



Education
Strategy
Group

STACKABILITY GUIDE

BUILDING CREDENTIAL
CONNECTIONS WITHIN INSTITUTIONS



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INTRODUCTION

Stackable credentials and guides to support implementation of them have been available for students and institutions for some time. Most in higher education are familiar with stackable credential pathways in healthcare (such as CNA to RN); however, there has been little movement toward scaling such credential pathways across other fields, and in many cases these pathways are found in just a few institutions. And when institutions do design credentials to be stackable on paper, some of these credentials leave much to desire in terms of equitable student use of pathways and subsequent realization of economic mobility. Stackable credentials have the potential to provide more equitable access for students, offer more flexible training options for employers, and generate a pipeline of individuals who will re-enroll in institutions for upskilling. These more flexible postsecondary options may be particularly valuable in a time of pandemic enrollment declines and increasingly transient patterns of student educational engagement.

ABOUT ESG

In today's economy, success largely depends on attainment of a credential beyond high school. Education Strategy Group supports the preparation, entry, and success of individuals from K-12 through postsecondary education to build a more equitable system, open economic doors for all, and strengthen our democracy. We work with America's education leaders and employers to design, scale, and implement strategies that improve attainment. ESG specializes in strengthening the transition points that have the highest stakes for youth and adults and the highest benefit for states, communities, and economies. We are driven by the conviction that a robust education system aligned with workforce demands leads to a stronger, more equitable society.

A CAVEAT AND NOTE OF THANKS

We offer our deep and sincere appreciation to the institutional representatives that shared their experience, lessons, and learnings for practice examples in this toolkit. The institutions highlighted throughout this toolkit are not intended to be representative of all institutions or ways in which credentials are or may be stacked. Instead, these institutional examples offer insight into some of the different approaches currently used. There are a wide variety of ways in which institutions are examining, designing, and stacking credentials and the examples are not intended to be all-encompassing. Special thanks to Natasha Jankowski, Amber Garrison Duncan, and Lindsay Daughtery. This guide was created with resources from the generous support of the Bill & Melinda Gates Foundation and Lumina Foundation.



THE CHALLENGE

Students are increasingly seeking short-term credentials that will help them see a quick improvement in their wages. In nationally representative polls led by Strada Education Network, respondents reported a preference for non-degree and skills training options.¹ While 1 in 5 stated their intent to enroll in an education program, the preferred route was skills training followed by non-degree credential offerings.² This is a trend that is projected to increase.³ It is not surprising given that many workforce training programs, offered on a non-credit basis, provide flexibility and responsiveness to employer needs in a more timely fashion than is currently possible when moving through the formal approval process of accredited credit-bearing programs.

The concept of stacking credentials - where earning additional credentials builds on the learner's knowledge and advances their workplace and academic careers - has been expanding for over twenty years. Many institutions map the ways credential can stack on one another, showing the promise of academic and career progression. Few studies have been able to parse out the effects of stacking credentials due to a combination of data limitations and the nonlinear ways that students navigate stackable programs. Recent evidence from Virginia suggests that stacking credentials can increase the likelihood of employment and quarterly wages, but there is still work to be done to better understand the outcomes of stacking.⁴

Short-term credentials may serve as a start, but research suggests that long-term career mobility is limited for individuals who only complete short-term credentials, and individuals must go on to longer-term credentials to see substantial earnings gains.⁵ However, students are often left facing a complex system of potential dead ends to navigate where the students are mobile but the credentials are not. For example, while opportunities exist for prior-learning assessment or receiving credit for learning outside of traditional postsecondary coursework, the process is complicated, often hidden, and expensive for students even though the benefits of receiving prior-learning offerings are well documented as a means to advance the success of students.⁶ There are many disconnects between credit and non-credit educational offerings, as outlined in [A More Unified Community College](#), that make credential stacking challenging, often inequitable, and limiting of the possible on- and off-ramps for students into jobs or continuing education.

Students who step in and out of education due to life circumstances are essentially forced to start over in order to continue their studies because they are often unable to receive credit for the knowledge and skills gained through prior offerings, work experience, or training. Without clear connections between credit and non-credit courses and credentials, many adult students of color who start in non-credit programs and desire to continue into degree programs are unable to do so.⁷ As a result, students who choose to continue their education often find that their non-credit courses don't count towards their newly desired program or degree. This causes many students to take on more courses and spending more money than originally anticipated. In short, true stackability of credentials has yet to be achieved.

WHY A GUIDE?

Why is there a need for a guide? The reality is that regularly used and effective stackable credential pathways are rare and when they do exist, they are not often accessible or widely understood by students. This guide is designed to help institutional leaders move stacking credentials from a concept to a reality and to create stackable credentials that position students to move internally seamlessly through credit and non-credit, between and among programs, to adjacent career pathways, and over time as students return to engage with institutions for various educational and skill-building needs. The focus is to examine processes and practices within an institution such that existing institutional credentials, and new ones that get added, are stackable.

The internal institution focus is intentional. Before a credential can stack between institutions, an understanding is needed of how it fits within the current institution. Without intentional internal alignment and design, students who return for additional credentials expecting their skills to build upon each other and add value over time will find that such stackability is not a real

option. It is the responsibility of the institution to ensure that the credentials offered are stackable, and not just within a curricular map, but within the structure and system of the college itself.

It is not easy work. Creating stackable credentials is complex. It requires employer engagement to ensure credentials have labor market value, entails embedding industry-recognized certifications or licensure, incorporates work-based learning, supports transfer, and requires engagement with local school district partners—all while meeting the quality assurance standards of accreditors, state agencies, and certification and licensure bodies.

This guide aims to help institutional leaders examine internal stacking and processes for developing stackable credentials to ensure that current and future students have access to the on- and off-ramps needed to ensure equitable access to learning while working. More specifically, this guide is designed around **four evidence-informed pillars** to support learner-centered stackability and equitable uptake of credentialing opportunities, namely:

1



**DATA
INFRASTRUCTURE
AND SYSTEMS**

2



**MAPPING AND
ALIGNMENT
OF CURRICULUM**

3



**CREDENTIAL
PATHWAY
COMMUNICATION**

4



**STUDENT-
CENTERED SUPPORTS**

The subsections for each of the four pillars include action steps for practitioners, guiding questions and checklists, best practice examples, and additional resources to get the work started. Each recommended step offers 3 levels of action: to implement, to improve, to level up. The image below shows the structure within each pillar which will become very familiar through the remainder of the guide.



To Implement

Outlines the needed pieces to ensure successful implementation of a particular step.



To Improve

Provides direction on opportunities to improve on processes, practices, and outcomes.



To Level Up

Presents opportunities to further advance and integrate stackable credential efforts for sustainability and organizational change.

INSTITUTIONAL READINESS: PREPARING TO BUILD LEARNER-CENTERED STACKABLE CREDENTIALS

Before diving into the content around the four pillars, we first describe what institutions should do to assess their readiness to build out learner-centered stackable credentials.

Key Considerations for Institutional Readiness

- Develop common definitions and clarify the different ways in which language is used to describe “stackable credentials.”
- Identify a “why” statement about the value stackable credentials can provide to the students, faculty, institution, and employers to ensure the team is working towards a shared goal.
- Identify an implementation team to provide ongoing support, advice, and to do the internal work.
- Review value propositions and definitions and modify as needed with the institutional team over time.
- Clarify the different ways in which the language of “stackable credentials” may be used to ensure that the team is working towards a shared goal.
- Identify which credentials will be the focus for stacking. Start with only one or two credential pathways.

“The more flexibility we have, making it easier to exit and enter, the more we are going to support students in their life and in these programs.”

- SOUTH TEXAS COLLEGE

“Stackability is defined by the data. It is not just that we can divide the curriculum, but we can do it in a way that leads to meeting the needs of an industry partner.”

- BLUEGRASS COMMUNITY
AND TECHNICAL COLLEGE

Stackable credentials provide opportunities for students to step in and out of education as needed. With stackable credentials, students may enroll in postsecondary education to upgrade their skills, advance to a better job, move from one related career field to another, or work towards a degree in a manner that allows them to balance work and family demands.⁸ They provide flexibility to students looking to education to help them respond to shifting employer needs.

An institution with internally stacked credential pathways is well positioned to build upon current offerings, focusing resources and curricular development on addressing skills not covered elsewhere in the institution. Such credentials position institutions to respond to labor market demands, increase credential completion rates, and enhance student economic mobility and degree attainment. Stackable credentials are useful to institutions and local employee-partners and leaders.

Before examining stackable credentials within an institution, **it is helpful to develop a statement about the value** that such credentials provide to a variety of key stakeholders. Different language, reasons, and arguments may be needed depending on the audience, but having shared reasons to examine stackability will enable efforts down the line and help determine who should participate on an institutional team to share in the work of stacking credentials. The institutional team may include membership from throughout the institution including faculty, staff, and students. It may also include employer partners, school districts or K-12 partners, and/or community-based organizations that support students in attaining stackable credentials.

Clear definitions of what is meant by stackable credentials within a specific institution or context aids value proposition and can help to guide internal efforts. Further, trying to tackle the wide expanse of credentials that may be stacked can be overwhelming, add confusion, or complicate the work. A recommended action is to identify one to two areas or credentials to focus upon for the remainder of the guide. In selecting which program, course sequences, or certificates will be the focus of stacking, consider which options may meet an immediate community need, may be harder or easier to stack, and if a “quick win” is needed to continue stackable credential conversations within the institution. Resources on definitions, types, value proposition development, and approaches are shared on the following pages if needed to help ensure institutional readiness.



DEFINING STACKABLE CREDENTIALS

While it will be useful to determine a definition appropriate for a specific institution, for the purposes of this guide, the U.S. Department of Labor definition of stackable credentials is used. The department defines stackable credentials as “part of a sequence of credentials that can be accumulated over time to build up an individual’s qualifications and help them to move along a career pathway or up a career ladder to different and potentially higher-paying jobs.”⁹ Within that definition are some key elements worth further mention.

1. First, it necessarily entails more than one credential that intentionally builds upon another such that students **advance in a career and education pathway**.
2. Second, credentials within the stack are industry-recognized or endorsed and have **value in the labor market**, providing students with life-sustaining wages and economic mobility.
3. Third, they are **portable** such that the acquired credentials are accepted as valid qualifications in other geographic areas, institutions, or industries.

Stackable credentials may be offered through certificates or non-degree programs, third-party certification, or occupational license, but in order to be stackable, the credentials must provide a pathway toward a certificate, associate, or bachelor’s degree. This may include credentials awarded from educational institutions for completion of credit-bearing courses, non-credit certifications for course completion, apprenticeship-related credentials, industry and professional association certifications, and licenses. Further, in stackable credential pathways, the goal is to build pathways such that two or more credentials share course requirements. With such a wide landscape, definitions may be of help. The definitions snapshot provides the U.S. Census Bureau definitions of certification, license, and certificate.

Definition Snapshots¹⁰

Certification: A credential awarded by a certification body, as opposed to a school or government agency, based on demonstrating attainment through examination of designated knowledge, skills, and abilities to perform a specific occupation or skill. The examination can be written, oral or performance-based. Certifications are time-limited and must be renewed to maintain certification status.

License: A credential that permits the holder to practice in a specified field. A license is awarded by a government licensing agency based on predetermined criteria such as degree attainment, certifications, certificates, assessment, apprenticeship programs, or work experience. Licenses are time limited and must be renewed periodically.

Certificate: A credential awarded by a training provider or educational institution based on completion of all requirements for a program of study, including coursework and tests or other performance evaluations. Certificates are not time limited and do not need to be renewed.

TYPES OF STACKING

In addition to definitions on stackability and credentials, there are many ways to stack credentials and different types of stacking. As part of readiness for stacking and before moving further through the guide, it is helpful to review the different types of stacking and consider the ways in which the term “stackable credential” is used within an institution. This will help in developing a value proposition, definitions, and potentially even areas to start. Clarifying the different ways in which the language of “stackable credentials” may be used within an institution will help ensure that those doing the stacking work together towards a shared goal.

Progression Stacking	Attaining short-term credentials that are acquired on the way to an associate or bachelor’s degree. ¹¹
Supplemental Stacking	Attaining certificates to meet a new labor market need or upskill within a current industry or profession. This may even supplement prior degrees. ¹²
Independent Stacking	Attaining a variety of short-term credentials, in the absence of a degree, that improve overall skill and avoid loss of credit. ¹³
Horizontal Stacking	Encourages students to earn two or more credentials to update knowledge or move into other related areas of specialization. An example of this would be securing an IT credential and then specializing in solar energy to combine the two for employment in solar energy IT related careers. ¹⁴
Vertical Stacking	Connects credentials such that students earn higher-level credentials and deepen knowledge in a specific area, often starting with career-specific learning with general education coursework completed later. ¹⁵
Lattice Pathways	Developed within a single institution, lattice encourages a combination of horizontal and vertical stacking, allowing movement both up a career ladder and across multiple pathways in a career lattice. ¹⁶

The focus of this guide is *internal progression stacking* to ensure that students are on a pathway that leads to a degree while they stack credentials. Now that definitions and types of stacking have been reviewed and consideration of institution specific definitions are underway, resources are offered to help capture why there should be a focus on stackable credentials for institutions, at this time.

“It is the key. Everything counts and they can keep going without having to apply or pay twice.”

- SOUTH TEXAS COLLEGE

DEFINING THE VALUE OF STACKABLE CREDENTIALS AT YOUR INSTITUTION

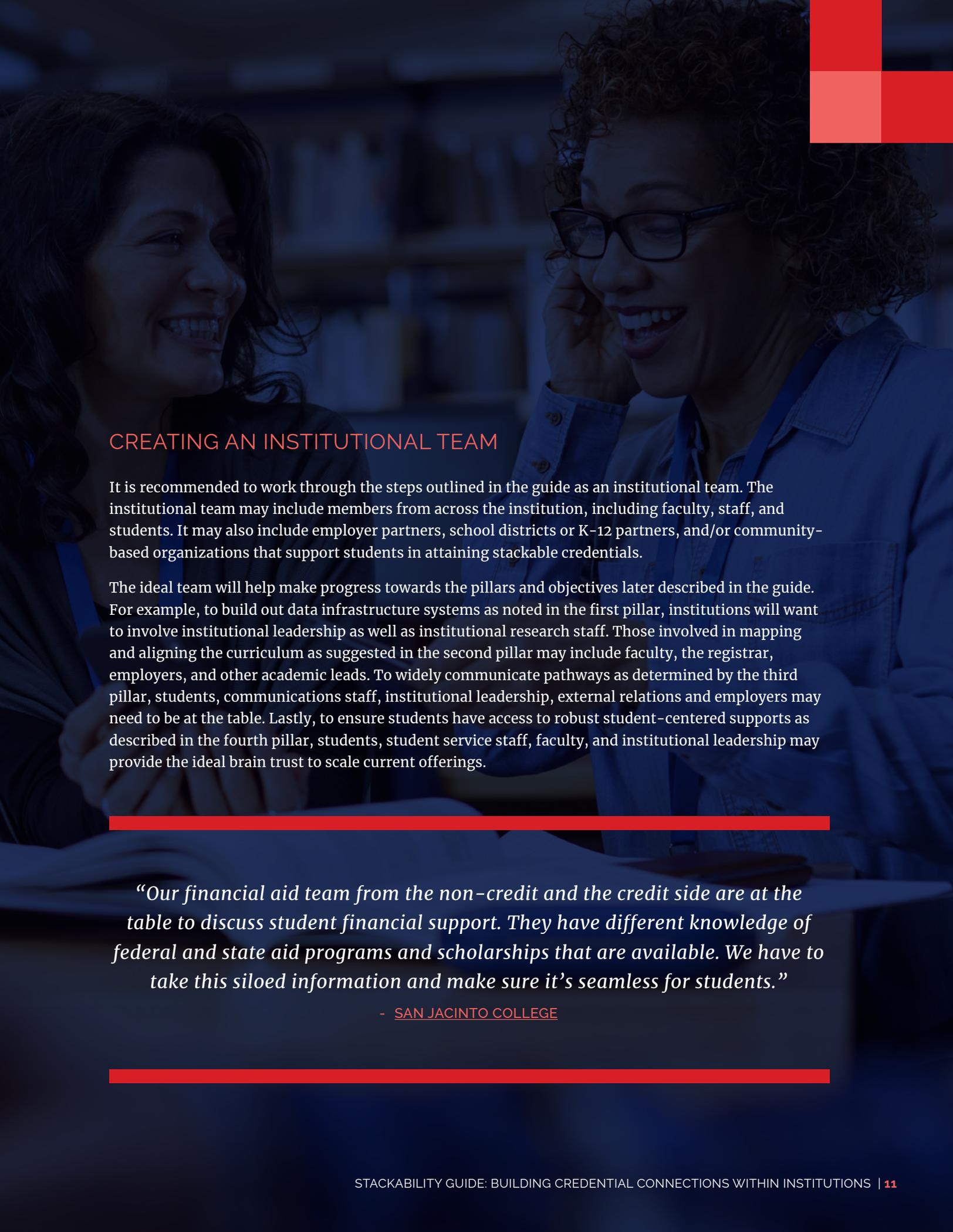
The following table provides a useful tool to help capture value propositions or the “why” for stacking credentials work.

GUIDING QUESTIONS FOR ESTABLISHING THE “WHY” FOR STACKABLE CREDENTIALS	
<p>Provide Context: What is it?</p>	<p>Explain the background of stacking credentials and the relationship to the students and institution – where did this work come from and what is it for? Be prepared to answer the “what are stackable credentials?” question.</p>
<p>Identify the Problem: What problem does this address?</p>	<p>What challenges, problems, or issues does stacking credentials address for the student/institution/employer/community? Be prepared to clearly state why this work is important and answer the “so what?” question.</p>
<p>Clarify the Connection: How does stacking credentials help address the problem?</p>	<p>What value does stackable credentials add and how does it help to address the identified problem? Be prepared to succinctly state how stacking credentials helps. Consider the connection to current or previous efforts, like Guided Pathways.</p>
<p>Address Misconceptions and Concerns: What misconceptions need to be addressed or cleared?</p>	<p>What concerns or areas of confusion will need to be addressed that are stakeholder specific? This may entail distinguishing how this is different from similar efforts that were done before.</p>
<p>Target the Individual: Why does this matter to me?</p>	<p>Be prepared to address the question of “what do I have to do differently” or “how will this impact me?” Be prepared to answer, “why does this matter to me?” questions.</p>

The next page provides a blank table as a resource to complete if it is helpful to developing value propositions and “why” statement(s). These statements will likely need to be reviewed and modified as additional members join the institutional working team or as interests and needs shift over time.

GUIDING QUESTIONS FOR ESTABLISHING THE "WHY" FOR STACKABLE CREDENTIALS

<p>Provide Context: What is it?</p>	
<p>Identify the Problem: What problem does this address?</p>	
<p>Clarify the Connection: How does stacking credentials help address the problem?</p>	
<p>Address Misconceptions and Concerns: What misconceptions need to be addressed or cleared?</p>	
<p>Target the Individual: Why does this matter to me?</p>	



CREATING AN INSTITUTIONAL TEAM

It is recommended to work through the steps outlined in the guide as an institutional team. The institutional team may include members from across the institution, including faculty, staff, and students. It may also include employer partners, school districts or K-12 partners, and/or community-based organizations that support students in attaining stackable credentials.

The ideal team will help make progress towards the pillars and objectives later described in the guide. For example, to build out data infrastructure systems as noted in the first pillar, institutions will want to involve institutional leadership as well as institutional research staff. Those involved in mapping and aligning the curriculum as suggested in the second pillar may include faculty, the registrar, employers, and other academic leads. To widely communicate pathways as determined by the third pillar, students, communications staff, institutional leadership, external relations and employers may need to be at the table. Lastly, to ensure students have access to robust student-centered supports as described in the fourth pillar, students, student service staff, faculty, and institutional leadership may provide the ideal brain trust to scale current offerings.

“Our financial aid team from the non-credit and the credit side are at the table to discuss student financial support. They have different knowledge of federal and state aid programs and scholarships that are available. We have to take this siloed information and make sure it’s seamless for students.”

- [SAN JACINTO COLLEGE](#)

The table below may help determine the needed team members. While the table presents different roles and possible positions that may fill those roles, it is very likely that one person will fill multiple roles on the team. Be sure to provide clarity for team members about the role(s) they are filling to help ensure team success. Further, as team members are selected, consider who may serve in an advisory role or as a liaison to different stakeholder groups and who needs to be a part of the team doing the ongoing work of stacking credentials.

BUILDING A STRONG TEAM TO IMPLEMENT LEARNER-CENTERED STACKABILITY

POSITIONS	ROLES
Institutional Leadership	Support for stacking credentials needs to come from institutional executive leadership in the form of attention, fiscal resources, access to technology for accurate data collection, and allocating time for faculty and administrators to do the work of stacking. Institutional leadership representation positions the team for lasting organizational success
Faculty	Non-credit and credit faculty representatives from the programs, courses, or certificates that are the focus of stacking should participate to inform and communicate the process of mapping and aligning curriculum. Faculty representation on a team is also important for quality assurance, and internal buy-in throughout the institution. Faculty representation on a team is also important for quality assurance and internal buy-in throughout the institution.
Student Services and Supports	Student affairs or student support services representatives can help the team understand student needs and provide advising support. They can help explain advising support requirements, the availability of non-academic supports to consider along the credential pathways for equitable access and attainment success. They can help explain current advising offerings, the non-academic support often needed for learner success, and how to further integrate academic affairs and student services.
Data Infrastructure or Institutional Research	Institutional research can collect and provide data to better understand how student populations engage with educational pathways as well as provide data on earnings, labor market value, and other regional economic and educational success data needed to inform decisions.



POSITIONS	ROLES
Registrar	The registrar is needed to support transcription of stackable credentials and consideration of internal portability and documentation.
Communications	Communication expertise is vital to the success of any stackable credential pathway. This can include developing vital to the success of any stackable credential pathway. This can include developing student personas likely to use the stackable credential pathways and communication plans to share pathway options internally and externally with various stakeholders.
Student	Student representatives provide context on the lived experience, motivations, and challenges of students attempting to stack credentials. Engaging students is critical to check assumptions, provide guidance, and to help ensure that stackable credentials are truly student-centered and equitably designed. Engaging students is critical in order to check assumptions, provide guidance, and to help ensure that stackable credentials are truly student-centered and equitably designed.
External Relations	Representatives from the community, support organizations, intermediaries, workforce boards or chambers, and school districts may be needed to inform credential pathways, supports, and points of connection in the community work and learning ecosystem.
Employer	Employer partners ensure that points of exit along the stackable credential pathway have labor market value, align with living wages, and will serve to address talent pipeline needs. Including employers, ensures awareness of stackable credential options to help meet local employer talent needs.

PILLAR ONE



DATA INFRASTRUCTURE AND SYSTEMS

Many institutions don't track which students stack credentials, if they are successful, and what their outcomes are. Gathering and reviewing data is important to any institutional initiative and stackable credential pathways are no exception. Data can help the implementation team determine where stackable credentials are needed, understand what is or is not working, identify programs or credentials to focus on for initial rounds of internal stacking, and provide case-making data on the value of stackable credentials more broadly. A well-designed data infrastructure can aid in identifying issues in the stackable credential pipeline as well as help an institution better understand who makes use of stackable credentials.

Key Considerations for Data Infrastructure and Systems

Some data elements to collect may include:

Student Data

- Rates of completion, certification, credit loss, and/or credential attainment, as well as continuation in a stackable pathway
- Student demographics such as race, ethnicity, age, gender, etc.
- Student rates of participation in further education or industry
- Student satisfaction data from surveys
- Federal and state student aid usage

Labor Market Data

- Job placement by sector and employment, as well as wage data by credential
- Regional self-sufficiency data on living wage and benefit cliffs
- Regional labor market data on occupational and credential demand, including disaggregating to understand where occupational segregation and wage gaps exist
- Employer satisfaction data from surveys

Institutional Data

- Number of courses that have been designed to be stack and their relevant pathways
- Number of students who stack credentials including which credentials they stack and time lag between credentials
- Credential data such as length, sequence, and licensure pass rates (when applicable)
- Total credentials and degrees awards
- Contact hours and credit hours
- Courses enrolled and courses completed with academic department information
- Number of students who progress across non-credit and credit programs

When building data definitions and data infrastructure, consider data standards in programs, employment, and student level data to ensure that there is conceptual alignment across the data infrastructure. To help build a data infrastructure, the following steps are suggested with subsequent levels of complexity and progression.

Identify Occupations for Immediate Impact Coupled with Long-Term Mobility

At Bluegrass Community and Technical College, a close connection with the employer advisory board identified a potential need in orthotics. A data deep dive revealed current wages that were expected to incline in demand and create even more skilled positions. The college was able to build new certificates that stack into associates degree and transfer to bachelor's degree in engineering. Similarly, colleagues at Gateway Community and Technical College also work closely with employers and leverage state data sets to understand regional labor market demand now and in the future. Using data to chart immediate needs and future needs guided the creation of a stackable pathway that was responsive to the immediate needs of employers with a short-term credential that stacked into a degree in diesel technology.

“Various programs have different tracking and reporting metrics, but all this data has to come together and a new data dictionary is needed across institutional silos.”

- [SAN JACTINO COLLEGE](#)

1. Have the implementation team review existing data to determine what data points are collected and identify any data that need to be collected.



To Implement

Review existing data and determine which elements to track. Identify who will collect and hold the data, how often it will be gathered, and when it will be reviewed and by whom.



To Improve

Analyze and review data on student and employer interest in credential pathways and return on investment for students and employers to inform changes in delivery or design. Run test reports to ensure data are being reliably collected for key measures and can be disaggregated for key groups of interest.



To Level Up

Ensure interoperability of different institutional data systems (e.g., credit and noncredit offerings, student support services data and academic data) to examine stackability transitions. Explore data sharing agreements with entities outside the institution including negotiating with employers for any needed data elements.

Collected data may be sourced or gathered from administrative data, learning management systems, surveys or self-reported data, focus groups, interviews, observations, advisor logs, assessments, state agencies, employer partners, and/or performance reviews. To aid in selection of data elements, consider the discussion questions for this pillar and what data would be needed to answer them, if you regularly collect it, and what data capacity building you may need to address in order to answer them. At a minimum, regularly collect and examine enrollment and completion of non-degree credentials, along with transitions to employment or further education.

2. Build data collection and review processes.

To gather the identified data, processes and practices need to be in place to collect, clean, protect, and maintain needed data. This requires a data collection and storage process with consideration for workflow management as students move in and out of institutions, shared definitions for data collection, and integration of various data sources.



To Implement

Develop common data definitions and data collection points for identified key data elements. Determine data storage and access levels by stakeholder audience, as well as collection timelines.



To Improve

Identify and develop technology and administrative supports (including enterprise systems), as well as policies, needed to enable the data infrastructure. Ensure policies and structures work to integrate credit and non-credit data.



To Level Up

Integrate data with student records and transcripts to enable automation and seamless movement for students in and out of the institution and between credit and non-credit offerings. Provide feedback loops to administrators, department chairs, and related credential provider faculty and staff.





3. Analyze the data to develop insights to refine and improve stackable credential offerings.

For a stackable credential to be of quality, it must hold value in the labor market and increase available employment opportunities for those who acquire it. This means the success of the credential pathway must be under regular review as labor market values change. To determine success and/or areas of improvement, engagement with employers and students will be key. In addition to regional labor market data, employer partners, trade associations, chambers, business associations, or advisory councils can provide insight and commentary on credential value including whether they are used in hiring or promotion decisions. Data-driven decision making can improve the quality of stackable credential offerings on campus, but data systems across the country are rarely equipped to collect data on both stacked credentials and post-college outcomes for students. A variety of stakeholders - internal and external to the institution - collect relevant data needed to assess current offerings and ensure learner success. For example, institutional research specialists may provide student-level data on credential uptake and academic progress across programs, whereas regional labor market data and employers may validate credentials in our workforce. Determining when, where, and why to analyze data is necessary to ensure credential quality and that institutions are not reinforcing inequities in the labor market for learners in stackable pathways.



To Implement

Engage in ongoing formative evaluation to support stackable credential programs. Ensure awareness of student and employer demand and value by involving students and employers in review of data and identification of areas for improvement as well as possible solutions. Disaggregate data by student demographic variables to examine equitable access and opportunity.



To Improve

Use analyzed data to inform student supports such as advising, student success services, and professional development needs of faculty or staff to better support and engage with stackable credential student needs. Use evidence to identify issues and pinpoint root causes, implement changes, and track for improvement.



To Level Up

Build data capacity and technology supports to maintain connection with students after credential completion, including setting the expectation of program follow up by asking students to affirm their agreement to stay in contact. Reconnect with students to invite them back for additional credentials.



Pillar 1 Resources

- ESG's [Building Credential Currency](#) report
 - U.S. Department of Education [Data Sharing Toolkit](#) for Communities
 - Harper College Data Sharing Agreement:
 - [Example Data Share Agreement](#)
 - [Data Share Template](#)
 - Bluegrass Community and Technical College Orthotics Program [Website](#)
 - Gateway Community and Technical College Diesel Technology Program [Website](#)
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Things to Discuss About Data Infrastructure

- What types of credentials are captured in existing data systems?
- Are additional codes needed to track students stacking credentials? Where and when would such data be collected along a students' journey through the institution?
- Is there a need for data sharing agreements or a data consortium to understand student engagement with stackable credentials?

Things to Explore With the Data

- Are students on credential pathways able to access the courses they need, when they need them?
- How do students flow in and out of the institution and where are they creating their own pathways of credentials?
- What is and is not working for students? The program or pathway? For employers?

Things to Consider Around Data Equity

- Which students are more likely to move into fields with opportunities for stacking credentials? Are such opportunities equitable?
- How equitable is the stackable credential pathway? Do rates of credential stacking vary by student demographics and industry-related fields?
- What data systems are interoperable and easily share information to provide a more holistic picture of stackable credential participation and attainment?

PILLAR TWO



MAPPING AND ALIGNMENT OF CURRICULUM

In a stackable credential pathway, the goal is to build pathways such that two or more credentials share course requirements, allowing for progression towards several credentials. The credentials serve as points where a student may step out and find employment along a longer pathway towards a degree. Ensuring alignment in requirements means that students can return and build upon what they already have without losing credits or time while securing meaningful credentials with labor market value along the way. To ensure that credentials are stackable for students, Pillar 2 focuses on the process of articulating various points of connection between credentials, competencies, skills, courses, and credits, that when combined, provide the means for a student to stack.

Key Considerations for Mapping and Alignment of Curriculum

- Align with federal and state financial aid rules and scholarship requirements (if applicable). Consider if the credential map ensures that different stackable credentials are eligible for federal and state financial aid in terms of length of time and clock or credit hours.
- Ensure each credential has value in the labor market by working with local employers to assess critical short-term and long-term workforce needs and that students will experience additional employment value by combining credentials in the stack.
- Ensure alignment with relevant institutional, state, accreditation, industry, and licensure or professional certification requirements or standards. This may include review of and alignment with articulation policies, prior-learning assessment offerings, and integrated education and training opportunities.
- Update any professional or national accreditation organizations as required by the quality assurance entity.
- Update any MOUs or agreements with intermediaries or additional institutions as needed to support the stackable credential pathway.
- Align credential course requirements to ensure overlapping coursework and the ability for students to make progress towards multiple credentials simultaneously.

Stackability Should Scaffold Learning

University of Maine Presque Isle leverages an interdisciplinary team of faculty to review curriculum and examine through different disciplinary lenses to understand the value of credentials in horizontal, vertical, and adjacent pathways. Approval processes for the curriculum ensure changes are reviewed for programmatic requirements of the state, national accreditor, and employer. Essential to this review are tools that ensure the competencies in the pathway are transparent and facilitate scaffolding of learning towards a degree, not just a collection of disparate skills and competencies.



Examine Current On-Ramps to Accelerate Mobility

South Texas College understands the value of recruiting students already enrolled in short-term programs, including English Language Learners and adult education programs, from inside the college. Using the mindset that “no degree is terminal,” the college uses stackability to build confidence each step of the way and leverages competency-based education to ensure the learner can progress much faster and with less debt up a ladder of credentials. Students report satisfaction with the accelerated model and knowing that everything counts is beneficial to keep their lives moving. Without that guarantee of a clear map, uncertainty keeps students away.

1. Create working teams tasked with mapping and aligning curricular requirements and relevant educational policies.

 To Implement	Empower two working teams to lead the work: one with programmatic faculty and advising representation tasked with mapping and aligning competencies, curriculum, skills, and certifications; and a second administrative team including financial aid and registration staff to examine relevant and applicable policy alignment.
 To Improve	Establish regular review, upkeep, and renewal of curricular maps/crosswalks. Use data to review the mapping process to ensure it is equitable, reliable, consistent, and transparent. Provide professional development for mapping and alignment and explore possible technology solutions to aid in the process.
 To Level Up	Expand the types of mapping and alignment efforts for additional types of stacking (such as supplemental or lattice) or for additional program areas and credential pathways. Consider opportunities to ensure automatic awarding of credentials as students navigate pathways.

While the role of the faculty team is addressed more fully in subsequent steps, a short checklist of areas of focus for the administrative team is provided to aid in scope and function of the working team.



2. Build stackable credential pathways based on agreed upon mapping and alignment processes.



To Implement

Determine equivalencies in curricular offerings; identify non-credit credentials or awards that could be part of a stackable credential; and connect increasing levels of education, training, and career opportunities. Seek to embed industry-recognized credentials.



To Improve

Critically examine evidence of alignment including student movement through stackable credential pathways and outcomes to ensure the alignment and equivalencies are accurate and do no harm. Incorporate prior-learning assessment options to ease student progression.



To Level Up

Regularly review evidence and modify credential stacks as necessary. Use equivalency mapping to make determinations of future areas of curricular build out or labor market need. Embed work-based learning in pathways.

The process of mapping and aligning stackable credential pathways requires creating clear connections between increasing levels of education, training, and career. It may entail exploring alignment to competency frameworks, existing crosswalks, credential pathways, micro-credentials, non-credit offerings, certifications, licensures, and degrees. To determine equivalences, faculty working teams will need to examine sets of competencies and skills in relation to credits for certification. Transparent evidence of what students know and can do, whether via assessment or evidence of competency mastery, may greatly aid in determining equivalencies and relationships.

3. Connect with employers to ensure that stackable credential pathways lead to sustainable income and good jobs.



To Implement

Engage with business and industry to identify current and future workforce needs. Facilitate job skills and curricular alignment validation with employers to ensure that students are prepared for employment opportunities. Identify and embed preparation for industry certifications within a program.



To Improve

Confirm portability and transferability of alignment between relevant industry and career pathways. Continue engagement with employer partners to highlight existing stackable credential options that meet employer needs. Embed upskilling opportunities into training programs.



To Level Up

Involve employer partners in encouraging students to return to continue to earn stackable credentials. Engage with employers in work and learn models such that current employees can advance in a career and credential pathway.



Pillar 2 Resources

- Center for Adult and Experiential Learning (CAEL) Credit for Prior Learning (CPL) [Website](#)
- Education Strategy Group [Blog on Building Pathways Between Credit and Non-Credit](#)
- Education Design Lab [Resources for Skills Mapping](#)
- National Institute for Learning Outcomes Assessment (NILOA) [Curriculum Mapping Toolkit](#)
- Lumina Foundation on Using Qualifications [Frameworks in Curriculum Mapping and Alignment](#)
- [Connecting Credentials Framework](#)
- Research For Action [toolkit](#) for All Learning Counts

Things to Discuss About Mapping and Alignment

- Given the current program offerings and local workforce needs, in what ways could an existing program be modified to address need? Is a new program or credential needed?
- Is there internal articulation between credit and non-credit coursework such that students are able to earn credit for competency and skill acquisition?

Things to Explore with Mapping and Alignment

- Have local employer partners validated alignment and employability of credentials?
- Is there alignment with industry-recognized certifications? Should there be?

Things to Consider Around Equitable Mapping and Alignment

- Are multiple entry and exit points available to students? Are they realistic and utilized? What equitable supports are provided to students in relation to alignment?
- Do the different credential exit points provide access to employment opportunities with family sustaining wages for students? Are different exit points furthering inequities or working to remove them?

PILLAR THREE



CREDENTIAL PATHWAY COMMUNICATION

Students and advisors should be able to clearly see, with any credential, what job it leads to, how to take the next step, and when to come back for the next credential. To develop marketing and outreach that are appropriate and effective for targeted student audiences, it will be important to use data-informed insights on student population(s) served, including student voice, to develop student personas. Student personas outline the many different types of students who are served in a stackable credential pathway along with the ways in which they engage with the pathway.

While some students will be able to engage in education continuously to stack credentials quickly, other students will need to step in and out of education seamlessly. Messaging will likely differ depending on the student population and their needs.

To ensure that students are aware of their full range of opportunities, including on and off-ramps, institutions should begin to move away from haphazard ways of communicating (i.e., fliers and websites) and towards more systematic processes of making sure learners receive high-quality advising as they come near the end of one credential and consider beginning another. Communication of credential pathways can also be integrated into administrative processes such as screening questions and enrollment forms, and can reduce the need for traditional communications. Providing timely, accurate information is pertinent for students to successfully navigate credential pathways.

Key Considerations for Credential Pathway Communication

- Include a description of the stackable credential pathway.
- Clearly state each credential available along the pathway (certificate, technical diploma, associate degree, etc.) including any certifications earned.
- Provide information on the cost, financial supports, and length of each credential.
- Outline employment opportunities associated with each credential and certification including titles, salary and skills.

Most institutions use websites to share information with interested students. While websites may be effective for certain populations, they provide a passive means to relay information to students who may not know what to do with the information or what steps or actions to take next. Ensure in any website development to seek audience and user feedback from students and provide clear action steps beyond a searchable database of credential options available to students.



Nothing Left to Chance

As students move between non-credit and credit within the institution or from any critical educational transition or from any critical educational transition, they can easily find themselves bounced around from office to office with unclear answers. Colleges that wanted to ensure student continuation all reported an explicit role designated to a staff member to monitor student progress, communicating the importance of continuing on to the next credential, and removing barriers to continuation. University of Maine Presque Isle prides itself on the academic success coach model that ensures every learner has a personalized and flexible map. South Texas College advisors use SMART plans that embed advising and financial aid processes along the pathway, and ensure each credential and related pay increases are visible to the student. San Jacinto College implemented a non-credit to credit coordinator to map out processes and procedures and ensure a smooth transition. Bluegrass and Gateway Community and Technical Colleges highlighted the role of faculty in advising students on the well-defined pathway, even publishing on websites the program outcomes. By providing individualized advising with a professional, these colleges are able to ensure that students do not fall through the cracks and receive the information they need at critical moments to successfully graduate on time.

Communications is More Than Media

South Texas College recognizes that relationships matter in communicating authenticity and trust to communities that have historically been marginalized from education. Program faculty and advisors spend time in the community to help convey how they want to support students in their life through the stackable programs offered. The team can often be found at community events and in local schools off campus, but also spends time on-campus connecting with students in programs such as English Language Learning, GED, and migrant education programs to connect with stackable pathways.

Marketing and Communications on the Team

Using learner personas to explore and define how and where students are most likely to access information will require a multi-level marketing and communications plan. This includes knowing what learners value, which may not directly say “stackable credentials” but messages related to affordability, less time, and employability. While websites are most frequently used to communicate with students, they are often heavy text and narrative based. Bluegrass and Gateway Community and Technical Colleges use infographics to easily and quickly communicate employment trends, average salary, current job opening numbers and titles, and projected growth. University of Maine Presque Isle uses YouTube and informal social media marketing to reach learners. These different mediums indicate a level of market research to know how to reach students in today’s media rich world. San Jacinto College is starting to include marketing teams from the start so that the website can better reflect how students have to use their website to navigate the various aspects of a stackable pathway and not a linear, “one and done” credential pathway.



Ensure External Support for Pathways

Some colleges report skepticism from employers or concern that an increase in education will increase turnover. Institutions that are proactive in building and maintaining relationships, open communications, and involve employers in the design of the pathway report greater employer buy-in and economic mobility for their learners. Institutions must be able to communicate credential pathway to external stakeholders in order to attract diverse talent and pathway support. To establish high-quality pathways for learners, a wide-range of voices have to assist in designing and communicating opportunities for students and working adults alike.

1. Design student-centered communication plans on the availability and benefit of stackable credentials.



To Implement

Develop student personas and stackable credential maps that indicate credential connections to career and further education opportunities. Develop a marketing and outreach plan targeted to specific student populations.



To Improve

Gather data on student awareness of stackable credential opportunities and general effectiveness of outreach efforts. Ensure advising is consistent for students over time and develop processes for outreach to alumni to return for additional credentials.



To Level Up

Modify stackable credential maps based on the entry and exit points used by students, provide data on the success of students due to credential alignment with further education and employer, and gather student testimonials from those who have completed the pathways.

To ensure effective outreach, a marketing plan that makes clear the need for and value of stackable credentials to targeted student audiences can aid in student recruitment to programs as well as help re-enroll students who have stopped out. In developing communications and marketing plans, engage in market research for target populations asking: Who are the students? What are their needs and interests? What types of messages and mediums resonate with them? Consider what value stackable credentials provide for the student, what options are available, how large the student market might be, and how best to get information on available credential opportunities into student hands. A sample outreach plan is included in this pillar section to use as a guide for communication plan development along with discussion questions.



2. Develop an internal communication plan for consistency of messaging and information sharing within and across an institution.



To Implement

Develop internal communication processes within existing meeting and communication structures for providing updates and messaging to institutional constituents including faculty and staff on stackable credential opportunities, processes, and practices.



To Improve

Track effectiveness of communication approaches and consistency of messaging to determine areas of misunderstanding or disconnect on policies and practices related to stackable credentials. Develop clear messaging by audience segmentation.



To Level Up

Provide professional development on the differing means and modes of effective communication for target audiences as well as ongoing updates about stackable credential opportunities available to students.

Information sharing regarding stackable credentials is the responsibility of everyone within an institution – faculty, staff, and administration. Developing and refining communication plans and processes for providing updates on stackable credential opportunities and direction on messaging, ensures that students receive consistent information regardless of the source. To support consistency in responses, consider identifying key personnel to whom faculty and staff direct questions or concerns about stackable credentials that are widely publicized and encouraged in order to address any misinformation before it starts.



3. Engage with employers and community partners on shared messaging in support of stackable credentials



To Implement

Connect with local employers to communicate the availability of different stackable credentials, determine credential needs, and develop communication plans for talent pipelines in credential attainment. Engage with other community partners as needed (such as area school districts) on common messaging.



To Improve

Review data on the effectiveness of messaging and work to involve employers in development of marketing, advising, and recruitment messaging to students and current employees.



To Level Up

Work with employers to build in stackable credentials as part of upskilling and employee recruitment opportunities. Review communication channels for effectiveness and modify approaches as needed.

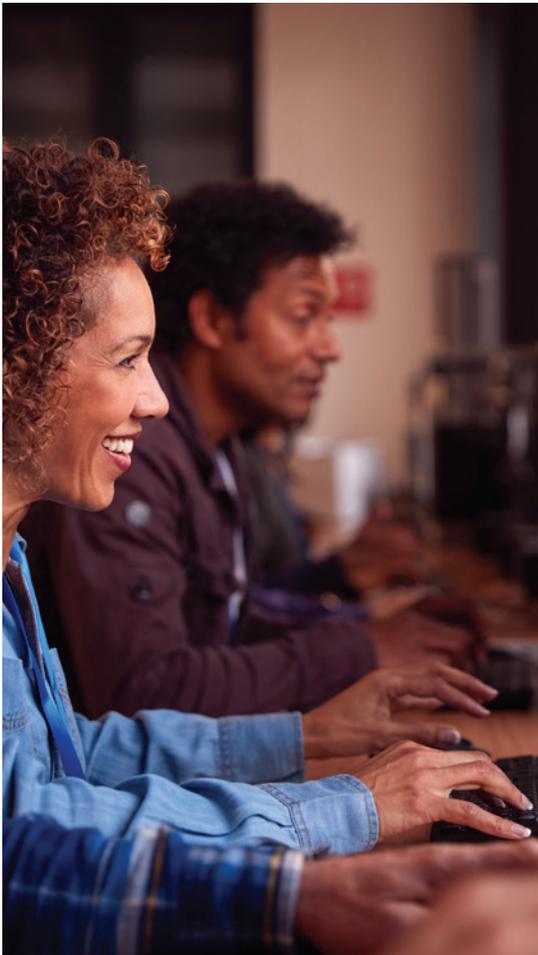
Employer partners are vital to the success of stackable credential opportunities. Without value in the labor market, stackable credentials do not provide added value to students, and without employers encouraging students to return for additional credentials, student may be less likely to stack. Ensuring that the messages from employers to students are in alignment with institutional messaging helps keep employers informed of opportunities and students on track for credential and ultimately degree attainment.

Sample Outreach Plan

Given the variety of stakeholders involved in the communication and advising of stackable credential pathways, it will be useful to develop an outreach plan which outlines roles and responsibilities of different audiences as well as targeted messaging for specific audiences. The **outreach plan on the following page** is by no means comprehensive but serves to provide select options for what might be included in such a plan. Such plans will need the expertise of those responsible for marketing and communication to ensure success of target audience message segmentation.

Pillar 3 Resources

- South Texas College [website](#)
- University of Maine at Presque Isle [Video](#)
- Gateway Community and Technical College Diesel Technology Program [Website](#)



Things to Discuss About Credential Pathway Communication

- How do students become aware of stackable credential opportunities? What are their trusted sources of information on credential stacking? At which point in their educational journey do they most often learn about stackability?
- How will you ensure that information shared is consistent and up to date whether online, in print, or in person?
- When should information be shared and communicated? Does timing matter for different audiences?

Things to Explore with Credential Pathway Communication

- In what ways can employers and other industry partners be engaged in encouraging students to pursue stackable credentialing opportunities?
- What methods will be used to communicate on a regular basis, and with whom? What channels are most effective: informal or formal? For which audience(s)? How do you know?
- Do current communication efforts make the enrollment process and stackable credential programs simple and straightforward for individuals, or does it suggest complicated processes and programs to navigate?

Things to Consider Around Equitable Credential Pathway Communication

- Which students are likely to receive messages about the opportunity to stack credentials? Are such outreach messaging efforts equitable?

PILLAR FOUR



STUDENT-CENTERED SUPPORTS

Building from and informed by all previous pillars, student-centered supports are the structures in place to ensure student success. A large proportion of the individuals who enroll in stackable credential programs are adult learners and working individuals¹⁷. These individuals bring valuable assets (e.g., work experience, clear vision for purpose of seeking a credential), and these individuals can also benefit from supports such as financial and basic need support to ensure they have the resources necessary for success. Pillar 4 is focused on building out these student-center supports needed to ensure student success in stackable credentials.

Bundled and Sequenced Supports

Colleges that use data to understand the needs of students and proactively addresses those needs along the stackable pathway report higher outcomes. While many of the student supports may already be provided at the college or in association with community partners, it is important to understand how to leverage them collectively and provide a seamless experience for the student. At San Jacinto College, faculty and staff use the analogy that while they may work in different departments and are having to “glue” together various components, the student should never experience or see the “glue.” In stackable pathways, colleges advise that frequent monitoring of changes to student household income are important as individuals earn increases in pay that can change their access to aid, subsidies for food and child care, and transportation. Additionally, stackable programs can straddle different aid programs and scholarships at different points in the pathway. Advisors and financial aid specialists must monitor and support students through these transitions, ensuring there are no gaps in services. This points back to earlier examples shared of colleges appointing one-on-one advisors, non-credit to credit coordinators, financial aid specialists sharing data to monitor progress, and frequently communicating with students.

Key Considerations for Student-Centered Supports

- Identify the barriers and assets impacting student progress through their stackable credential path early and often, especially at key transition points.
- Ensure availability of supports is transparent to students in non-credit and non-degree credential programs.
- Make sure supports are available via multiple modalities (e.g., online, remote) and during evening and weekend hours to support working learners.
- Interrogate the data to determine if there are differences in which students are utilizing supports, and then take steps to address disparities.
- Train faculty to identify needs and connect students to supports, as they are often a student’s primary or only touchpoint. This is particularly true for working students.

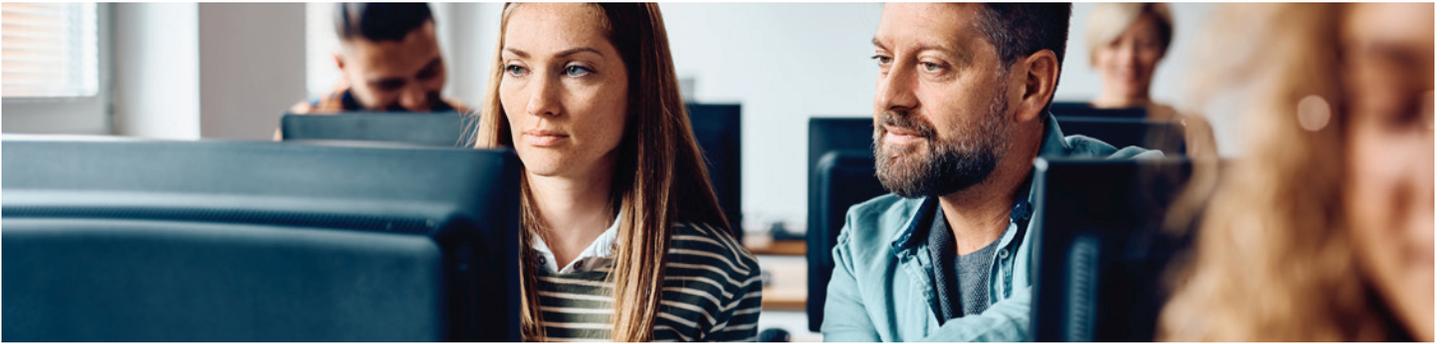


1. Provide cost transparency and financial support for students, faculty, and staff working to stack credentials.

	<p>Provide transparency in cost structure and financial support options available to students including paid work-based learning options. Actively seek financial assistance for students to offset costs of credentials and address basic needs support.</p>
	<p>Review fees, financial supports, and business models related to stackable credentials on a regular basis to ensure equitable access to opportunity. Ensure that adequate institutional resources are allocated for coaching and guidance.</p>
	<p>Engage in regular outreach to students and identify opportunities for students to earn additional credentials that offer increased labor market value. Provide financial support for professional development and incentives for faculty to stack credentials.</p>

2. Develop and implement needed supports including advising, academic, financial aid, registration, and employer relations.

	<p>Ensure that needed support services are available to students including guidance through advising, financial aid, and registration. Update or confirm any MOUs or articulation agreements that are necessary for seamless student movement along credential pathways.</p>
	<p>Catalog/map available services, identify gaps, and identify resources to fill gaps. This may include coordination with community-based organizations or intermediaries. Seek employer agreements to support work-based learning opportunities and hiring.</p>
	<p>Provide annual training and professional development opportunities to internal and external support and understand the scope of students' needs. Improve services over time and remove barriers between credit and non-credit offerings, disciplinary groupings, or industry clusters.</p>



3. Engage in student-centered design and implementation of supports to ensure equitable student success.



To Implement

Use student voice and student educational journey data to inform support options, offerings, and timing of support. Examine assumptions about student needs and why students may not be stacking credentials.



To Improve

Examine use, satisfaction, effectiveness, and any unmet needs related to support offerings for students and revise accordingly. Engage with students directly to understand support usage and needs.



To Level Up

Address identified barriers or support needs in partnership with students. Confirm student experience with stackability and portability of credentials in terms of ease of process and communication with the institution.

Supports should be student-centered in the sense that wrap-around supports are based upon how students move through and engage with program offerings, providing students with supports when timely and impactful for them. To provide such supports, it is vital to know who students are and what their needs are, which requires local data and likely student involvement.

Student success with stackable credentials requires meaningful engagement with student support offerings. Students need advising and guidance on which courses to take, what career opportunities are available, which credentials stack, and where to go for assistance or additional support. Support services should be offered such that they run alongside the mapped and aligned curriculum and policies with attention paid to the differing needs of students in different stages of credential attainment along the stackable credential pathway.



4. Provide cost transparency and financial support for students, faculty, and staff working to stack credentials.



To Implement

Provide transparency in cost structure and financial support options available to students including paid work-based learning options. Actively seek financial assistance for students to offset costs of credentials and address basic needs support.



To Improve

Review fees, financial supports, and business models related to stackable credentials on a regular basis to ensure equitable access to opportunity. Ensure that adequate institutional resources are allocated for coaching and guidance.



To Level Up

Engage in regular outreach to students and identify opportunities for students to earn additional credentials that offer increased labor market value. Provide financial support for professional development and incentives for faculty to stack credentials.

Clarity in cost and access to financial supports is necessary to help ensure student success along a stackable credential pathway. In addition to student costs, implementation teams need to consider associated institutional costs such as professional development, faculty incentives to engage in curricular mapping and alignment efforts, additional advising supports to assist students in movement along the pathway, and cost in terms of time and space for employer engagement. Creating a business model related to scaling stackable credentials within the institution will assist in future planning.

Pillar 4 Resources

- [The Hope Center for College, Community, and Justice](#) provides information on student basic needs and basic needs supports for success.
 - [NACADA: The Global Community for Academic Advising](#) supports academic advisors and provides a variety of resources targeted to advising supports.
 - [Council for the Advancement of Standards in Higher Education \(CAS\)](#) outlines standards for various functional support units across institutions, focused on meeting student needs through effective and efficient design.
 - [The Importance of Academic Advising in Higher Education](#) from the U.S. Department of Education
 - [Strategies for Improving Postsecondary Credential Attainment Among Black, Hispanic, and Native American Adults](#)
 - [Effective Advising for Postsecondary Students](#) from the U.S. Department of Education
 - [Designing and Delivering Career Pathways at Community Colleges](#) from the U.S. Department of Education
-

Things to Discuss About Student-Centered Supports

- Are students who intend to stack credentials able to do so? Are they earning stackable credentials?
- How are students funding their educational courses and is funding a barrier to pathway access?
- What additional supports are needed to ensure student success with stackable credentials? Which supports does the college provide? Which supports require connections and collaboration with community-based organizations, intermediaries, or employers?

Things to Explore with Student-Centered Supports

- What is the process for students to re-enroll in a stackable credential program? Are the necessary supports in place for students to re-enroll easily?
- How are students funding their educational courses (non-credit and credit) and is funding a barrier to access? Are there additional funding sources to be leveraged to support student progression?

Things to Consider Around Equitable Student-Centered Supports

- Are there differences in access and stackable credential attainment by student demographics?
- What are the barriers for students for stacking credentials? For returning to stack credentials? Which students experience which barriers? Are the barriers inequitable?
- What training and incentives are there for faculty and staff on stacking credentials? On supporting diverse student needs? On modifying offerings in order to meet diverse student needs?

Scaling: Repeat the process with additional stackable credentials.

Now that the implementation team has completed the process internally for one stackable credential offering, the same process and infrastructure may be applied for additional credential pathways and options. Upon completion, identify and select additional programs and credential opportunities to move to scale within the institution by offering a variety of stackable credential pathways. Once one credential pathway is stacked internally and others are following suit, the institution is ready to consider stackable credential connections for students beyond the institution in terms of transferability and portability.

Additional resources that may be useful in the scaling of stackable credentials inside and beyond the institution are listed below.

Competency-Based Education Network

C-BEN is a network of institutions, employers, and experts who believe competencies can unlock the future of learning — making postsecondary education and training more flexible, responsive, and valuable. We support stakeholders across the spectrum of competency-based learning, from institutions and employers who want to embed competencies into their existing programs to those looking to design full competency-based degree programs from the ground up. Across all our work, our aim is to make education and training more flexible, responsive, and valuable.

Credential As You Go

Credential As You Go focuses on building an incremental credentialing system, recognizing that many types of quality credentials (degrees, certificates, industry certifications, licenses, badges, microcredentials) document an individual's learning, and credentials are awarded by many types of providers including community and technical colleges, four-year colleges and universities, third-party organizations, employers, military, and state licensing boards.

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.

Community College Baccalaureate Association

CCBA is the nation's leading network of community colleges that build and sustain high-value, career-focused baccalaureate degrees that maximize opportunities for all citizens to achieve family-sustaining careers.

Learning Employment Records

A learning and employment record (LER) is a digital record of learning and work that can be linked to an individual and combined with other digital records for use in pursuing educational and employment opportunities.

ENDNOTES

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- 11 Bailey, T., Belfield, C. (2017). Stackable Credentials: Awards for the Future?. Community College Research Center. <https://ccrc.tc.columbia.edu/media/k2/attachments/stackable-credentials-awards-for-future.pdf>
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