

CREATING AN IMPACT WITH CREDENTIAL QUALITY AND TRANSPARENCY

BY RACHEL VILSACK

A State Policy Toolkit

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ABOUT NATIONAL SKILLS COALITION: Jobs that require skills training are the backbone of our economy. National Skills Coalition fights for a national commitment to inclusive, high-quality skills training so that more people have access to a better life, and more local businesses see sustained growth. Since 2000, through expert analysis and technical assistance, broad-based organizing, targeted advocacy, and cutting-edge communications, NSC has changed hundreds of state and federal skills policies that have changed thousands of lives and grown local businesses and economies.

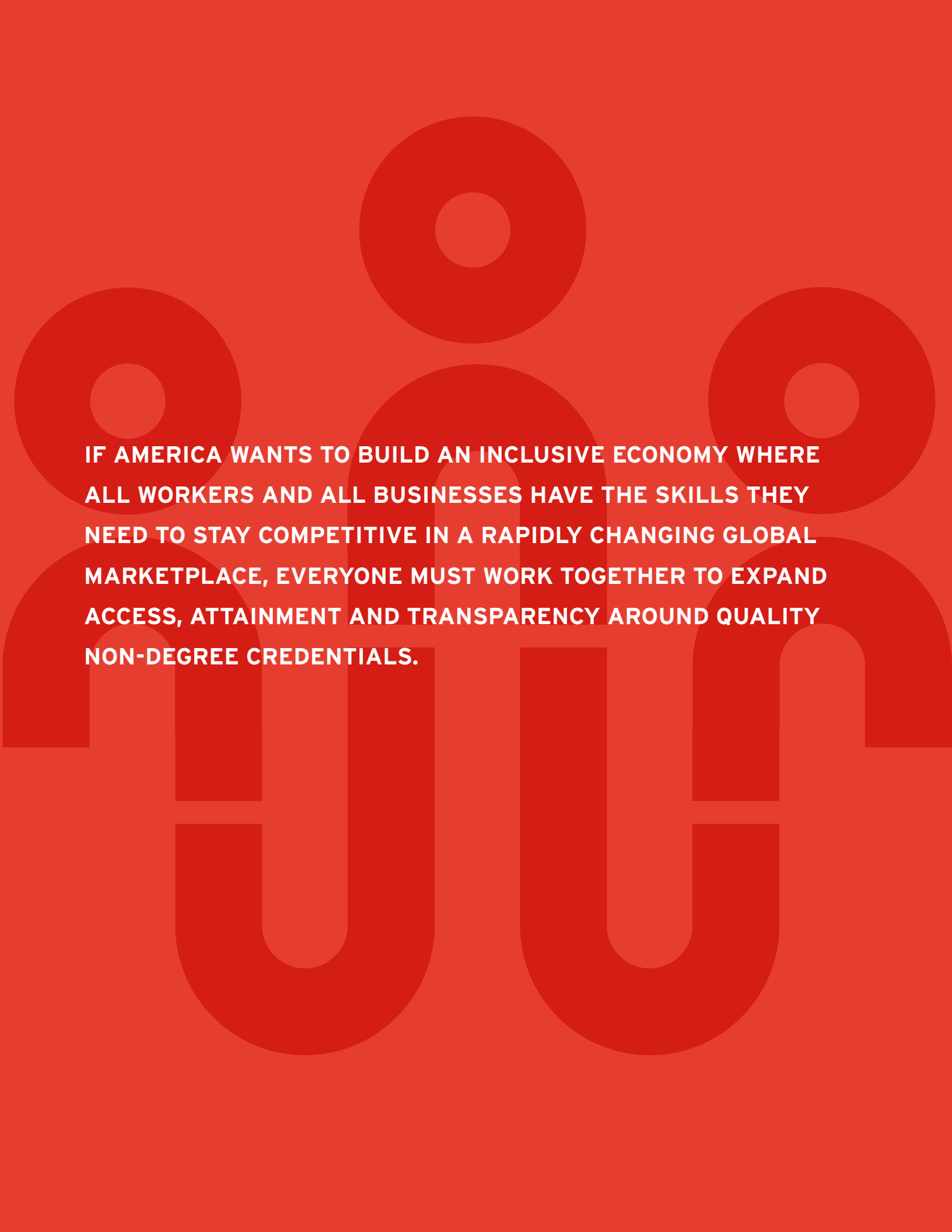
We build networks representing businesses, workers, colleges, community organizations, public officials, and advocates. We engage these networks to craft policy proposals and mobilize them to win concrete policy change. Our networks include SkillSPAN (state affiliate coalitions), Business Leaders United for Workforce Partnerships (thousands of small and medium-sized business owners and state affiliates), and Voices for Skills (tens of thousands of workers and grassroots skills advocates).

ABOUT THIS TOOLKIT: Simply put: Americans need clear and reliable information about their educational options. But they also need to know how to navigate these options. Good data on credential quality and transparency helps them select a path that leads to equitable economic and career success.

This toolkit provides a map for how states that are looking to improve credential quality and transparency can use the quality non-degree credential framework outlined by National Skills Coalition and the linked open data network, common description language, and publishing platform created by Credential Engine.

TABLE OF CONTENTS

Introduction	3
How to Use this Toolkit.....	6
Glossary of Terms.....	8
Mapping Quality Non-Degree Credentials.....	9
<i>Evidence of Substantial Job Opportunities.....</i>	<i>10</i>
<i>Evidence of Competencies Mastered by the Credential Holder.....</i>	<i>12</i>
<i>Evidence of Employment and Earnings Outcomes.....</i>	<i>14</i>
<i>Stackability to Additional Education or Training.....</i>	<i>16</i>
Bringing Quality Components to the Credential Registry	18
Policy Recommendations to Support Credential Quality and Transparency Efforts.....	21

The background features a stylized graphic of three human silhouettes in a dark red color. The silhouettes are composed of simple geometric shapes: circles for heads and rounded, vertical bars for bodies. They are arranged in a triangular formation, with one silhouette at the top center and two below it, one on the left and one on the right. The entire graphic is set against a solid, lighter red background.

IF AMERICA WANTS TO BUILD AN INCLUSIVE ECONOMY WHERE ALL WORKERS AND ALL BUSINESSES HAVE THE SKILLS THEY NEED TO STAY COMPETITIVE IN A RAPIDLY CHANGING GLOBAL MARKETPLACE, EVERYONE MUST WORK TOGETHER TO EXPAND ACCESS, ATTAINMENT AND TRANSPARENCY AROUND QUALITY NON-DEGREE CREDENTIALS.

INTRODUCTION

Jobs and the labor market have changed dramatically. The Covid-19 pandemic put millions of people, across all industries, out of work and disproportionately impacted workers of color, women, and workers without a college degree. In many ways, the pandemic exacerbated a problem that already existed - further penalizing workers who had already been marginalized. Additional structural changes to our economy happened almost overnight. In fact, the pandemic has accelerated 10 years of planned technological change into 10 months, rapidly altering existing job responsibilities for workers who now need to use new digital tools, while also reshaping the training process for unemployed workers looking to reskill. Given seemingly never-ending innovation in automation, AI, and the future of work, structural changes like these will be more common in the months and years to come.

With all this change, it is imperative that students, working adults, and people undergoing career transitions know what training will help them succeed in growing industries and to understand which credentials will help them upgrade their skills to find work in the new economy. Yet with nearly **one million unique credentials** issued in the United States and well over 50,000 providers, navigating information about credentials and their outcomes to choose the most promising pathway could prove to be a daunting challenge for an individual.¹

Also, a growing majority of today's students are considered *nontraditional*. Nontraditional students are working adults who are pursuing higher education while balancing work and family obligations. Non-degree credential programs, which generally take one year or less to complete and focus on an occupation, represent a crucial pathway for millions of U.S. workers to increase their earning and economic opportunities. These programs fit more seamlessly into the lives of nontraditional students, and they are becoming the preferred pathway for displaced adult workers pursuing additional training.



It is imperative that students, working adults, and people undergoing career transitions know what training will help them succeed in growing industries and to understand which credentials will help them upgrade their skills to find work in the new economy.

Yet, not all non-degree credentials are created equal. Some connect individuals to good careers and further education and employment, while others have little or no economic payoff. So, the urgency to identify *quality* credentials is more important than

ever. Quality assurance, tied to making information about credentials and their outcomes readily available, can help individuals identify the right program and credential for their circumstances while avoiding low-quality or ineffective options. It can also help businesses ensure that the competencies and skills obtained by individuals will be what they need on the job.

Credential quality and transparency information can also be a useful tool for *equity*. The majority of states have postsecondary attainment goals aimed at closing racial equity gaps or increasing credential attainment for people of color.² As states have developed policies to expand access to degrees and credentials for adult learners and nontraditional students, it is critical for states to define *which* non-degree credentials offer quality to learners in the workplace and expand access to postsecondary attainment for those who would otherwise go without.

If America wants to build an **inclusive economy** where all workers and all businesses have the skills they need to stay competitive in a rapidly changing global marketplace, everyone must work together to expand access, attainment and transparency around quality non-degree credentials.

WHY CREDENTIAL QUALITY AND TRANSPARENCY MATTER

Now more than ever states need to define what makes a quality credential, so adult learners have a clear and successful pathway to the training programs needed to get better jobs.

When states have clear processes in place to determine *which* non-degree credentials provide value to stakeholders:

- ▶ Learners and workers save time and money. Learners and workers need to be able to evaluate how well a program will meet their education and employment goals while also balancing work, family, and other obligations.
- ▶ Credential providers receive clear guidance on which credentials they should offer and how to think about designing new credentials or program offerings to create a strong return on investment for learners and to maximize alignment with labor market needs.
- ▶ Employers can reduce cost of hiring by more easily determining which applicants have the necessary skills to be immediately successful on the job and can help plan for future talent development needs by identifying where credentialing gaps may exist within their industry or region.
- ▶ Policymakers can better understand the range of non-degree credential options that – through policies and incentives – can help states meet postsecondary attainment goals, advance equity, improve economic mobility for workers and adult learners, and help businesses see sustained growth.

National Skills Coalition, in partnership with Credential Engine, is committed to making information about credentials more actionable through increased transparency and quality assurance. Reliable data is critical to ensuring that quality assurance definitions are student-focused and provide learners with the necessary information to make informed decisions about their employment and earnings goals.

SPOTLIGHT ON NATIONAL SKILLS COALITION

Jobs that require skills training are the backbone of our economy. National Skills Coalition fights for a national commitment to inclusive, high-quality skills training so that more people have access to a better life, and more businesses see sustained growth.

In 2019, National Skills Coalition worked with 12 states to review how they were using employment, earnings, and competencies to set quality standards for credentials. This analysis – and feedback from research and advocacy organizations with expertise in higher education and workforce policy, including those with a racial equity mission – led to the development of a vetted consensus **definition of quality non-degree credentials** that can be evaluated through data.

The four key criteria for defining quality non-degree credentials:

- ▶ There must be evidence of *substantial job opportunities* associated with the credential. Evidence must include quantitative data and direct communication with employers.
- ▶ There must be transparent *evidence of the competencies mastered* by credential holders; where the appropriate length of the training program is how long it takes to master the competencies.
- ▶ There must be transparent evidence of the *actual employment and earnings outcomes* of individuals after obtaining a credential. The data should be disaggregated by race, ethnicity, gender, disability status, and other characteristics to measure equitable progress.
- ▶ Finally, *stackability to additional education or training* can help individuals advance in their educational, training, or employment pathway.



Reliable data is critical to ensuring that quality assurance definitions are student-focused and provide learners with the necessary information to make informed decisions about their employment and earnings goals.

SPOTLIGHT ON CREDENTIAL ENGINE

Credential Engine is a non-profit whose mission is to map the credential landscape with clear and consistent information, fueling the creation of resources that empower people to find the pathways that are best for them. Credential Engine envisions a future where millions of people worldwide have access to information about credentials that opens their eyes to the full range of opportunities for learning, advancement, and meaningful careers. Through an increasing array of credentials—such as degrees, certificates, licenses, certifications, badges, and apprenticeships—job seekers, students, and workers have more options than ever. Yet, there has never been an efficient system to collect, search, and compare credentials in a way that keeps pace with the speed of change in the 21st century and is universally understood. As a result, people get lost and lose out on opportunities.

Credential Engine is working to end the confusion and frustration by mapping out the credential landscape and **illuminating paths to a better future**.

Credential Engine, along with a vast network of partners, are building a linked open data network that everyone can access for timely and trusted information about credentials. Credential Engine provides a suite of web-based services that creates for the first time a centralized Credential Registry to house up-to-date information about all credentials, a common description language to enable credential comparability, and a platform to support customized applications to search and retrieve information about credentials. This can be compared to purchasing an airplane ticket or mapping a route to the store. Open data systems on the web enable a platform like Expedia or Google Maps to get travelers where they want to go most efficiently. The same should be true for connecting people to education and work. This information fuels the creation of services and tools that allow students, employers, and workers to compare credentials and choose the best option.

HOW TO USE THIS TOOLKIT

This toolkit provides a map for how states that are looking to improve credential quality and transparency can use the quality non-degree credential framework outlined by National Skills Coalition and the linked open data network, common description language, and publishing platform created by Credential Engine.

By combining both efforts – quality and transparency – states can guarantee that students, workers, and adults in career transition receive a consistent signal about which high-quality skills training programs will lead to employment, so that they can meet their education and earnings goals.

This toolkit provides stakeholders with:

- ▶ A brief discussion of each criterion required to define quality non-degree credentials³;
- ▶ Key questions to move each criterion from definition into action;
- ▶ A description of how each criterion can be described using the Credential Transparency Description Language (CTDL);
- ▶ A list of additional resources that can be used to support the understanding of each quality criterion; and
- ▶ Examples of policy recommendations that can support quality credential and transparency efforts, and opportunities to leverage existing policies to advance these efforts.

This toolkit provides comprehensive information for states, and other stakeholders, who are interested in learning about credential quality and transparency. For stakeholders who already have familiarity with either credential quality or transparency efforts, this toolkit will demonstrate the combined power of both efforts.



By combining both efforts – quality and transparency – states can guarantee that students, workers, and adults in career transition receive a consistent signal about which high-quality skills training programs will lead to employment, so that they can meet their education and earnings goals.

Specifically:

- ▶ **States that have already adopted quality definitions for non-degree credentials** will learn more about Credential Engine and the linked open data network that can help them describe and publish information about credentials, including data elements associated with quality.
- ▶ **States that already partner with Credential Engine to make their credential information available** on the Credential Registry will learn about why efforts to define quality non-degree credentials are important, including the criteria needed to operationalize a quality definition and how to integrate recommended CTDL data elements.
- ▶ Finally, **states that have not yet engaged in conversations on credential quality or transparency** will find practical resources and recommendations to begin the process.

WHAT IS THE CREDENTIAL TRANSPARENCY DESCRIPTION LANGUAGE (CTDL)?

What it is: The Credential Transparency Description Language (CTDL) is recognized as the standard language to make credentials understandable, comparable, and discoverable. It's like a dictionary of credential data that people, organizations, and software can refer to in order to structure information. Without widespread adoption of this standard common language, people get lost and lose out on opportunities.

How it Works: The CTDL is the lexicon of credential terms. When credential information is **published** to the Credential Registry, the CTDL links each data point (e.g. competency), making it possible to compare that credential's data to all other credentials in the Registry. As the first common credentialing language dictionary, the CTDL makes credentials more discoverable across the Web, even if they aren't in the Credential Registry yet. Linked data also is widely accepted as the future of the Web. Credential Engine has a **Minimum Data Policy** for the Credential Registry, which is based on the CTDL and is the necessary baseline to establish credential transparency.

What is Required: Credential Engine makes available **Recommended Benchmark** models so that stakeholders publishing to the Credential Registry can include more comprehensive data that includes information valuable to different consumers, providers, employers, and agencies. Organizations offering credentials, education and career pathways, quality assurance, transfer value recommendations, and other information described by the CTDL are encouraged to include as much of this information as possible when publishing to the Registry. The recommended benchmarks allow for the creation and permanence of a more robust data network that offers valuable and trusted credential information to fuel the creation of services, tools, and opportunity.

How to Include Quality: As a complement to this toolkit, Credential Engine has developed a **National Quality Credential Frameworks** benchmark model that includes the consensus quality non-degree credential criteria developed by National Skills Coalition mapped to CTDL data elements. Making National Skills Coalition's framework available in a consistent common language will allow states to more easily highlight credentials of value and compare their results through the Credential Registry.

The screenshot shows the Credential Engine website interface. At the top, there is a navigation bar with the Credential Engine logo on the left, a search icon, and buttons for 'CREDENTIAL FINDER' and 'CREDENTIAL PUBLISHER'. Below the navigation bar, the page title is 'Benchmark Models for Publishing' and the main heading is 'CTDL Benchmark Models'. A sub-heading reads 'National Quality Credential Frameworks Benchmark Model'. A dropdown menu is set to 'National Quality Credential Frameworks Benchmark Model' with a 'Print this Policy' button next to it. Below the dropdown, a link to the benchmark is provided: 'https://credreg.net/registry/benchmarks?benchmark=nationalquality'. The page includes an 'Introduction' section explaining the importance of credential transparency and the role of the Minimum Data Policy. It also features a section titled 'National Quality Credential Frameworks' which discusses the role of national organizations like the Educational Quality Outcome Standards Board (EQOS), Educational Strategy Group, and National Skills Coalition in providing guidance to state governments and other organizations.

FIGURE 1: National Quality Credential Frameworks Benchmark Model

GLOSSARY OF TERMS

Application Programming Interface (API) is a computing term used in this context to denote how data are transferred between computers on the web. An API permits data to be exchanged automatically based on predetermined business rules and thereby reduce the amount of work required to publish and/or consume data.

Common Education Data Standards (CEDS) is an education data management initiative whose purpose is to streamline the understanding of data within and across P-20W (early learning through postsecondary and workforce) institutions and sectors. CEDS is supported by the National Center for Education Statistics and provides stakeholders with a common vocabulary, data model, and set of online tools to help educational stakeholders understand and use educational data.

Competencies are the knowledge, skills, abilities, and behaviors required to successfully perform critical work functions or tasks in a defined work setting.

Credential Registry is a cloud-based repository that collects, maintains and connects information on all types of credentials—from diplomas, certificates and apprenticeships to certifications, licenses and degrees of all types and levels. The registry holds detailed information in an easily accessible format. Users can explore competencies, learning outcomes, up-to-date market values and career pathways.

Credential Transparency Description Language (CTDL) is an open-source language that lets states identify, describe, organize and compare credentials with uniformity, making it easier to match educational programs with careers. The CTDL is licensed under a Creative Commons Attribution 4.0 International License and publicly available at <https://credreg.net/ctdl/terms>.

Eligible Training Provider List (ETPL) is an approved list of programs of study, training providers, and allowable types of training that participants of Workforce Innovation and Opportunity Act (WIOA) Title I programs, which include the Adult, Dislocated Worker, and Youth programs. Program participants with individual training accounts can be used to pay for any allowable type of training, as long as the program of study is on a state's ETPL. The Department of Labor also requires a variety

of outcomes measurements, like completion, employment, and wages, on students to be collected at the institution and program of study level and provided to program participants to support informed consumer choice.

Non-degree credentials included certificates (awarded by an education institution based on completion of all requirements for a program of study); apprenticeship certificates (earned through work-based learning and postsecondary earn-and-learn models that are often applicable to industry trades and professions); industry certifications (awarded by a certification body based on an individual, demonstrating through an examination process, that they have acquired the knowledge, skills, and abilities to perform a specific occupation); and licenses (awarded by a government licensing agency based on specific criteria that permit the holder to practice in a specified field or occupation). It should be noted that Credential Engine uses the term "credential" broadly. It refers to diplomas, badges, certificates, apprenticeships, licenses, certifications and degrees of all types and levels. Each credential represents unique competencies that signal what a holder can do in the workforce.

North American Industrial Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

O*NET Standard Occupation Codes (O*NET SOC) defines the set of occupations across the world of work. Based on the Standard Occupational Classification, the O*NET-SOC taxonomy currently includes 923 occupations which currently have, or are scheduled to have, data collected from job incumbents or occupation experts.

State longitudinal data systems (SLDS) or P-20W data systems are state-level data infrastructures that securely brings together specific data on early childhood, K-12 and postsecondary education, and the workforce so leaders, practitioners, and community members can better understand the progress, predictors, and performance of learners along their educational and employment pathway.

A large, stylized red graphic of the letters 'SE' is positioned in the background. The 'S' is on the left and the 'E' is on the right. The 'E' has a horizontal bar that extends to the right, ending in a large, solid red arrowhead pointing towards the right edge of the page. The entire graphic is rendered in a uniform red color against a white background.

**MAPPING QUALITY
NON-DEGREE
CREDENTIALS**

EVIDENCE OF SUBSTANTIAL JOB OPPORTUNITIES

There must be evidence of substantial job opportunities associated with the credential.

Quantitative data and employer feedback should be the foundation for measuring substantial job opportunities. While what is considered “substantial” will vary by state or region, data is needed to evaluate the market demand for the occupations that credentials are associated with. Use of real-time labor market data, existing sector partnerships, or emerging industries that represent a regional economic development strategy are all potential sources to inform whether or not employers demand the credential.

Job openings and the credentials associated with occupations should be substantiated through direct communications with employers. States can leverage trade and business associations, sector partnerships, and existing state or regional education and advisory councils to validate that a credential is needed in the hiring, retention, or promotion for an occupation in a particular industry sector.

Information on job opportunities associated with credentials should be updated periodically by states since labor market conditions change over time.



Quantitative data and employer feedback should be the foundation for measuring substantial job opportunities.

Questions to Consider in Defining Substantial Job Opportunities

- ▶ What occupations requiring credentials have current or projected job growth?
- ▶ Do industry-sector partnerships or targeted career pathway programs already designate in-demand credentialed occupations in your state?
- ▶ Are there any new and emerging industry or occupational sectors where defining credentials pose a strategic opportunity because they are a focus of the Governor’s Office, an economic development priority, or other efforts to open career fields to nontraditional or underrepresented populations?
- ▶ How will you involve businesses in either identifying or validating opportunities?
- ▶ What employer groups or industry association feedback can be accessed to validate credentials?

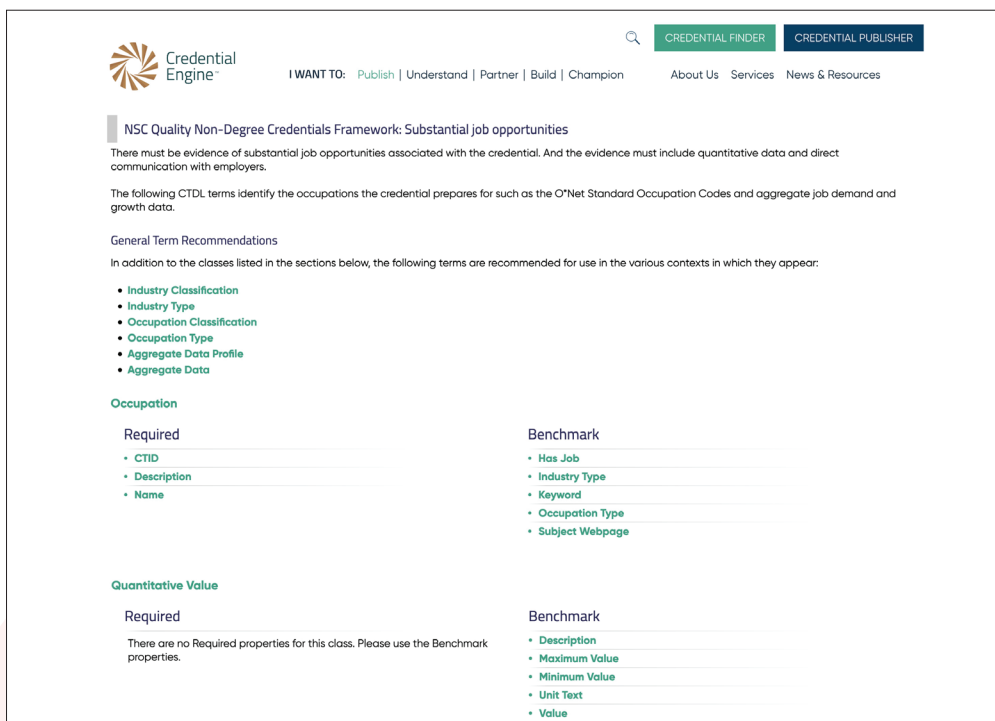


FIGURE 2: NSC Quality Non-Degree Credentials Framework: Substantial job opportunities

Mapping Job Opportunities to the Quality Benchmark Framework

Credential Engine’s CTDL terms allow stakeholders to map the substantial job opportunities in order to:

- ▶ Identify occupations that a given credential prepares an individual for, using the O*Net Standard Occupation Codes (O*NET SOC)
- ▶ Identify industries where those occupations are employed, using the North American Industrial Classification System (NAICS)
- ▶ List data to support numbers of job openings, numbers or percentages of future job growth related to an occupation.

Making information about what occupations a given quality non-degree credential is associated with, what industries those jobs are concentrated in, and what current trends or future demand looks like are a critical part of career information that should be shared with students and adult learners.

Additional Resources to Help Define Substantial Job Opportunities

Certification Finder - Find certifications and the organizations that provide them by occupation or the certifications most commonly found in industry sectors.

Building Credential Currency - This resource page includes sample focus group protocol and a sample survey that can be used to engage employers in validating non-degree credentials associated with in-demand occupations.

State Job Banks - Online job postings and real-time labor market tools (which are usually subscription based) can be used to assess current demand for credentials required for currently available jobs.

State Labor Market Information Offices - Explore state-specific tools for measuring job demand, including 10-year industry and occupation employment projections, lists of high-demand occupations, and other research on the skills and credentials needed for jobs.

EVIDENCE OF COMPETENCIES MASTERED BY THE CREDENTIAL HOLDER

Non-degree programs resulting in a credential must have clearly specified competencies that need to be mastered by the learner and a process for them to demonstrate mastery before a credential can be granted.

Competencies and the process for demonstrating mastery may be determined by various actors, including state bodies that issue occupational licenses, third-party certifying organizations that require passing an exam, or a higher education institution. Whatever the means, evidence of competencies mastered act as a signal to prospective employers that the credential holder has the foundational, industry-related, or occupational skills needed to hire, retrain, or promote individuals for an occupation.

Mastery of a single competency or general workplace skills, while useful to the individual, do not generally count towards this criterion. Individuals should expect

that a quality non-degree credential is sufficient for substantial employment opportunities and that its related competencies are demanded by employers.

Questions to Consider in Defining Competencies Mastered by Credential Holders

- ▶ What actions are needed to identify the competencies associated with each credential?
- ▶ Who determines what competencies or learning outcomes are needed for the credential?
- ▶ What are the specific foundational, industrial, and occupational competencies that an individual would master related to a particular non-degree credential?
- ▶ Are there gaps in available data tied to non-degree credentials issued by licensing bodies, third-party providers, or other private institutions?

The screenshot displays the 'NSC Quality Non-Degree Credentials Framework' website. At the top, there is a navigation bar with the 'Credential Engine' logo, a search icon, and buttons for 'CREDENTIAL FINDER' and 'CREDENTIAL PUBLISHER'. Below the navigation, the main heading reads 'NSC Quality Non-Degree Credentials Framework: Transparent evidence of the competencies mastered by credential holders'. A sub-heading states: 'There must be transparent evidence of the competencies mastered by credential holders; competencies that align with expected job opportunities. The following CTDL terms identify the competencies/skills a credential prepares for.'

The content is organized into two main sections: 'Competency Framework' and 'Competency Statement'. Each section is divided into 'Required' and 'Benchmark' categories.

Competency Framework

- Required:**
 - Description
 - In Language
 - Name
 - Publisher
 - CTID
- Benchmark:**
 - Concept Keyword
 - Concept Term
 - Creator
 - Date Copyrighted
 - Date Valid From
 - Date Valid Until
 - Derived From
 - Has Top Child
 - Is Version Of
 - License
 - Publication Status Type
 - Publisher Name
 - Repository Date
 - Rights
 - Source

Competency Statement

- Required:**
 - Competency Text
 - Is Part Of
 - CTID
- Benchmark:**
 - Coded Notation
 - Competency Category
 - Concept Keyword
 - Concept Term
 - Education Level Type
 - Has Child
 - Is Child Of

FIGURE 3: NSC Quality Non-Degree Credentials Framework: Transparent evidence of the competencies mastered by credential holders

Mapping Competencies to the Quality Benchmark Framework

Credential Engine's CTDL terms allow stakeholders to map a rich source of competencies associated with a credential in order to:

- ▶ Link the specific foundational, industrial and occupational competencies associated with the credential.
- ▶ Identify the assessment needed to demonstrate mastery of competencies associated with the credential, who owns or administers the assessment and issues the credential, and how long the credential is valid for before recertification is necessary.

Making information about what specific competencies are associated with a credential, and what licensing or regulating bodies validate the mastery of those competencies, enables learners to better match their skills and training to jobs. It also allows education and training providers to communicate that the competencies included in their programs are aligned to job requirements.

Additional Resources

Competency Model Clearinghouse - Find resources for developing and applying competency models in vital industries and sectors of the U.S. economy. These models serve as a resource for educators, economic developers, and workforce development professionals to identify specific employer skill needs, create competency-based curricula and training modes, and in the development of resources for career exploration.

O*NET - Information in the US Department of Labor's O*NET database is available for over 900 occupations. The O*NET database includes information on skills, abilities, knowledge, work activities, and interests associated with occupations. This information can be used to facilitate career exploration, vocational counseling, and a variety of human resources functions, such as developing job orders and position descriptions and aligning training with current workplace needs.

HOW CREDENTIAL ENGINE CAN HELP DEFINE COMPETENCIES ASSOCIATED WITH CREDENTIALS

In today's rapidly changing labor market, people need to be able to understand how a given credential can help them learn the skills that employers seek. This is usually a heavy lift for education and training providers and for employers. It requires the supply side (the training provider) and demand side (the employer) to have a shared language for what competencies a job requires and how the training program will assess a student's mastery.

Credential Engine's linked open data schemas play a critical role in defining the full spectrum of connections that exist among credentials, competencies, occupations, and job skills. The Credential Registry provides open tools to publish competency and skill data. At the date of publication for this toolkit, there are currently over 750 competency frameworks in the Registry containing over 49,750 competencies, growing rapidly as more organizations publish their competencies and skills.

In the Registry, competencies from multiple organizations can be aligned to competencies from the U.S. Department of Labor (DOL) O*NET and the Competency Model Clearinghouse Industry Models. The DOL competency models provide nationally recognized grounding for defining the knowledge, skills, abilities, tasks, and work activities in specific occupations and work roles, as well as cross-functional skills and foundational competencies mapped to multiple occupations. They have been developed and are continuously maintained in collaboration with employers and industry experts. These models provide grounding and contextualization for mapping and aligning all different types of competencies and skills from various sources, including education and training providers.

Stakeholders can increase the relevance of their credential offerings by using the Credential Registry to publish competency frameworks and create linked open data alignments to competency frameworks.

EVIDENCE OF EMPLOYMENT AND EARNINGS OUTCOMES

There must be evidence of the employment and earnings outcomes of individuals after obtaining the credential.

Individuals pursue postsecondary education and training for many reasons. But improving one's employment and earnings is the most common reason individuals enroll in postsecondary education or training, and this is particularly true of non-degree credentials. There must be transparent evidence of the employment and earnings outcomes of individuals after obtaining a credential so individuals and others know if a credential provides means to achieve their goals.

These data should be disaggregated by race, ethnicity, gender, disability status, and other characteristics to measure equitable progress.

Stakeholders may vary in their ability to measure and report employment and earnings for individual credentials. To fulfill this quality criterion, stakeholders will need to determine what data systems already exist and can be used to connect quality non-degree credential

completers with their employment and earnings outcomes, or if new data sharing agreements or policies are needed.

For instance, state longitudinal data systems, that securely brings together specific data on early childhood, K-12 and postsecondary education, and the workforce, are useful data repositories to understand the outcomes of individuals completing credentials by linking credential data with employment data, and to understand individuals' education and career pathways.

Additional data sharing agreements or policies may also be needed to obtain full information on the outcomes of some non-degree credentials, like occupational licenses or registered apprenticeship programs. State, federal, or other proprietary data systems likely contain information on occupational licensure holders, completers of registered apprenticeship programs, and credentials earned by third-party certification providers. States can pursue data sharing agreements with the owners of these data to further assess employment and earnings outcomes.

WHAT ARE COMMON EDUCATION DATA STANDARDS?

What it is: **Common Education Data Standards (CEDS)** is an education data management initiative whose purpose is to streamline the understanding of data within and across P-20W (early learning through postsecondary and workforce) institutions and sectors. CEDS is supported by the US Department of Education's National Center for Education Statistics and provides stakeholders with a common vocabulary, data model, and set of online tools to help educational stakeholders understand and use educational data.

Why is it needed: Student populations are highly mobile, so high-quality data must be shared in an efficient manner as students transfer from one program, institution, or system to another. Without common standards for communicating this information, transfer of data may be slow and fraught with errors, can increase staff burden, and potentially compromise student outcomes.

How can it be used: CEDS provides stakeholders with online tools to make metadata comparisons across data systems or organizations possible. By aligning an institution's or system's data dictionary to CEDS, data systems have a common vocabulary on which to compare. This is designed to help the education data community work together towards standard definitions and methodologies that will provide common, comparable data measurements and reporting that can cross states and educational agencies.

How does this relate to credential quality and transparency: Whereas credential transparency efforts make available valid and reliable information about credentials, CEDS can help stakeholders understand how to define and map student-level data across systems so that information on credential attainment and outcomes about credential holders are consistently defined and comparable.

Questions to Consider in Determining Employment and Wage Outcomes

- ▶ What capacity exists to measure employment and earnings outcomes for quality non-degree credentials?
- ▶ What is the timeframe for measuring employment and earnings after credential attainment?
- ▶ Is there a performance standard for the earnings levels associated with quality credentials? If yes, what is the threshold based on?
- ▶ How will outcomes information be made available to consumers/students?

Mapping Employment and Wage Outcomes to the Quality Benchmark Framework

Credential Engine's CTDL terms allow stakeholders to map employment and wage outcomes in order to:

- ▶ List data on the employment rates associated with a credential
- ▶ List the hourly or annual wages associated with credential holders

It is important to make transparent information on the employment and wage outcomes of a non-degree credential. Without reliable, transparent information individuals and others don't know if credentials are truly enabling individuals to achieve their goals.

It is important to note here that the CTDL focuses on specific data about credentials and does not provide a data framework for collecting information at an individual student level. Credential Engine does not collect or verify personally identifiable information, issue credentials, or verify issued credentials. Other initiatives, like the Common Education Data Standards (see accompanying sidebar) focus on aligning student level data elements across educational and workforce systems.

Additional Resources

MIT's Living Wage Calculator - This is just one of many similar resources available that displays a state or regional threshold needed to meet an individual or family's basic cost of living.

State Longitudinal Data Systems - This resource will provide information on which states have a longitudinal data system linking postsecondary students to workforce data to assess outcomes by field of study and award type.

The screenshot shows the Credential Engine website interface. At the top, there is a navigation bar with the Credential Engine logo, a search icon, and buttons for 'CREDENTIAL FINDER' and 'CREDENTIAL PUBLISHER'. Below the navigation bar, there is a main heading: 'NSC Quality Non-Degree Credentials Framework: Evidence of the employment and earnings outcomes of individuals after obtaining the credential'. The page content includes a paragraph explaining the importance of this evidence, followed by a section titled 'General Term Recommendations' which lists 'Aggregate Data Profile' and 'Aggregate Data'. Below this, there are two columns: 'Quantitative Value' with a 'Required' section and 'Benchmark' with a list of terms: 'Description', 'Maximum Value', 'Minimum Value', 'Unit Text', and 'Value'.

FIGURE 4: NSC Quality Non-Degree Credentials Framework: Evidence of the employment and earnings outcomes of individuals after obtaining the credential

STACKABILITY TO ADDITIONAL EDUCATION OR TRAINING

The gold standard is that non-degree credentials are embedded in, or lead to, additional postsecondary education or training.

It is a strongly preferred criterion that non-degree credentials “stack” to additional training opportunities and can help individuals advance in education and employment. Individuals may pursue short-term training for a non-degree credential for a variety of reasons, including as a quick route to stable employment in an in-demand job. Non-degree credentials that articulate with or provide credit towards another postsecondary program can ensure that an individual will be an on-ramp to a longer career pathway.

Stackable credentials can be particularly important for people of color and others who have been traditionally underserved by higher education. It’s also important for workers who return to education to reskill or upskill when faced with unemployment due to declining demand for their skills.



Documenting the stackable credentials associated with a quality non-degree credential helps to ensure that all learners and adult workers have a pathway to continue their education and training.

Questions to Consider in Determining Stackability to Additional Education or Training

- ▶ Will stackable credentials be required in assessing quality non-degree credentials?
- ▶ What policies exist to support the development of, mapping of, articulation of, transparency of, rather than just support? What policies may need to be created?
- ▶ How will learners and adult workers get information about the education or training pathways associated with quality non-degree credentials?

Mapping Stackability to the Quality Benchmark Framework

Credential Engine’s CTDL terms allow stakeholders to map stackable pathways in order to:

- ▶ Identify what additional credentials the completion of a given credential prepares an individual
- ▶ Identify if this credential is required to obtain other credentials

Documenting the stackable credentials associated with a quality non-degree credential helps to ensure that all learners and adult workers have a pathway to continue their education and training. It also allows education and training providers to transparently communicate to students and learners what additional programs a given credential is aligned with.

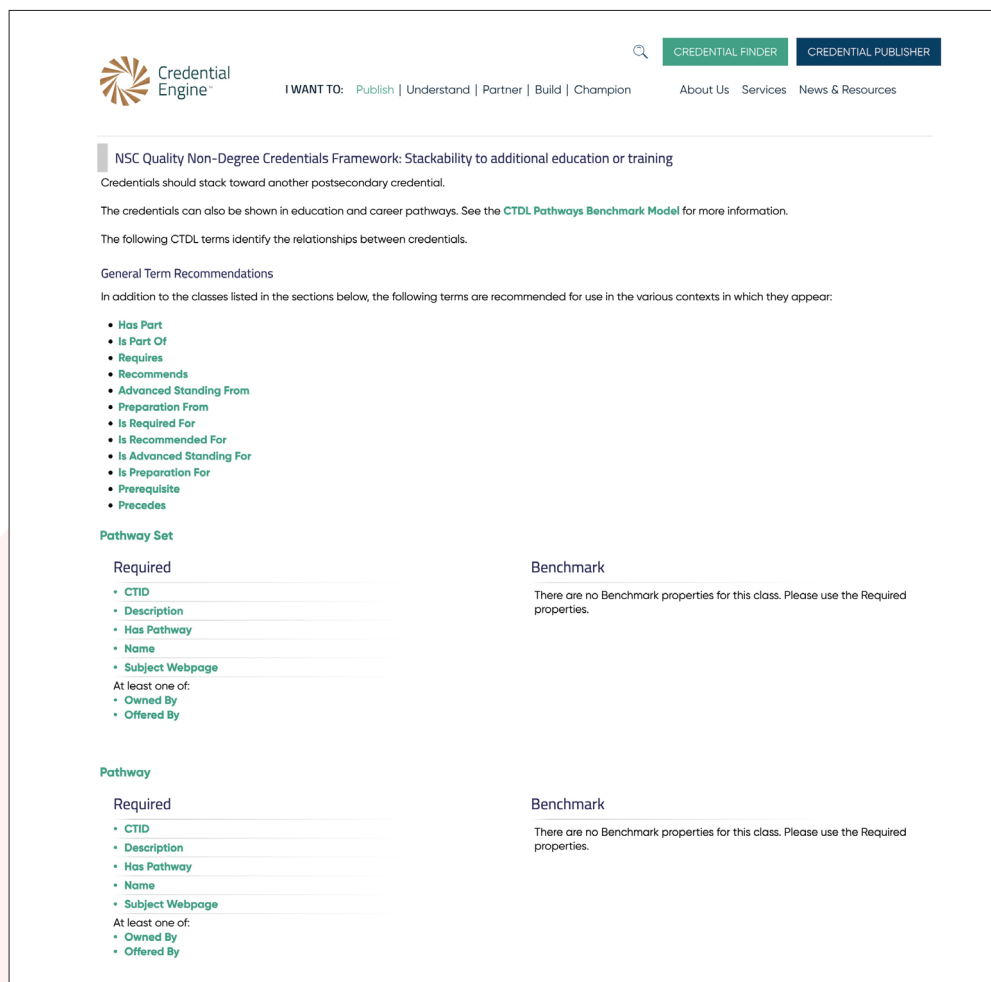


FIGURE 5: NSC Quality Non-Degree Credentials Framework: Stackability to additional education and training

Additional Resources

Connecting Credentials - This website provides a framework to identify the competencies that underpin credentials to help create and map stackable credentials to improve the alignment of educational programs to job market needs.

Stackable Credentials Tool Kit - This guide offers resources and examples for how to embed industry-recognized credentials within technical associate degree programs, including strategies for engaging employers in developing programs, designing curricula, creating career pathways, and policies to support learner completion.

Strategies and Resources to Align Non-Credit and Credit Programs - This report offers a compilation of research, strategies, and examples of success in the field to support community colleges in pursuit of more equitable student experiences and outcomes.

BRINGING QUALITY COMPONENTS TO THE CREDENTIAL REGISTRY

By mapping National Skills Coalition’s quality non-degree credential criteria to the CTDL, more complete information about a credential – including its demand, competencies, outcomes, and pathways – can be made publicly available to learners. The CTDL is recognized as the standard language to make credentials understandable, comparable, and discoverable. Credential Engine, along with a vast network of partners, are building a linked open data network that everyone can access for timely and trusted information about credentials (including degrees of all levels, certificates, certifications, badges, apprenticeships and more).

In addition to the CTDL, Credential Engine provides a suite of web-based services that creates for the first time a centralized Credential Registry to house up-to-date information about all credentials and a platform, [Credential Finder](#), to support customized applications

to search and retrieve information about credentials. This can be compared to purchasing an airplane ticket or mapping a route to the store. Open data systems on the web enable a platform like Expedia or Google Maps to get travelers where they want to go most efficiently. The same should be true for connecting people to education and work. This information fuels the creation of services and tools that allow students, employers, and workers to compare credentials and choose the best option.

Making National Skills Coalition’s framework available in the CTDL will allow states to highlight credentials of value and compare their results through the Credential Registry more easily (see accompanying sidebar on [page 20](#)).

The following image shows an example of a non-degree credential that includes the quality assurance criteria discussed in this toolkit.

FIGURE 6: Example of a non-degree credential that includes the quality assurance criteria

CREDENTIAL FINDER The Credential Finder is a tool for exploring all of the information published to the Credential Registry.

Nursing Aide Certificate - Mapped to NSC Framework
Coffeyville Community College
Certificate
ce-9B8702f-b63b-478f-a495-2dc771ada0bf FinderAPI New Finder
Last Updated: May 6, 2021 10:24 AM

Basic Info
Connect to this Credential
About this Credential
Less Than One-year Technical Certificate: A program that prepares individuals to perform routine nursing-related services to patients in hospitals or long-term care facilities, under the training and supervision of a registered nurse or licensed practical nurse.
Estimated Time to Earn
Estimated: 6 months
Credential Status Type
Active
Credential Type
Certificate
Audience Levels
Postsecondary Level
Occupations
Nursing Assistants (31-1014.00) Nursing Assistants (OBSOLETE) (31-1131.00)
Instructional Programs
Nursing Assistant/Aide and Patient Care Assistant/Aide (51.3902)
Keywords
CNA Nurse
Additional Information
In Language: English

Location Info
Owned By
Coffeyville Community College
Coffeyville Community College is a comprehensive two-year institution of post-secondary learning. The College offers 19 academic programs, 15 technical programs and 14 certificate programs. Students can graduate from the College with one of four Associate Degree options.
Owned By

More Info
Competencies
6 Requires 6 Competencies
Connections
1 Preparation For 1 Credential
Quality Assurance
1 Quality Assurance
Requirements and Recommendations
1 Requirements
Estimated Costs
1 Cost
Outcomes and Employment
2 Has Outcome Data

0 Credentials 0 Organizations 0 Assessments 0 Learning Opportunities Expand/Hide Details Compare Selected

6 Requires 6 Competencies

Nurse Aide Competency Exam Duties

Nurse Aide Competency Exam Duties

Nurse Aide Competency Exam Duties. Competency framework mapped for the NSC credential example.

Details

Competencies

- ✓ Communicating Information - 31 tasks
- ✓ Performing Basic Nursing Skills - 59 tasks
- ✓ Performing Personal Care Skills - 43 tasks
- ✓ Performing Basic Restorative Skills - 42 tasks
- ✓ Providing Mental Health and Social Service Needs - 11 tasks
- ✓ Providing Residents' Rights - 14 tasks

1 Requirements

Nursing Aide Certificate - Mapped to NSC Framework

Description:
It is possible that there may be more applicants than spots available. Some students may be waitlisted. For this reason, it is important you complete each step below early to ensure your placement.

More Information

Conditions

- Complete Coffeyville Community College Application for Admission. Apply online or stop in the Technical Campus office during weekday hours, 9 a.m. – 5 p.m.
- Contact the CCC Technical Campus to reserve your spot. Technical programs operate on a first-come, first-serve basis and have limited openings. It is important you contact us to start the enrollment process!
- Request a copy of your official transcripts from any and all educational institutions and high schools you have attended. Have them sent directly to the CCC Registrar Office. If you have them sent to you, DO NOT open them. If the seal is broken the transcript cannot be considered official.

Audience Level
Postsecondary Level

2 Has Outcome Data

Sample employment outcomes for review purposes

Description:
Sample employment outcomes for review purposes

Data Provider
Coffeyville Community College
Coffeyville Community College is a comprehensive two-year institution of post-secondary learning. The College offers 19 academic programs, 15 technical programs and 14 certificate programs. Students can graduate from the College with one of four Associate Degree options.

Source

Data Set Time Period

Description:
Nursing Aide Certificate timeframe
Start Date: 1990-01-02
End Date: 2021-03-24

Data Attributes

Description:
Data Profile for credential
Outcomes and Employment Data
 Holders in Set: 7 Successful Completers
Total WIOA Completers: 7 All Completers
Total WIOA Participants: 8 Total Enrollment (Including Currently Enrolled)
Total WIOA Exiters: 6 Completed Successfully and Exited WIOA

KEY

- 1 Identify the occupations the credential prepares an individual for, such as the O*Net Standard Occupation Codes, and aggregate job demand and growth data
- 2 A list of competencies associated with the credential
- 3 Data elements that provide employment and earnings outcomes associated with the credential
- 4 Information on the stackable pathways associated with the credential

PUBLISHING TO THE CREDENTIAL REGISTRY

What does it mean to “publish” to the Registry? Publishing to the Registry means to add data about credentials (e.g., their name, cost, competencies, location, assessment information, quality assurance information, relation to other credentials, outcomes information, etc.) to the cloud-based Registry. There are a number of ways to add data to the Registry, depending on the publishing organization’s bandwidth as well as the amount and type of available data.

Credential Engine has a Minimum Data Policy for the Registry to ensure the collection of relevant, clear, and quality data. Additionally, there are several [Recommended Benchmarks Models](#), like the National Quality Benchmark Model presented in this toolkit, that include more comprehensive data and information valuable to different consumers, providers, employers, and agencies.

How do you publish to the Registry? There are three main ways that states and institutions use to publish to the Registry.

- ▶ **Manual Entry:** Manually add or update credential information one at a time with a user-friendly tool.
- ▶ **Bulk Upload:** Easily add and/or update credential information by uploading multiple credentials with a user-friendly spreadsheet.
- ▶ **Registry Assistant Application Programming Interface (API):** The Registry Assistant API involves a mapping process with JSON code from the online source(s) of the credential data into the Credential Registry. This method allows for the most up to date information to be conveyed in the Credential Registry.

How to use information about credentials on the Registry: The [Credential Finder](#) hosts customizable “search widgets” that can be embedded on a state’s or institution’s website to provide individuals with a way to search credential data with very minimal technical know-how or investment. Widgets can be customized to filter search results that are relevant for a given audience, including credentials that meet a quality assurance threshold.

How to integrate data from the Registry: The Credential Finder hosts customizable “search widgets” that can be embedded on a state’s or institution’s website to provide individuals with a way to search credential data with very minimal technical know-how or investment. Widgets can be customized to filter search results that are relevant for a given audience, including credentials that meet a quality assurance threshold. Additionally, Linked Open Data powers a variety of tools and services so students, jobseekers, employers, policymakers, and others have access to credential information in formats and applications that work for them. For example, Indiana’s Ivy Tech Community College partners with Parchment to incorporate data from the Registry to build digital diplomas that individuals can take with them, share, and use to showcase their skills and competencies. This critical context is now shown in all digital diplomas issued by Ivy Tech and helps contribute to the institution’s goal of moving toward a true interoperable learner record.

Need more help? Credential Engine has a detailed [handbook](#) and technical assistance resources available to help stakeholders publish to and consume information on the Registry. If you have specific questions or need additional information, please email info@credentialengine.org.

POLICY RECOMMENDATIONS TO SUPPORT CREDENTIAL QUALITY AND TRANSPARENCY EFFORTS

For policy recommendations to support codifying or regulating quality criteria, policies to support quality non-degree credential attainment, and policies to improve data and measure credential attainment, please read more in National Skills Coalition's report [Expanding Opportunities: Defining Quality Non-Degree Credentials for States](#).

States who wish to pursue credential quality and transparency efforts have a range of programmatic and policy opportunities to link these efforts more intentionally to provide clear information for students and adult workers on which non-degree credentials have immediate labor market value and pathways to additional education or training.

1 Create cross-agency and cross-organization partnerships to support comprehensive credential quality and transparency efforts.

States that wish to establish quality assurance criteria for non-degree credentials should take steps to create an inclusive process to ensure that key stakeholders are at the table to define quality non-degree credentials for their state or local region.

While the appropriate lead entity for convening a group of stakeholders who will adopt a quality definition may differ from state to state, it will likely include representatives from the state's education, postsecondary education, and workforce or labor agencies.

The process should also include a significant and meaningful role for:

- ▶ Organizations that represent underserved or underrepresented worker and student populations, to ensure that the criteria support broader equity and attainment goals.
- ▶ Industry leaders who represent both employers and workers in the state's major industries, and/or economic development associations who can bring the voice and credentialing needs of businesses to the discussion.
- ▶ The governor's office, to ensure consistency with overall postsecondary attainment goals and to facilitate discussions between both internal and external partners where appropriate.

These partnerships will lead to better outcomes when credential transparency is a part of adopting a quality assurance process. These cross-system and cross-agency partnerships ensure that equity is at the center of the work, prioritize the in-demand skill needs of businesses, and guarantee that adult learners and workers have access to consistent information when setting their education and employment goals.

2 Enact state legislative policies that adopt quality non-degree credential criteria and require transparency through linked open data.

Nearly all states have set a postsecondary attainment goal, or a targeted threshold for the percent of residents holding a postsecondary credential.⁴ States also recognize that quality non-degree credentials are a key component of state credential attainment goals, help workers obtain better jobs and serve to reconnect them to further postsecondary education and training opportunities. Therefore, it is no surprise that states are increasingly taking legislative action to set goals or targets for credential attainment, to identify high-value credentials, to develop protocols to provide academic credit for credentials, and to create incentives for credential programs.⁵

Legislating the establishment of a credential quality definition can help ensure that the definition is sustained as administrations change and can serve as an important

signal to state agencies and other stakeholders about the importance of the definition as part of the state's education and workforce training policy frameworks.

Furthermore, legislative policies should also mandate a common language and repository for all credentials to streamline data collection and reporting and allow for comparison across credential types. Utilizing the CTDL framework, as discussed in this toolkit, not only supports better comparisons across state systems that house data on credentials but also allows for better comparisons across state lines. Ultimately, publishing details about all credentials as linked open data will guarantee that everyone has current and complete information.

3 Enact organizational level policies that prioritize funding for quality non-degree credentials.

In the absence of statewide legislation to codify quality non-degree credential criteria, individual institutions, agencies, or organizations should adopt their own quality assurance definitions and use them to guide decisions around eligibility for tuition assistance and other public funding for education and jobs training programs.

Funding for federal workforce development programs has been in a **decades long decline**, so there are fewer opportunities for unemployed or underemployed workers without a college degree to gain access to high-quality training opportunities or market-driven upskilling.

A quality assurance process benefits organizations who need a way to effectively and efficiently allocate limited federal and state training dollars. As discussed in this toolkit, a quality definition must be informed by transparent evidence of the value of a credential to meet the needs of employers, a public process that includes input by key stakeholders, and it must position the student to make informed decisions about their education and employment goals.

4 Align existing data systems to collect data on non-degree credentials.

Policymakers realize the importance of aligning credential attainment with the real-world demands of the marketplace so that the education system can more quickly respond to structural shifts in the labor market so that people, businesses, and economies don't suffer as much. By leveraging existing data systems to collect data on non-degree credentials and analyze their outcomes, states can begin to streamline the interoperability, or how data systems talk to each other, across education and workforce systems.⁶

Two common data systems that states are leveraging to combine credential quality and transparency efforts include:

- ▶ Student longitudinal data systems (SLDS), or P-20W systems, can be expanded to include new data sources on non-degree credentials, like occupational licenses, registered apprenticeships, and third-party or proprietary training providers. This type of expansion also serves to support and strengthen the essential role these data systems play in providing policymakers with information about how the education and workforce systems are preparing workers to meet the needs of businesses in regional and state economies.

When states center data collection of non-degree credentials in existing SLDS, they, in turn, can increase stakeholder awareness and support of these systems *as a necessary and ongoing source of data* on non-degree credentials, their quality, and outcomes of credential holders. Showing the value of data in informing decisions is critical to long-term sustainability efforts of SLDS.

- ▶ The Eligible Training Provider List (ETPL) is another system that states are using as a rich source of data on non-degree credentials and a way to incent quality credentials. Under the federal Workforce Innovation and Opportunity Act (WIOA) Title I program participants using WIOA training funds must select a training program from the state's ETPL.⁷ WIOA requires that this list of training programs and providers are made publicly available, along with performance and cost information, to support informed consumer choice.

Additionally, the Department of Labor mandates that a state ETPL must include measures of the quality of the program or training services. State who adopts a quality non-degree credential definition should apply it to program eligibility requirements for their state ETPL.

To maintain progress towards closing equity gaps, we need systems capable of tracking programs by demographic characteristics, we must make education and workforce outcomes available by population subgroups, and we need to use the data to actively address disparate outcomes when they become apparent.

To guarantee that quality criteria support equitable post-secondary attainment goals, data systems should also be used to collect and link demographic data on individuals with their education and employment records. Disaggregating employment and earnings outcomes by race, ethnicity, gender, disability, age, low-income status, and veteran status, for example, are necessary to see if post-secondary attainment and career success are available to all residents. If outcomes are not equitable, state can then use these data to find the appropriate policy levers to fix the inequities present. Disaggregated data should not report personally identifiable information and should protect the privacy of individuals, including obtaining consent from individuals before collecting data that informs them on how the information they supply about themselves will be used for outcomes reporting.

5 Make outcomes transparent through customer information tools.

Data about credentials matter throughout the learner lifespan. Data are essential to determine the quality of non-degree credentials and to find the employment and earnings outcomes of individuals after obtaining the credential. Yet simply collecting outcomes data should not be the end goal. States must share outcomes data through customer-facing tools that are built for learners.

State data systems, like those listed above, can be used as a bridge to make information on quality non-degree credentials Information on quality non-degree credentials should be presented in a way that provides clear and relevant information for a person who is trying to decide which training program will help them meet their career goals.

There may be a suite of data tools (training provider lists, pathway evaluators, supply and demand reports, and dashboards) needed to give all stakeholders the right information they need to make informed individual, business, programmatic or policy decisions.

Many initiatives exist to support states in this work. For example:

- ▶ The **Workforce Data Quality Initiative** (WDQI) is a collaborative partnership at the Federal level between the US Departments of Labor and of Education, with a goal for States to use their state longitudinal data systems to follow individuals through school and into and through their work life. States who receive WDQI grants develop new, or expand upon existing, state longitudinal data systems to conduct workforce and education analyses, and to use this information to create materials on state workforce performance to share with stakeholders and the public.
- ▶ Philanthropic efforts, like the **Data for the American Dream** (D4AD) initiative, support innovative efforts to expand access to education and career data through public-private partnerships. D4AD has a goal to help individuals make better career decisions in a changing economy through data-driven information and tools developed specially to help working people access better jobs and educational opportunities.

State policymakers and skills advocates can use these policy levers to require that information around quality credentials, and the training programs available to access and attain a quality credential, be made publicly available. In this respect, credential transparency eliminates barriers to information and makes opportunities more equitably attainable for populations that have been systematically shut out of the education and workforce training system. Gaining information about quality credentials should not depend on personal social networks, wealth, or the cultural capital to connect the dots between such information.⁸

MORE RESOURCES FOR STATE POLICY DEVELOPMENT

Credential Engine, along with 12 national organizations focused on supporting state leadership and workforce, education and data advocacy and technical assistance experts, have come together to form a State Policy Partnership. Specifically, this Partnership:

- ▶ Builds awareness among state policymakers around the importance of credential transparency to their own state workforce and education goals and strategies;
- ▶ Elevates a common language about credentials for use in state policy;
- ▶ Increases demand among policymakers for credential transparency; and
- ▶ Provides specific actions policymakers can consider using to support integrating credential transparency into their larger human capital development efforts.

Together, the State Policy Partnership has published several policy briefs specifically designed for states to explore ways to take action to support, integrate, and leverage credential transparency efforts:

- ▶ [Creating Equitable Futures for All Learners Through Credential Transparency](#)
- ▶ [Credential Transparency and P-20W Data Systems](#)
- ▶ [Making Information About Credentials More Actionable Through Increased Transparency and Quality Assurance](#)
- ▶ [Making Sense of Credentials: A State Roadmap and Action Guide for Transparency](#)
- ▶ [The Role of States in Credential Transparency](#)

ENDNOTES

- 1 Credential Engine. (2021). [Counting U.S. postsecondary and secondary credentials](#). Washington, DC: Credential Engine.
- 2 Currently, 45 states have set attainment goals that meet Lumina Foundation's criteria for rigor and efficacy; see <https://www.luminafoundation.org/stronger-nation/report/2021/#nation>
- 3 For detailed information on the quality non-degree credential criteria, development of the criteria, and state policy recommendations on quality non-degree credential attainment, please see NSC's [Expanding Opportunities: Defining Quality Non-Degree Credentials for States](#) report.
- 4 Currently, 45 states have set attainment goals that meet Lumina Foundation's criteria for rigor and efficacy; see <https://www.luminafoundation.org/stronger-nation/report/2021/#nation>
- 5 Credential Engine. (2021). [The role of states in credential transparency](#). Washington, DC: Credential Engine.
- 6 Credential Engine. (2021). [Credential transparency & P-20W data systems: Aligning education and employment information to meet state talent goals](#). Washington, DC: Credential Engine.
- 7 CareerOneStop maintains a list of state directories of WIOA-eligible training programs: <https://www.careeronestop.org/LocalHelp/EmploymentAndTraining/find-WIOA-training-programs.aspx>
- 8 Credential Engine. (2021). [Creating equitable futures for all learners through credential transparency](#). Washington, DC: Credential Engine

