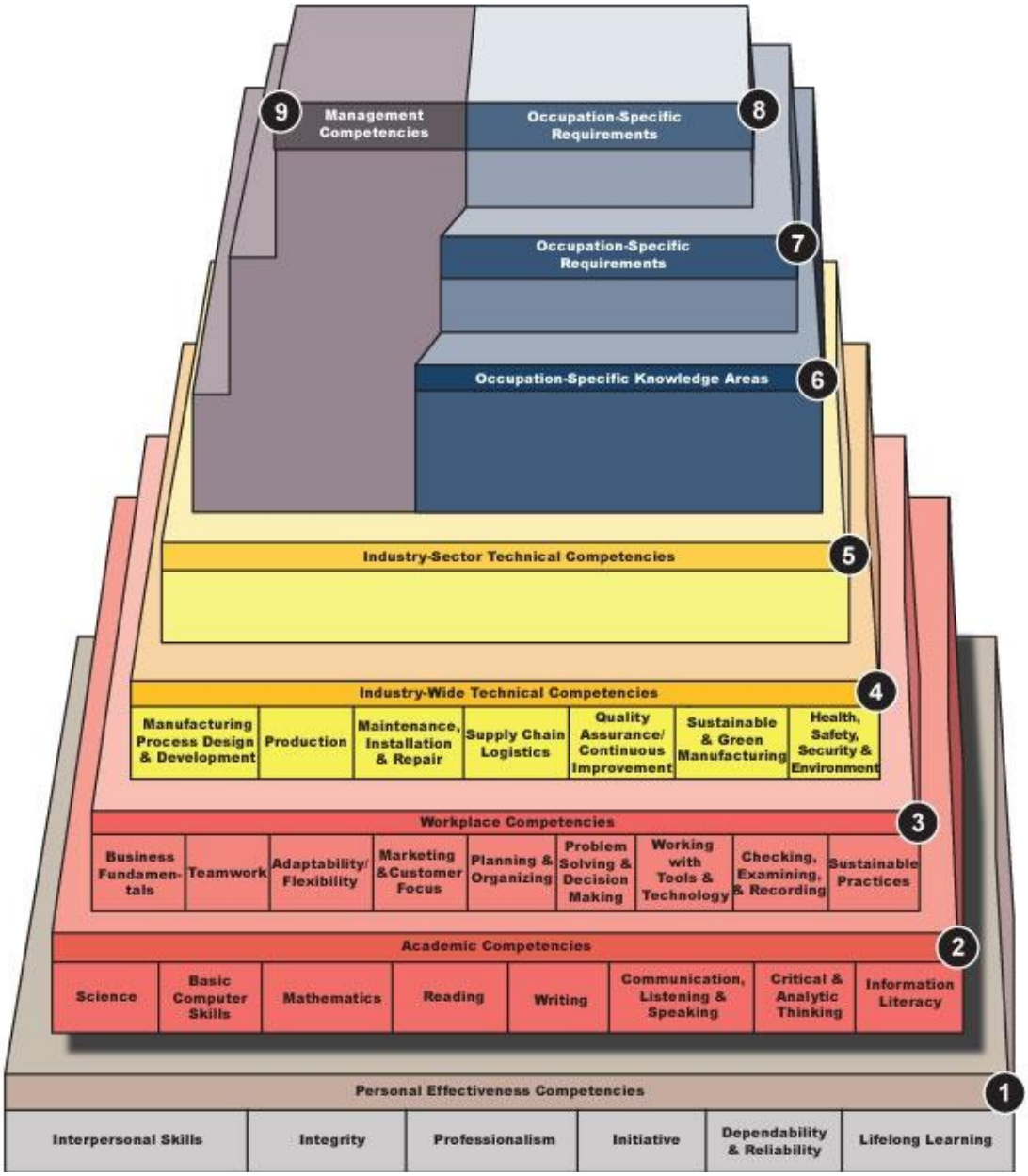
Transfer of credit
The policies and procedures used to determine the extent to which educational experiences or courses undertaken by a student while attending another institution may be counted for credit at the current institution.

Appendix 3: 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



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international Qualifications Frameworks and represent the means by which noncredit workforce learning can be connected to credit programs and credentials (see *International Aspects of Bologna: the TUNING Project*, Carvalho). With tuning, students, employers, policymakers, and the general public know what a credential in that field means and why it represents learning in that particular field. In short, the tuning process makes the value of any credential more visible and more directly comparable by and among students, academics, and employers. It also highlights—in real-world terms—the institution's contribution to the value of that credential. It serves as a starting point for shared definitions of quality and excellence. [*Adapted from Lumina Foundation's Tuning Project*].

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DACUM (**D**eveloping **A** **C**urricul**UM**) is a method for analyzing jobs and occupations that uses the SCID (**S**ystematic **C**urriculum and **I**nstructional **D**evelopment) to produce competency-based instructional materials based on the job/occupational analysis. The *DACUM* process uses subject-matter experts to define the occupational standards for an occupational area. The duties and tasks must be rated by a larger group of subject matter experts in a variety of industry sectors and within various types and sizes of companies and organizations.

In the Electronic Delphi method, panels of experts respond to electronic questionnaires. Panelists rate the criticality of the duties and tasks for their industry sector or business. The first questionnaire is designed to collect individual response rating and subsequent questionnaires enable the Delphi experts to refine their initial rates as they view the ratings of the other Delphi respondents through one or two additional rounds.

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