THE ROLE OF CERTIFICATES
IN SIGNIFYING KNOWLEDGE AND SKILLS ATTAINMENT

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BACKGROUND

ABOUT THE BRIEF

This issue brief was developed by Workcred as part of its "Demonstrate Value Through Linking Data" project. One of the goals of the project was to address the continued confusion about the purpose and characteristics of certificates and certifications as well as provide an overview of organizations that convene credentialing bodies.

The following three issue briefs were developed:

» *Certification Myths Debunked* addresses five common myths about certifications.

» *The Role of Certificates in Signifying Knowledge and Skills Attainment* brings clarity to the different types of certificates with a particular emphasis on the role of assessment-based certificates and certificates of achievement.

» *A Primer on Associations for Credentialing Professionals* provides an overview of four organizations that bring together credentialing bodies that issue certifications and certificates outside of higher education institutions.

ABOUT THE PROJECT

From 2020-2022, Workcred brought together a network of certification bodies to explore the potential for data-linking efforts to improve understanding of the value of certifications, the aggregate labor market outcomes of certifications, and insights into successful career pathways into the workforce. The network is working with the National Student Clearinghouse to match data from certification bodies, educational attainment and enrollment data from universities, and aggregate wage data from the U.S. Census Bureau.

Despite their prevalence in the workforce, there is no complete, centralized source of data on the outcomes or impact of certifications. While there have been isolated efforts to collect this data by states, as well as self-reported data from certification bodies, outcomes data are fragmented and incomplete. By linking different data sets, the information can be used by individuals, employers, and policymakers can make more informed choices about the return on investment of certifications.

ABOUT WORKCRED

Formed in 2014, Workcred is an affiliate of the American National Standards Institute (ANSI). Its mission is to strengthen workforce quality by improving the credentialing system, ensuring its ongoing relevance, and preparing employers, workers, educators, and governments to use it effectively. Workcred's vision is a labor market that relies on the relevance, quality, and value of workforce credentials for opportunities, growth, and development.

INTRODUCTION

Over the last several decades there has been a shift in the visibility and growth of certificates, which are offered upon completion of an education or training program. According to Credential Engine, in 2020 there were 318,792 unique certificates, which is an increase of 20.7 percent since 2019.[1] However, the number of certificates is most likely much higher if certificates issued by professional or trade associations were counted.

Several factors have been driving the growth of certificates. First, there has been a shift to a skills-based economy which makes it more critical now for people to define their skills rather than solely relying on their educational attainment. This shift toward skills affects how individuals decide what credentials to earn and which hiring practices employers use. As a result, certificates that signify that an individual has achieved learning outcomes are offered at all levels from sub-baccalaureate through post-graduate. The proliferation of certificates allows people to earn them at all stages of their career. Second, because certificates can be earned separately or as part of a college degree, college students may add a certificate to enhance their degree program, while an incumbent worker may earn a certificate to learn a specific skill or gain specific knowledge. Third, certificates provide colleges and universities with a substantial revenue source by allowing them to target a broader audience. And finally, there has been increasing interest from policymakers, employers, and individuals to know the return on investment of a credential, including certificates.

As discussed in this issue brief, there are different types of certificates that serve different purposes. And to confuse matters even more, whether or not someone achieves learning outcomes after earning a certificate is complicated by the fact that not all certificates convey the same type of information about the knowledge and skills of the certificate holder. This issue brief highlights the purposes of different types of certificates, outlines the national standards for certificate issuers, and describes the process to accredit certificate issuers.

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1   Credential Engine, *Counting U.S. postsecondary and secondary credentials*, Washington, DC: 2021.

TYPES OF CERTIFICATES

Certificates can be broadly grouped into two categories—those that signify completion of an education or training program and those that include an assessment or a series of assessments that measure learning objectives or knowledge.

CERTIFICATE OF COMPLETION

Certificates that signify completion of an education or training program are commonly referred to as certificates of completion or participation. These certificates indicate that a person attended the education and training program but does not indicate that learning outcomes were attained by the certificate holder since they do not include an assessment of learning.

ASSESSMENT-BASED CERTIFICATE OR CERTIFICATE OF ACHIEVEMENT

If a certificate is issued upon completion of an education or training program and includes an assessment(s) to measure whether the learner achieved the intended learning outcomes, then the certificate is referred to as an assessment-based certificate or a certificate of achievement (see Figure 1). The steps involved to develop these certificates include creating a management system, a learning system, and an assessment system for the program. Creating a management system includes establishing an operational system based on continuous improvement principles. The learning system includes establishing an instructional design system that includes conducting a needs analysis, as well as the design, development, implementation, and evaluation of the certificate program. The assessment system includes developing appropriate assessment(s) to measure the intended learning outcomes where the participants must pass assessments based on criterion-references tests or rubrics. The assessments may be offered throughout the course or only at the conclusion of the course. The assessments can also take many forms, including oral, written, or practical. Upon completion of the education or training program and passing the assessments, the student receives a certificate of achievement or an assessment-based certificate. These three systems must be aligned to ensure that the learners achieve the learning outcomes at the end of the program.

FIGURE 1: CHARACTERISTICS OF ASSESSMENT-BASED CERTIFICATES AND CERTIFICATES OF ACHIEVEMENT

Awarded by	Community colleges, universities, employers, labor unions, for-profit training providers, government agencies, and professional and trade associations
Awarded for	Passing an exam or a series of summative assessments either throughout or at the end of an education or training program
Indicates	A person has achieved the learning outcomes in an education or training program
Assessment created by	Education and training providers who may have a test and measurement background; if it is a criterion based assessment with a determined pass-fail point, it will be developed by a test and measurement expert
Assessment type	An educational assessment designed to specifically measure learning outcomes, which may be a criterion-based exam or detailed rubrics if it is a performance-based assessment
Time to complete	Length of certificate programs vary
Period of validity	Issued for life or for a specific period of time, which will be listed on the issued certificate
Renewal requirements	No renewal requirement
Revocation process	Cannot be revoked, only invalidated
Standards for accreditation	ANSI/ASTM E2659-18: *Standard Practice for Certificate Programs* ICE 1100: 2019 – *Standard for Assessment-Based Certificate Programs*

As an example, a community college course with a final test or a final project for which a certificate is awarded, could be called either an assessment-based certificate or a certificate of achievement if it includes an assessment of the learning outcomes. Some higher education certificates do not include an assessment as part of the course, so therefore they would be considered a certificate of participation or completion. This is an important distinction because a certificate of participation or completion does not signal to an employer that the individual has gained knowledge by attending the course, since there were no assessments to measure learning outcomes as part of the education or training program.

CERTIFICATE ISSUERS

Since certificates are associated with education and training programs, they are issued by a variety of providers (see Figure 2). Community colleges, universities, employers, for-profit training providers, labor unions, government agencies, and professional or industry associations all issue certificates. Community colleges and universities issue both credit and non-credit certificates in numerous academic disciplines. Some university certificates complement an academic degree, similar to the relationship between an academic major and minor. Universities also offer for-credit graduate certificates, many of which are online, that target incumbent workers who want to gain specific expertise in areas such as data analytics, media and analytics, or managerial analysis and business economics.[2]

FIGURE 2: VARIOUS CERTIFICATE ISSUERS

- UNIVERSITIES
- COMMUNITY COLLEGES
- EMPLOYERS
- FOR-PROFIT TRAINING PROVIDERS
- LABOR UNIONS
- GOVERNMENT AGENCIES
- PROFESSIONAL OR INDUSTRY ASSOCIATIONS

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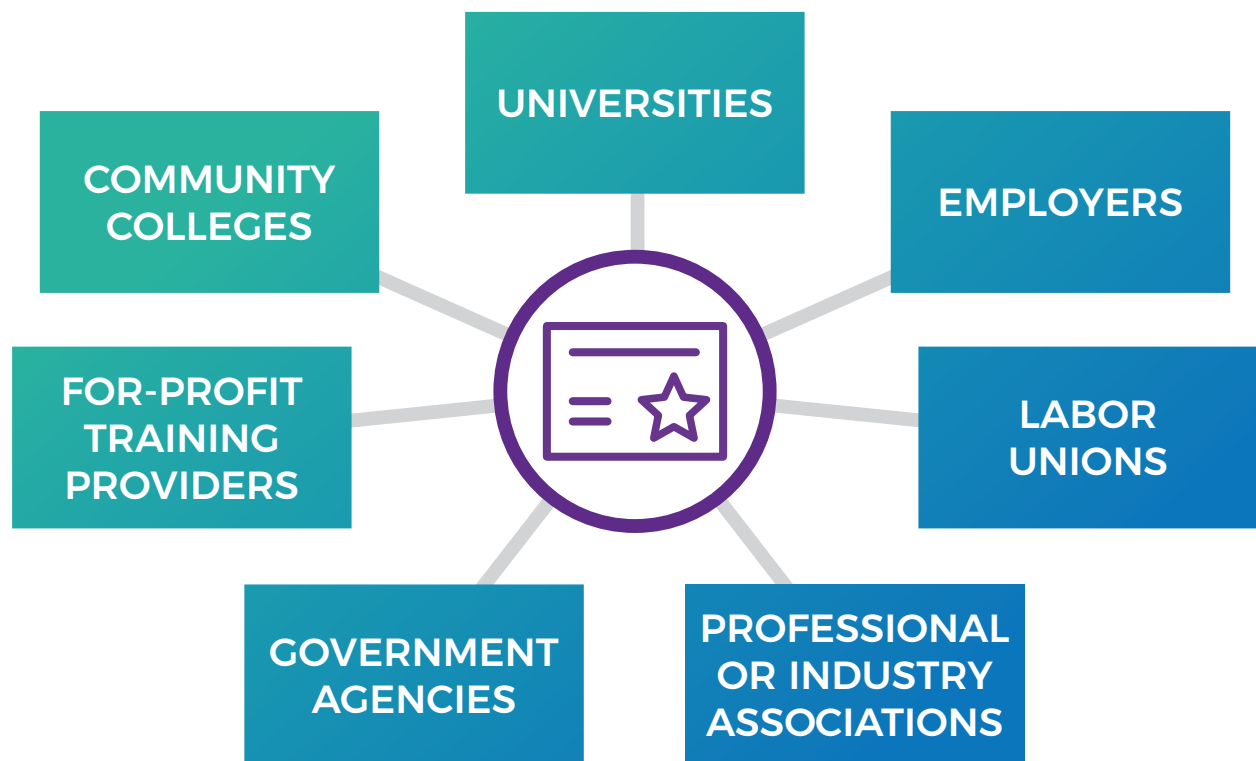
2   University of Illinois Champaign-Urbana, "Online Graduate Certificates," accessed March 28, 2022: https://online.illinois.edu/online-programs/graduate-certificates.

Community colleges also offer certificate programs, which have different names (e.g., certificate program, certificate of completion, career studies certificate, technical certificate, advanced technical certificate) and different purposes. Certificate programs may be for-credit, non-credit, technical, or stackable with other certificates or into an associate's degree program. The CNC Machinist Certificate at the Community College of Baltimore County or the Certificate of Completion in Adobe Foundations: Audio and Video Production at Mesa Community College are examples of for-credit certificate programs.[3] At Valencia College, the Biotechnology Laboratory Specialist Certificate and the Biotechnology Specialist Certificate programs are comprised of courses that meet the requirements of the associate degree in biotechnology laboratory sciences.[4] Students at Valencia College can earn the biotechnology certificates as stand-alone credentials or earn them as they complete the associate degree requirements. By integrating certificates and degrees, students have the flexibility to earn credentials in a way that best meets their educational and career goals.

Certificates may also be issued by employers and labor unions, such as through apprenticeship programs. People who complete an apprenticeship program earn a certificate upon completion. Employers that offer professional development or company-sponsored training issue certificates when an employee completes the program. Many people also earn certificates through their industry or professional association. According to the American Society of Association Executives™, "80 percent of associations deliver professional development and training programs."[5] With certificates issued by many different types of organizations, the challenge for consumers of certificates is differentiating which certificates signify that the certification holder met learning outcomes versus just completed the education or training.

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3   Maricopa Community Colleges, "Adobe Foundations: Audio and Video Production," accessed March 28, 2022: https://www.maricopa.edu/degrees-certificates/computer-information-technology/adobe-foundations-audio-video-production-5166n-ccl; and Community College of Baltimore County, "CNC Machinist Certificate, Credit Certificate," accessed March 28, 2022: https://www.ccbcmd.edu/Programs-and-Courses-Finder/Program/cnc-machinist-certificate.

4   Valencia College, "Biotechnology Laboratory Services," accessed March 22, 2022: https://catalog.valenciacollege.edu/degrees/associateinscience/biotechnologylabsciences/#text.

5   American Society of Association Executives, Benchmarking in Association Management: Policies and Procedures, Vol. 1 (2018).

STANDARDS FOR CERTIFICATE PROGRAMS

A standard is an agreed-upon way of doing something. In practice, it is a document that sets specific guidelines and requirements for the design, operation, manufacture, and use of products, systems, and personnel across industry sectors. So, what about certificates—are there even standards for certificate programs? The answer is yes. There are two standards that are relevant to assessment-based certificate programs and certificates of achievement: the ANSI/ASTM E2659-18 *Standard Practice for Certificate Programs* (ANSI/ASTM E2659), and ICE 1100: 2019 - *Standard for Assessment-Based Certificate Programs* (ICE 1100:2019). Both standards provide guidance to certificate issuers about the process to develop and administer certificate programs; establish requirements for both the organization issuing the certificate and the certificate program for which certificates are issued; and provide a foundation for the accreditation of an organization to issue a certificate upon an individual's successful completion of an education or training program.

As part of the standards, certificate issuers are required to have systems in place that address issues such as organizational structure, policies and procedures, financial management, outsourcing and contracting, and records control. Both standards require certificate issuers to use experts to inform aspects of the certificate development and implementation process. As part of the organizational structure, ANSI/ASTM E2659 requires certificate issuers to have an advisory group comprised of individuals who are knowledgeable about content area and can provide input into the certificate program(s). ICE 1100:2019 requires the use of subject matter experts to provide guidance and input into the development of the certificate program(s).[6] Both approaches provide information to inform the purpose, intended learning outcomes, and instructional design plan of the certificate program.

There are also requirements around the analysis, design, development, implementation, and evaluation of a certificate program. This includes identifying the minimum requirements for people to participate in the certificate program and the length of time that the knowledge and skills gained in a certificate program will be valid. For example, certificate programs in information technology (IT) may be valid for less time than a certificate in food handling because the knowledge and skills change more rapidly in IT. In addition, the certificate

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6   Institute for Credentialing Excellence, *Standard for Assessment-Based Certificate Programs* (ICE 1100:2019).

program must regularly conduct an evaluation to determine if the program is meeting its performance objectives, whether assessments are still valid, and identify if any changes need to be implemented.

Both standards also offer guidance about how a certificate is issued and can be used, including the minimum information that must be included on the certificate. Both standards require the name of the certificate issuer, name of the certificate holder, title and scope of the certificate program, and date the certificate was issued to be included on the certificate. Certificates accredited under ANSI/ASTM E2659 also require a unique identifier and the term or length of time that the content is valid for which the certificate is issued. For areas where the content knowledge is constant, the term could be listed as "valid-for-life."[7] ICE 1100:2019, on the other hand, requires an expiration date only if it is applicable.

The standards also include instructions about whether it is allowable to develop acronyms or designations to show that a person earned a certificate. ANSI/ASTM E2659 allows certificate bodies to develop acronyms and designations, but ICE 1100:2019 prohibits their use. To minimize confusion between certificates and certifications, both standards forbid certificate providers from stating that a person is "certified." ANSI/ASTM E2659 provides additional restrictions that the designation or acronym cannot use the "words certified, certificated, licensed, registered, or accredited or in any other way imply such statuses."[8] The standard also outlines the type of information that needs to be verifiable if a digital badge is issued. ANSI/ASTM E2659 also outlines the minimum information that needs to be verifiable in a digital badge, which includes the certificate issuer, certificate holder, certificate purpose and scope, certificate requisites, and certificate issue date and term.[9]

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7   ASTM International, *Standard Practice for Certificate Programs* (ASTM E2659:2018).

8   Ibid.

9   Ibid.

ACCREDITATION

The two main accrediting bodies in the United States that accredit assessment-based certificate programs are the ANSI National Accreditation Board (ANAB) and the National Commission for Certifying Agencies (NCCA). ANAB accredits certificates against the standard ANSI/ASTM E2659, while NCCA accredits against the ICE 1100:2019 standard.

Accreditation as defined by the standard, ISO/IEC 17011:2017 *Conformity assessment - Requirements for accreditation bodies accrediting conformity assessment bodies*, is "third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks."[10] This means that the certificate issuers need to demonstrate their competency in ensuring that the participant achieves the learning outcomes from the education or training program. Accreditation in this case is not having the issuer just meet a requirement, but rather requires the issuer to demonstrate its competency to achieve specific tasks.

Both the ANAB and NCCA accreditation assessment processes involve a document review to ensure that the documents adhere to the accreditation requirements. But only ANAB's Certificate Accreditation Program follows data triangulation, in which the assessment process uses three methods—a document review, observation, and interviews—to verify that the programs are in compliance with the standard. To conduct this verification, ANAB requires a two-day, on-site assessment at the certificate issuer's main operational office (see Figure 3). The NCCA accreditation program only conducts an on-site visit to the certificate issuer if deemed necessary. Both accreditation programs grant accreditation for five years and require annual reviews.

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10 International Electrotechnical Commission, *Conformity assessment - Requirements for accreditation bodies accrediting conformity assessment bodies* (ISO/IEC 17011:2017).
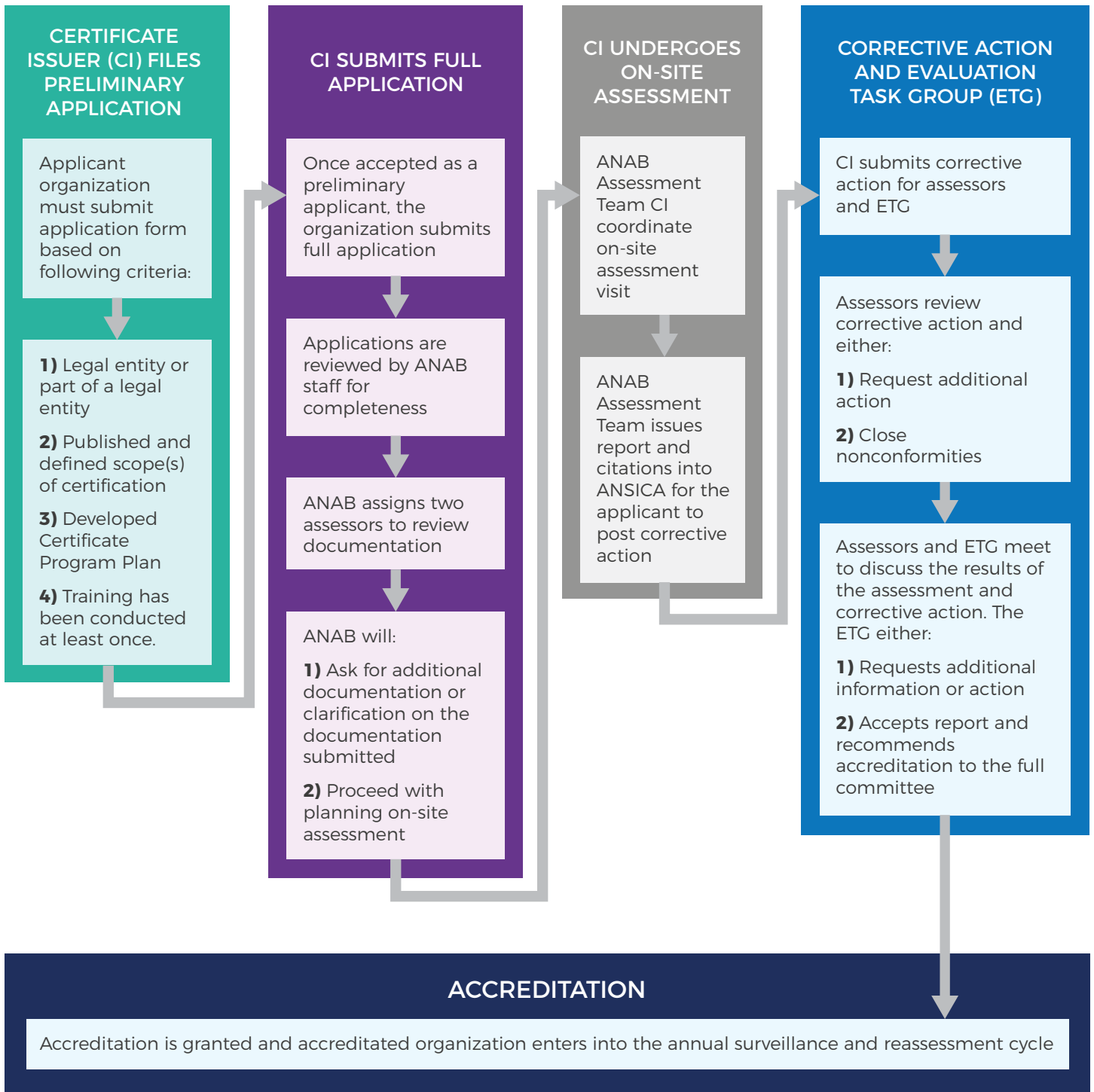
THE VALUE OF ACCREDITATION

What is the value of accrediting assessment-based certificate programs? Some assessment-based certificate programs are high-stakes programs, meaning there are consequences to society, an organization, or an individual if the certificate holders cannot perform their jobs appropriately. For these high-stakes programs, accreditation assures that a certificate program has educational defensibility, which is based on multiple components of validity. Two of the most important components are content validity and assessment validity and reliability. This means that the content of the assessment must be based on industry-accepted best practices and approved and monitored by an expert oversight group to create content validity. To establish assessment validity and reliability, the scoring of the learner assessment must be based on a passing standard, which is developed using a criterion-referenced method or rubrics. Both content validity and assessment validity and reliability are addressed in the ANSI/ASTM E2659 and ICE 1100:2019 standards. One of the benefits for certificate issuers to become accredited is that the documentation related to content validity and assessment validity and reliability can be submitted as evidence in legal cases that involve incidents in which an employee's competency is in question. Accreditation may also be viewed as a form of quality assurance since the certificate issuer meets a standard that is validated by a third party.

FIGURE 3: ANAB CERTIFICATE ACCREDITATION PROCESS

CERTIFICATE ISSUER (CI) FILES PRELIMINARY APPLICATION

Applicant organization must submit application form based on following criteria:

1) Legal entity or part of a legal entity

2) Published and defined scope(s) of certification

3) Developed Certificate Program Plan

4) Training has been conducted at least once.

CI SUBMITS FULL APPLICATION

Once accepted as a preliminary applicant, the organization submits full application

Applications are reviewed by ANAB staff for completeness

ANAB assigns two assessors to review documentation

ANAB will:

1) Ask for additional documentation or clarification on the documentation submitted

2) Proceed with planning on-site assessment

CI UNDERGOES ON-SITE ASSESSMENT

ANAB Assessment Team CI coordinate on-site assessment visit

ANAB Assessment Team issues report and citations into ANSICA for the applicant to post corrective action

CORRECTIVE ACTION AND EVALUATION TASK GROUP (ETG)

CI submits corrective action for assessors and ETG

Assessors review corrective action and either:

1) Request additional action

2) Close nonconformities

Assessors and ETG meet to discuss the results of the assessment and corrective action. The ETG either:

1) Requests additional information or action

2) Accepts report and recommends accreditation to the full committee

ACCREDITATION

Accreditation is granted and accreditated organization enters into the annual surveillance and reassessment cycle

BENEFITS OF ASSESSMENT-BASED CERTIFICATES AND CERTIFICATES OF ACHIEVEMENT

As explained in this brief, there are multiple types of certificates available today that serve a variety of purposes. And to make things even more complex, employers are faced with determining how certificates presented by job applicants and earned by incumbent workers are relevant to the skills necessary for specific jobs. Only assessment-based certificates and certificates of achievement convey that the learner achieved the learning outcomes of the education or training program. These certificates also signal to the employer that the individual gained knowledge and/or skills. In addition, and highlighting the element of quality assurance, issuers of assessment-based certificates and certificates of achievement have opportunities to develop their programs based on national standards and become accredited. These qualities all serve to highlight the benefits of assessment-based certificates and certificates of achievement as a credential that signifies the knowledge and/or skills of the certificate holder, which is valuable both to the individual and the employer.