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Defining High-quality CTE: Contemporary Perspectives on CTE Quality

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"High-quality career and technical education" has become a national catchphrase—in use by policymakers, practitioners and a wide variety of influential education and workforce development stakeholders. But what is high-quality CTE? How should this term be defined, and can it be used to evaluate programs, determine areas for targeted improvements and recognize successful elements that should be scaled?

CTE programs of study are subject to rigorous state and federal accountability systems that provide information on key student outcomes. However, while these outcome measures can form a basis for identifying high- and low-performing programs, they are insufficient for answering underlying questions about how or why that level of achievement was attained. Furthermore, on their own, they do not provide the information necessary to identify and replicate best practices or to determine appropriate technical assistance for targeted program improvement. For these reasons, more extensive frameworks to define and measure program inputs, linked to student outcomes, are necessary, and have become a major topic of conversation among education and workforce development leaders and policymakers.

However, there is no single source of information on what makes a quality CTE program of study, and different states, national organizations and system stakeholders place different emphases on key elements. As school reform efforts proliferate, newer CTE delivery models such as career academies are developed, and career pathways and sector strategies gain popularity, CTE leaders have an increasing array of instructional strategies and programmatic elements to consider.

In addition, the term "high quality" is itself problematic. It is commonly used to describe variance in education programs, with some programs determined or presumed to be "high quality," and the typically unspoken corollary—that some programs are "low quality." Of late, "high quality" has also been used to differentiate newer models of CTE from older "vocational" programs that offered little in the way of college prep or experiences beyond the classroom. However, these usages are imprecise. "High quality" is in need of a definition in relation to CTE.

To help synthesize the myriad voices that are a part of the dialogue on high-quality CTE, ACTE is embarking on a multi-step project to identify a comprehensive, research-based quality CTE program of study framework; test the framework; and integrate it into our efforts to recognize and disseminate information on best practices within CTE.

The first phase of the larger project focuses on defining high-quality CTE. Within this phase, we have two broad research objectives:

- Identify the specific characteristics of a high-quality CTE program of study.
- Determine the most important characteristics of a high-quality program of study for evaluation purposes.

In order to begin addressing these objectives, we started by examining how CTE quality is currently being discussed and defined, and that effort is the focus of this paper.

Background on Current Information Sources

The first step in our research was to identify current sources of information on high-quality CTE elements. A preliminary review of this area yielded three major sources of information: broad statements on CTE quality, such as general white papers or national organizational positions; national frameworks; and state frameworks and policy documents. Definitions of key terms relevant to this conversation, such as programs of study and career pathways, can be found in Appendix C.

National organization positions: In recent years, a variety of groups and thought leaders have weighed in on the discussion around high-quality CTE. This has yielded a number of broad statements or papers on aspects of CTE quality. CTE leaders themselves were some of the first to begin the quality conversation.

For example, in 2010, the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) introduced its vision for a high-quality CTE system through its paper *Reflect, Transform, Lead: A New Vision for Career and Technical Education*. This vision, which was endorsed by all 50 state CTE directors, lays out five principles designed to "guide CTE's role in our nation's educational, workforce and economic advancement and success" (NASDCTEc, 2010, p. 2). Though not listed here, under each of the principles are programmatic and policy actions for the field to take in order to make the vision a reality. The principles include:

- CTE is critical to ensuring that the United States leads in global competitiveness.
- CTE actively partners with employers to design and provide high-quality, dynamic programs.
- CTE prepares students to succeed in further education and careers.
- CTE is delivered through comprehensive programs of study aligned to the National Career Clusters® Framework.
- CTE is a results-driven system that demonstrates a positive return on investment.

Groups outside the traditional CTE system have put forth ideas as well. The following year, Harvard Graduate School of Education released *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*. While not specifically focused on quality CTE, the idea permeates the paper, and the authors note a "growing number of rigorous, high-quality national models that demonstrate what career and technical education can achieve in the 21st century" (Symonds, Schwartz & Ferguson, 2011, p. 27). Key quality elements embedded in the paper include:

- clear pathways to all major occupations
- stronger linkages between labor market needs and educational programs
- enhanced employer role
- increased work-based learning opportunities
- greater focus on career counseling

As the conversation continued, in late 2013, the Georgetown Law Center on Poverty, Inequality, and Public Policy; the Business Roundtable; and the College Board released *The Promise of High-Quality Career and Technical Education: Improving Outcomes for Students, Firms, and the Economy*. This paper outlines broad principles around what the authors believe constitutes high-quality CTE (Holzer, Linn & Monthey, 2013):

- being part of career-oriented systems in secondary and postsecondary schools, with access for both youth and adults
- an emphasis on strong career options for all students, including those bound for two-year and four-year colleges (to relieve the stigmatization of CTE programs and avoid the "tracking" of CTE students away from college paths)
- the integration of rigorous academic curricula into CTE, along with the teaching of rigorous technical and employability skills in project-based or work-based settings
- professional development for staff and support services for students (especially the disadvantaged or those whose academic preparation has been weak)
- the use of appropriate assessment tools and accountability based on those tools

Around that same time, the American Federation of Teachers and the Albert Shanker Institute hosted the conference "Fulfilling the Promise of a Quality Education for All: 21st Century Career and Technical Education," and released a paper outlining thoughts on high-quality CTE (Albert Shanker Institute, 2013). These groups defined high-quality CTE programs as ones that:

- align with the Common Core and Common Career Technical Core standards
- employ teaching strategies and curricula that integrate career and technical subjects, as well as core academic subjects, in students' programs of study
- have as their foundation partnerships between educational institutions and businesses, community institutions and labor unions from all sectors of the economy (private and public, for profit and not-for-profit)
- coordinate career and technical programs and sequences between secondary and postsecondary educational institutions
- provide educators with high-quality professional development that is embedded in their educational

workplace, focused on real issues they confront in their work and sustained over a period of time
- incorporate appropriate technology
- wherever possible, provide internships and other work-based learning opportunities for students
- use high-quality performance assessments of technical skills

In a presentation at that conference, Dr. James Stone, Director of the National Research Center for CTE, summarized the research on CTE program quality and provided these four elements as critical: rigorous programs/curriculum, effective pedagogy, a systems approach and professional development (Stone, 2013).

The above are just a sample of the voices that have contributed to the growing dialogue on high-quality CTE. In addition to these, many more organizations have supported conversations or initiatives that have touched on CTE quality over the past few years.

National frameworks: While the documents and statements described above have served to magnify the focus on CTE quality and provide initial points of discussion about critical elements, a more detailed set of criteria is necessary to truly assess individual program-level quality.

There are a number of national frameworks relevant to CTE quality. These frameworks often include general defining statements related to broad elements of CTE quality, but also provide a range of more specific indicators. Existing frameworks address varying units of analysis, from career pathways systems, such as the Center for Law and Social Policy (CLASP) career pathways indicators, to CTE programs/programs of study, such as the Southern Regional Education Board's *Evaluating the Quality of Career/Technical Programs* tool, to individual CTE program elements. We also found frameworks suitable for institutions, including those from High Schools That Work and the Council on Occupational Education, which have relevance to the CTE quality conversation. In addition, some national frameworks also focus on specific delivery models, such as those related to career academies and Linked Learning.

Of particular interest to CTE professionals is the U.S. Department of Education's Rigorous Program of Study (RPOS) Framework. This framework was formulated by the Office of Career, Technical, and Adult Education (OCTAE), in collaboration with major national associations, organizations and states. Following its development, OCTAE sponsored six states for a four-year pilot to support the advancement of RPOSs and assess how they impact student outcomes. Arizona, Kansas, Maryland, Montana, Utah and Wisconsin have each developed one RPOS in a targeted CTE program through collaboration with local education agencies (LEAs) and postsecondary partners. Each LEA has evaluated itself on the 10 key RPOS Framework components and is working on strategies to address improvement, where needed.

While the RPOS Framework was an important step in developing the program of study concept and providing guidance to programs on the basic principles of what a RPOS would look like, it is only one tool in a proliferating conversation. In addition, the RPOS Framework indicators vary as to level of specificity, some reaching down into the minutiae of individual classrooms and others upward into the broad strokes of state policy. What this tool accomplishes—and how it could be taken further—played a key role in sparking the CTE quality conversation and our project.

State documents: In the absence of a single national framework, almost every state has developed tools to provide CTE programs with quality indicators in some manner. These frameworks might exist in the form of program approval processes, program evaluation tools, or even legislation or other formal state policy.

Research Questions

While each of the above discussed areas is a critical piece of the quality conversation, it is with national quality frameworks that we at ACTE began our efforts to define research-based quality indicators that might be applied broadly to the CTE enterprise.

However, to increase our capacity to review relevant documents, ACTE is working with Regional Educational Laboratories (REL) Central, one of the National Center for Education Statistics' Regional Educational Laboratories. Under the direction of Dr. Robert J. Marzano of Marzano Research, REL Central provides education research, dissemination and technical support services to educators and policymakers in Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota and Wyoming.

For our collaboration with REL Central, it was determined that REL researchers would conduct a targeted analysis of state quality documents as described above, while we used a similar process to analyze national frameworks. Their findings will be used to inform our future work and publications.

As we considered the national frameworks, we asked the following research questions:

1. How and why were current frameworks developed?
2. How are current frameworks structured?
3. What elements appear in current frameworks?

Methodology

Framework selection: To select nationally utilized frameworks (a general term that encompasses standards, rubrics and other documents outlining key CTE program characteristics) for our examination, we—the two ACTE staff researchers—started with a list of frameworks brainstormed by CTE experts. We added to this list through online searches using CTE-related keywords,

such as "career pathways" and "career readiness." While our overall project is intended to result in a framework for CTE programs of study specifically, we decided we could learn valuable lessons from related initiatives and delivery models such as career pathways systems and institutions that incorporate CTE, hence the broadness of our search.

We concentrated on frameworks that primarily address inputs, such as programmatic elements, teaching strategies and partnerships, rather than student outcomes. As mentioned earlier, our goal in this project is to develop a framework of inputs that foster program improvement and quality replication—the Perkins Act already provides a federally mandated set of program outcome measures.

Over the course of the review and research process, several frameworks were eliminated as not relevant to our particular evaluation. In most cases, this was either because the framework contains very few details, such as a short list of one-sentence statements, or because it addresses student outcomes rather than program inputs.

We also excluded frameworks that address a single program element in-depth, such as school counseling or student equity, because there were few points of comparison between these more specific frameworks and the broader tools we assembled. These specific frameworks will be used in later phases of our research on high-quality CTE. In addition, we excluded several general institutional standards documents with no particular relevance to CTE, but retained those we could locate that are more applicable to CTE, such as the accreditation standards from the Council on Occupational Education.

Frameworks were only included on our list if they had been developed or updated in the last 10 years (with the vast majority within the last five years); however, we did not determine whether or not frameworks are still actively being used or promoted by the developing organizations. We felt the recent content of the frameworks still played an important role in the national CTE quality conversation, regardless of whether they are still being supported.

We selected only frameworks and supporting materials that are publically available, or frameworks for which the draft versions were made available to us by their developers, who had been identified during our search process.

We sent our compiled list of frameworks to CTE researchers for their feedback, and also shared the list with several stakeholder audiences, including state and local leaders, for input. Throughout our evaluation process, we made some adjustments to the list as we discovered new frameworks or different versions of frameworks.

There are likely other frameworks that are not publically available to which we did not have access, as well as frameworks and supporting documents that were not identified during our search and review process. Despite these limitations, we are confident that the set of frameworks we have chosen provides a thorough representation of the current conversation about CTE quality at the national level.

Twenty-one frameworks were eventually selected for inclusion in the project, including the RPOS Framework and CLASP career pathway indicators mentioned earlier, as well as others such as the National Career Academy Coalition Standards of Practice and documents related to program accreditation. A complete list is included beginning on page 5.

Evaluation Part 1: To answer our first two research questions related to the frameworks' development and structure, we first created a set of descriptive categories to be addressed relative to each framework. We then each read each framework multiple times and classified it in relation to the categories we created, listed below, which were modified slightly throughout the evaluation process. Where there were discrepancies between how each researcher categorized each framework, we discussed and came to a consensus. The first three categories relate to our first research question, and the remaining categories relate to our second research question. The descriptive categories are:

1. developing organization
2. research base/development (how the criteria were developed)
3. evaluation purpose (none, formative and/or summative)
4. unit of analysis (state career pathway system, career academy, etc.)
5. number of criteria
6. formulation of criteria (inputs and/or outcomes)
7. level and consistency of detail within criteria (few, some or substantially detailed specifications; used consistently or with variation throughout)
8. administration of criteria (self-assessment, third-party assessment or third-party assessment including a self-assessment component)
9. complexity of response scale (no response scale; simple, medium or complex scale)

Where possible, we standardized our process across the frameworks to ease comparability. For instance, for two of our categories—level and consistency of detail within criteria, and complexity of response scale—we devised a ranking system to compare the frameworks, described in the "Descriptive Findings and Discussion" section.

It is important to note again that we only used information that was readily available publically or voluntarily provided to us during our collection process to describe the frameworks. Additional information may exist related to some of the criteria,

such as the frameworks' research base, which we will seek out in a later phase of our project.

Evaluation Part 2: To answer the third research question in a systematic way, we decided to use descriptive coding of the framework content for our analysis. As described in *Introduction to Research Methods in Education*, "codes are tags, names or labels, and coding is therefore the process of putting tags, names or labels against pieces of the data … The point of assigning labels is to attach meaning to the pieces of data" (Punch, 2009, p. 176). It is a very useful technique for summarizing and evaluating large quantities of text, such as the sizable amounts of text found in most of the frameworks we analyzed. While this technique also supported our analysis in "Evaluation Part 1," it was primarily deployed for this part of the evaluation.

Content coding was based on an initial set of codes developed by REL Central for its evaluation of state documents, which was modified throughout our coding process to accommodate the particular documents we were evaluating. The resulting 68 codes are organized in three levels: overarching categories, codes and subcodes. For instance, the main category "TEACH" is for framework elements relating to teachers. The code "TEACH – Professional development" applies to framework content that addresses opportunities or policies related to professional development for teachers. In a few instances, a subcode is used to further provide nuance, such as "TEACH – Professional Development – Community of practice," which describes a particular type of professional development experience, the teacher community of practice. When subcodes were used, the framework had to be coded at the second level in order for the third level to be applied; for example, in order to be coded as "TEACH – Professional development – Community of practice," a framework would also be coded as "TEACH – Professional development." The full list of content codes can be found in Appendix B.

A number of the frameworks we examined include several pieces, such as a set of standards and a related rubric, sometimes published together in one document and sometimes spread across multiple documents. For our content coding, we applied codes to the components of the framework within the primary document for that framework (the primary document can be found by following the hyperlink for each framework in Appendix A). We did not perform content coding for companion documents.

The frameworks also differ in how indicators are presented, which impacted coding. Many frameworks present indicators or elements in numbered or bulleted lists, while others use a rubric format with quality statements that differ at each level of progress. Several include both lists and related rubrics. In all of these cases, we used all of the text included within the framework itself as the basis for our coding, including headings and explanatory statements. We did not code surrounding text such as introductory paragraphs that describe the purpose of the framework, background information sections or concluding calls to action (this type of text was used for "Evaluation Part 1"). Relevant chapters or sections for coding are noted in the list of frameworks, and page numbers for the specific content coded in each framework are included in Appendix A.

With the content coding, we each read each framework multiple times and identified content codes as they appeared. Where there were discrepancies between how we coded the text, we discussed and came to a consensus. After the first round of coding, a second round was conducted wherein one researcher coded across all frameworks for half the codes, and the second researcher did the same with the other half of the codes. Discrepancies were again noted and discussed to arrive at the final coded chart.

Generally, our threshold for assigning a code was low, requiring only a mention or reference to a particular topic. However, because several codes are very similar, in certain cases we looked for very specific phrases or ideas to ensure that each code had a unique meaning. For example, a specific reference to "programs of study" was required for the code "CONTENT – Vertical alignment/course sequences – Program of study."

Our content coding allowed us to create a crosswalk showing common elements and to identify codes that are rare across frameworks.

Frameworks

For the purposes of presenting the list of frameworks and our results in an easy-to-read way, we have classified the frameworks according to the framework unit of analysis. However, we did not organize the frameworks in this way until after our first round of evaluation.

System level: Criteria in these documents are primarily applicable to either multiple CTE programs/pathways across districts or state systems, or programs or systems that focus on a broader set of populations and/or partners. They would generally not be useful in their entirety for an individual local program. System-level frameworks and their developers include:

- "Criteria and Indicators for a Quality State Career Pathway System" and "Criteria and Indicators for a Quality Local/Regional Career Pathway System," *Shared Vision, Strong Systems: Alliance for Quality Career Pathways Framework Version 1.0*; Center for Law and Social Policy (State and local/regional pathway versions)
- "Essential Elements of a Quality Linked Learning Pathway" and "Critical Conditions for Developing a System of Linked Learning Pathways," *Framework for*

Developing a System of Linked Learning Pathways; ConnectEd: The California Center for College and Career

- "Key Descriptive Characteristics and Service Strategies in Career Pathways," *Career Pathways as a Framework for Program Design and Evaluation: A Working Paper from the Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project*; U.S. Department of Health and Human Services
- "Eight Areas for State Action—A State Sector Strategy Framework," *Sector Strategies Coming of Age: Implications for State Workforce Policymakers*; National Governors Association (NGA), NGA Center for Best Practices, Corporation for a Skilled Workforce and National Skills Coalition
- *Career Pathways: Six Key Elements—Readiness Assessment Tool*; U.S. Department of Labor
- *Career Clusters Critical Component Self-Assessment Form for Implementation*; National Association of State Directors of Career Technical Education Consortium (State and local versions)
- "Core Elements of the Comprehensive Career Pathways Framework," *Career Pathways as a Systemic Framework: Rethinking Education for Student Success in College and Careers, A Call to Action*; National Council for Workforce Education/League for Innovation in the Community College
- *College and Career Pathways System Design Specifications*; National Center for College and Career Transitions (April 2015 draft)

Program level: Criteria in these documents are primarily applicable to an individual CTE program at the local level, such as a program of study, career academy or pathway. Broader partnerships may be required, but partners themselves are not the subject of the evaluation. Program-level frameworks and their developers include:

- "Program of Study (POS) Components," *Career and Technical Programs of Study: A Design Framework*; U.S. Department of Education
- "National Standards of Practice," *National Standards of Practice for Career Academies*; National Career Academy Coalition
- *Academy Standards*; National Academy Foundation (2014 version)
- *Rubric for Linked Learning Pathway Quality Review and Continuous Improvement*; multiple organizations
- "Career and Technical Education Standards Statements," *Career and Technical Education Standards, 2nd Edition*; National Board for Professional Teaching Standards
- "Career/Technical Education—Tool for Evaluating the Quality of a CT Program," *Evaluating the Quality of Career/Technical Programs;* Technology Centers That Work, Southern Regional Education Board

Institution level: Criteria in these frameworks are primarily applicable to an entire educational institution, such as a secondary school or a postsecondary institution, including its collection of CTE programs as well as other educational elements. The focus is not solely on the delivery of CTE programs. Institution-level frameworks and their developers include:

- "Understanding the Indicators for the Comprehensive HSTW Framework" and "Indicators for the Comprehensive HSTW Framework," *Establishing Benchmarks and Measuring Progress at HSTW Sites*; High Schools That Work (HSTW), Southern Regional Education Board
- "Accreditation Standards, Objectives, and Criteria," *Handbook of Accreditation: 2014 Edition*; Council on Occupational Education
- *Partnership for 21st Century Skills K-12 Local/Regional Exemplar Evaluation Tool*; Partnership for 21st Century Skills
- *College and Career Transitions Initiative Institutional Assessment and Sustainability: Self-assessment Rubric*; League for Innovation in the Community College (Secondary and postsecondary versions)

It is important to note that when we were determining in which category to place each framework, we considered the "best fit." However, there are outlying criteria in some frameworks that could apply to another framework category. In the case of one framework with criteria that appeared to apply across categories, we ultimately chose the category that the majority of the criteria fit within. In addition, if there are two versions of a framework (which applied in three cases), we included both frameworks in the same category. Again, we looked for the best fit for the majority of criteria across the two versions.

Descriptive Findings and Discussion

Within the descriptive elements of the frameworks, our key initial finding is of diversity: diversity of scope, diversity of level of detail and diversity of structure. However, overall, the national frameworks we reviewed are more likely to be less complex documents intended for development and improvement than highly detailed tools used to sanction established programs.

Research base/development: Our first research question relates to how and why frameworks were developed. To examine the "how" portion of this question, we looked for information within a framework on its development process, with a particular emphasis on its research base. We identified nine frameworks that cite expert participation in formulating criteria, one

framework that references alignment to research literature and eight frameworks that report both expert input and a basis in the literature.

However, there are very few details on the development process noted in the frameworks. Only two include information such as specific literature cited or the use of public comment periods. This lack of specificity may have been an editorial choice to keep the publication succinct and keep reader attention focused on the framework itself, but it also could signal a lack of rigorous research or consensus decision-making used in developing the framework. It may also indicate gaps in the CTE research related to specific program elements, which could explain why organizations developing frameworks are more likely to use expert input than a specific research base. More details on the research and expertise used in framework development are necessary to determine how appropriate these framework indicators are for evaluating high-quality CTE; and we will seek out these details in later phases of our research.

Evaluation purpose: To address the second part of our first research question related to why frameworks were developed, we examined whether or not the frameworks were designed to be used for evaluation purposes, and if so, whether formative or summative evaluation was the intended purpose.

The majority of frameworks were designed for formative or both formative and summative evaluation, often framed as part of a continuous improvement process—10 indicate primarily formative evaluation purposes and six state formative and summative evaluation purposes. Two frameworks do not specify any purpose related to evaluation, and appear to be targeted more to program development.

Three of the frameworks are primarily for summative evaluation. Generally, the summative evaluation frameworks, as well as a few of the frameworks that are for formative and summative purposes, are part of programs that result in an award or designation for the school, program or educator.

This focus on formative evaluation likely reflects the current trend toward continuous improvement in education programs. It also illustrates the role of the national organizations producing these frameworks, which typically offer support services and sometimes recognition to schools or teachers, but are not in the business of sanctioning local schools or programs that do not perform up to standards.

Unit of analysis: Shifting to our second research question about the structure of frameworks, we first looked at the overarching subject they each address. Across the frameworks, there is variation in the unit of analysis, ranging from CTE programs and programs of study, to institutions, to education and workforce development systems that involve multiple partners and services. Within the 21 frameworks, we analyzed 10 frameworks for career pathways systems, five frameworks related to institutions and six frameworks related to programs/programs of study. Additional information about the differences between these categories and our operational definitions for the units of analysis can be found in the "Frameworks" section beginning on page 5.

There are several potential reasons for the greater number of career pathways frameworks:

- We may be missing frameworks that we failed to locate in our search process.
- It may be easier and/or more appropriate for national organizations developing national-level frameworks to evaluate broader systems than to speak to programmatic elements more relevant to the local level.
- The recent rise of interest in career pathways systems may coincide with a rise of interest in developing such tools for program evaluation and accountability.

Criteria: Due to the delimitation within our research of looking only for frameworks including input measures, most of the criteria included are structured that way. However, six frameworks do include at least some outcome measures along with the input criteria, and several others have separate sets of outcomes as well.

There is more variation among the frameworks as to the number of criteria and the level of detail within criteria. The number of criteria ranges from eight broad strategies in the State Sector Strategy Framework, to 202 individual indicators in the Comprehensive High Schools That Work Framework. Most of the frameworks are organized into some number of elements, with more detailed criteria embedded under those main categories.

In order to describe the level of specificity in each framework, we created a three-tier system: few specifications, some specifications and substantially detailed specifications.

Frameworks that have few specifications largely feature brief, general statements for broad elements, such as work-based learning. Frameworks with some specifications include these general statements, but enrich them with more specifics on, in this example, types of work-based learning that should be fostered. Finally, substantially detailed specifications often feature details as granular as the number of hours of work-based learning that students should complete. They may also specify in detail what quality work-based learning looks like in operation.

We identified 13 frameworks with few specifications, five with some specifications and three with substantially detailed specifications. Some of the organizations with frameworks that we classified as having few specifications offer additional publications or technical assistance that is more detailed, but these were not part of our evaluation.

Thirteen frameworks include differing levels of specificity within the framework—a mix of level of detail—while eight frameworks are more consistent in using the same level of detail throughout. We labeled these as "variation in detail throughout" or "used consistently throughout." When there was variation within the framework, each framework was classified based on where along the detail scale the majority of its criteria fall.

This variation in specificity, and the generally lower level of detail included in most frameworks, seemingly reflects the goals and scope of frameworks and developing organizations. Similarly to how national organizations may find it more appropriate to their role to weigh in on broader career pathways systems than on a more programmatic level, as discussed above, these national organizations may also find it more fitting to propose fewer details, allowing flexibility for those using such a framework on the local level, or to only provide substantial details on the areas of a framework most directly related to their work.

However, a lack of consistent detail throughout a document likely impacts how functional the tool is for practitioners, particularly at the program of study level. Many of the organizations that have developed and released these frameworks address this utility through other resources and tools more targeted toward local implementation, which we will examine in later phases of our research.

Complexity of response scale: As we discussed earlier, frameworks are formatted in various ways, many presented as a list of bulleted statements outlining quality indicators or elements and others as rubrics, in which indicators differ at different levels of performance. For instance, a rubric-style framework may have a response scale with three levels of performance, such as "not met," "met" and "exceeded," with varying statements of progress that apply to each category.

We found that 12 frameworks include no response scale, five frameworks have a simple response scale with three levels of performance—such as the "not met," "met" and "exceeded" scale mentioned above—and four frameworks have a medium or complex response scale, with more levels of performance and/or requiring numerical responses backed by data. In addition, five of the frameworks with no response scale are accompanied by companion documents that translate the statements into a rubric with a response scale, plus the CTE Teacher Standards describe a complex scale used in evaluation. Again, these companion documents are not included in this phase of our evaluation.

The preference for initially presenting the frameworks as a list of statements rather than response-based rubrics accords with the generally low level of detail, indicating that these tools are meant to be a starting point. The frameworks that do use rubrics typically craft them to describe a progressively stronger implementation of the framework, fitting with the trend toward continuous improvement previously noted.

Administration of criteria: Self-assessment is a more common method of administrating the framework for evaluation than third-party assessment, which aligns with the formative, non-censorious thrust of the majority of frameworks already mentioned.

Eight frameworks are set up for self-assessment alone, and five frameworks include options for both self- and third-party assessment. Five frameworks we categorized as administered by a third party (although they typically involve a self-evaluation component that is part of the package that is submitted to the third party for evaluation), and three frameworks do not specify the method of administration.

External stakeholders: While not one of our evaluation categories, we felt it important to note that almost all the frameworks require the action or involvement of partners and stakeholders external to the education system—and many consider the activities of such partners as part of the evaluation process. This is particularly true for the frameworks that are applicable at the systems level, in which the unit of analysis typically already includes partners in industry and workforce development, and thus all partners are subject to any evaluation under the framework. On the other hand, a narrower unit of analysis, such as a framework for an institution, typically focuses more explicitly on the educational entity's engagement with external partners, but may not make those partners a subject of the evaluation itself.

For a complete look at each framework and its descriptive characteristics, please see Appendix A.

Content Findings and Discussion

We coded 741 pieces of content across the 21 frameworks, within our content code master categories:

- legislation/state policies
- program/school/system characteristics
- teacher-related elements
- assessment
- instructional delivery
- program content
- student recruitment and support
- aspects of career exploration and guidance
- partnership characteristics
- types and use of data
- equipment and space concerns
- progress toward framework goals

There is a great deal of similar content across frameworks, particularly noted by codes that make evident the integration and

alignment of education and industry to help students develop skills for further education and the workplace. Differences in content are often related to framework scope: whether the framework addresses the program, institution or system level, for instance, or is more attuned to secondary, postsecondary or adult education. We also identified several codes that do not appear as frequently in frameworks as we expected.

The results of our content coding can be seen in Appendix B. It is important to note that the total number of codes that apply to any given framework is not indicative of the overall quality of the framework, but rather is related to the level of detail and scope of that framework in relationship to the other documents in our data set.

Most common codes: Our rounds of content coding elicited the following 10 most common codes across all frameworks:

Most Common Content Codes	#
INVOLVE – Business partners	21
INVOLVE – Education partners	20
DATA – Accountability/outcomes	19
DELIVERY – Credit transfer opportunities	18
DELIVERY – Work-based learning	18
CONTENT – Vertical alignment/course sequences	18
PROGRAM/SCHOOL/SYSTEM – Statement of mission, vision and/or support from leadership	17
ASSESS – Assessment	17
GUIDANCE – Career development	17
INVOLVE – Community partners	17

These popular codes demonstrate a clear focus on alignment within and across different levels of education and the workplace, as indicated by the codes for business, education and community partnerships; credit transfer opportunities; work-based learning; vertical alignment/course sequences; and career development. This alignment is fundamental to CTE programs of study, career pathways and related strategies of career readiness and college and career transitions—the very subjects of these frameworks.

In addition, the codes for accountability/student outcomes and for assessment illustrate two major emphases of recent education policy, not just for CTE but across other education areas and reform strategies. Finally, the frequent inclusion of statements about mission, vision and support from leadership indicates how important buy-in from the top is to the success of the strategies that are the focus of each framework.

Least common codes: The least common codes are listed below. Infrequent subcodes that describe attributes of other codes (such as "DELIVERY – Work-based learning – Logistics") have been eliminated for the purposes of evaluating the rarest codes:

Most Rare Content Codes	#
TEACH – Evaluation	3
DELIVERY – Acceleration within a course/program	4
EQUIP – Equipment, physical space and/or safety/health issues	4
DATA – Training staff to use data	4
TEACH – Recruitment/retention	4
PROGRESS – Scaling	5
DELIVERY – Prior learning	5

Why might these topics appear rarely? The content code about training for staff on using data is likely too granular to be included in most frameworks. In addition, few frameworks incorporate the idea of scaling the educational strategy that is the subject of the framework. Those that do include scaling are all systems level; the idea of "scaling" is appropriate to the burgeoning career pathways system, while institutions and programs generally would not speak of "scaling" their more established modes of education.

Two other codes that are rare, "acceleration within a course/program" and "prior learning," are concepts that apply most frequently in the postsecondary and adult education arenas. The four systems-level frameworks that include both these codes—the CLASP state and local/regional career pathways frameworks, the Health and Human Services career pathways framework and the Department of Labor career pathways framework—are geared toward adults engaged in career pathways. Those frameworks that incorporate more from secondary education do not address these concepts, nor do institutional frameworks.

The lack of frameworks referencing equipment, physical space and/or safety and health topics (for instance, specifications that administrators provide the proper facilities and equipment for courses or that teachers supervise students in laboratories) was more surprising to us. This subject appears twice in the program-level frameworks, once in the institutional frameworks and once in the systems-level frameworks. It is likely that this content is too detailed for the systems-level frameworks, which take a broader view, but we would expect to see this code on the program and institution level, as the industry-relevant equipment on which students practice their skills is often cited by business partners as elemental to the quality of CTE programs and programs of study. We speculate that as these frameworks grew out of the education reform conversation in the past decade, they incorporate indicators that have been at the forefront of that dialogue, while fundamental but potentially less-discussion-

worthy subjects such as equipment are omitted or not made explicit.

The lack of frameworks coded for teacher recruitment/retention—only appearing in four frameworks—and teacher evaluation—appearing in three frameworks—was also surprising. In addition, teacher credentialing/qualifications only appears in eight frameworks. Meanwhile, teacher professional development is a common code, appearing in 16 frameworks, and likewise teacher collaboration with other teachers/programs appears in 12 frameworks.

We theorize that codes for teacher professional development and teacher collaboration exemplify the general trend toward program improvement, as well as the alignment within and across education, evident in these frameworks. Meanwhile, topics of hiring and evaluation and, to a lesser extent, teacher credentialing/qualifications may be considered outside the scope of these frameworks; essentially a human resources issue more so than an issue related to programs of study, career pathways or college and career transitions. For instance, where the teacher recruitment/retention code does appear—three times in the program-level frameworks—this accords with the closer relationship these frameworks have to day-to-day, operational aspects of education programs. The teacher evaluation code appears twice in the institutional frameworks, in documents focused on postsecondary institutions, likely reflecting staffing policies and procedures in higher education.

Despite these potential reasons why indicators on specific teacher topics are not included in most frameworks, we believe they could add value to local evaluation efforts. Much research has indicated how important teachers are to student and program success, and the myriad ways in which teachers can differentially impact their students and programs are well illustrated in the CTE Teaching Standards. Quality programs and courses depend on teachers who are not only initially qualified but also valued through recruitment and retention efforts and evaluated effectively to identify strengths and areas of improvement. We speculate that the effectiveness of a high-quality CTE program of study framework would be improved by including more indicators related directly to teachers.

Coding trends on the program level: When comparing frameworks across program, institution and system levels, differences based on unit of analysis become apparent. For instance, all six program-level frameworks include the specific term "program of study," which makes sense since CTE programs of study are their focus.

These program-level frameworks are also more likely to incorporate codes that are more suitable on the secondary than the postsecondary or adult levels. These include the code for students having opportunities to join career and technical student organizations (CTSOs)—organizations that are more common on the secondary level—or participate in similar leadership opportunities, as well as the code for the involvement of parents and/or families (such as through meeting with their student's career counselor, attending financial aid workshops or joining advisory groups). Presumably, this reflects how programs of study begin on the secondary level.

The program-level frameworks are also more apt to include language on student recruitment/enrollment. This topic also appears in two of the systems-level frameworks, the *Framework for Developing a System of Linked Learning Pathways* and the NC^{3}T *College and Career Pathways System Design Specifications*, which incorporate programs of study or the similar Linked Learning pathways concept, both beginning in high school. This leads us to conclude that the concept of student recruiting, in particular, is more common on the secondary level/at the beginning of the program of study or pathway. Other frameworks that focus more on the postsecondary and adult levels may fulfill similar objectives through language on open access and access for students from special or targeted populations.

Other codes more common on the program level include on-the-ground specifics more appropriate to the program of study than to the institution or system levels: teacher professional development through communities of practice, assessment strategies, work-based learning specifically provided or facilitated by program partners, project-based learning and the opportunity to earn industry certifications.

We were somewhat surprised not to find the last code more frequently in the institution- and system-level frameworks, given the growing emphasis on attainment of industry certifications. Most institution- and system-level frameworks also do not include language on technical assessment based on industry standards, a close proxy. Systems-level frameworks do refer more broadly to credentials, which can include industry certifications, so it is possible that industry certification as a specific credential type is simply not made explicit in these frameworks.

Rare codes on the program level include those that apply more to the postsecondary realm: job search assistance/job placement and flexible delivery options (such as online learning and night classes). Finally, there are no instances of the code for shared definitions. This is likely because these programs are already built on a shared definition—that of programs of study, encoded in the Perkins law, or, in the instance of the *Rubric for Linked Learning Pathway Quality Review and Continuous Improvement*, the definition of a Linked Learning pathway (which is defined similarly to a program of study—for more information, see Appendix C).

Coding trends on the systems level: Moving to the system level, the codes for legislation/state policy, workforce/economic

development agency partnerships and non-public sources of funding are more common. This aligns with the broader focus of the systems-level frameworks, which extend beyond an institution or program to include statewide policies, multiple agencies and opportunities for funding outside of the public arena. System frameworks also more commonly include statements that explicitly reference exit and entry points as part of vertical alignment/course sequences, which is common terminology for adult career pathways that offer stackable credentials and options for adult students to move back and forth between education and the workforce.

Rare codes on the systems level are typically those that are more specific—presumably too specific for the wider view that these frameworks take—such as particular types of assessment (the assessment of technical skills based on industry standards and the assessment of academic skills); teacher credentialing/ qualifications; and technology/instructional materials.

Coding trends at the institutional level: There are commonalities across the program- and system-level frameworks that differ from the institution-level frameworks. Several codes are used more frequently by both program and systems frameworks than by institution frameworks, being more appropriate to the alignment across schools, education levels and the workplace that are typical of CTE programs of study and of career pathways systemic approaches. These codes include personal learning plans as a guidance strategy, teacher collaboration, partnership policies and procedures, and tracking student outcomes after exit. These concepts may be less salient for institutions, which are interested in CTE but also in core subjects, financing, human resources and many other issues.

Program-level and system-level frameworks are also more likely to touch on issues of student motivation and interest, perhaps because they are dedicated to helping students progress along a path incorporating various levels of education, while schools are focused on the portion of that student's educational career conducted at that institution.

One exception in the institution-level frameworks is the High Schools That Work Framework, which does incorporate several of the above codes, possibly because it emphasizes aligned technical and academic coursework within a whole-school approach.

Conclusions and Next Steps

Our overarching conclusion of our review of national frameworks is that there is great variation in form, but at the same time, key trends in content among these documents.

The most commonly found content elements are consistent across many of the frameworks, and align with other initiatives in CTE, as well as education and workforce development activities more broadly. Rarer content elements seem to generally be more reflective of the intended purpose and scope of each framework, rather than of actual disagreements about the importance of key components of high-quality programs.

However, the diversity of scope and structure, along with the consistent lack of detail, among this set of documents does leave room for greater clarity and consistency in the conversation about high-quality CTE, particularly as it relates to individual local programs. This is particularly true considering the low number of national frameworks we identified that are targeted at the program level.

As we draw near to completing the research process for this initial stage, we have begun to consider how individual CTE programs might fit in with broader reform strategies as well as with current frameworks in use. For example, are the characteristics of a high-quality CTE program of study different when that program is part of a strong career pathways system? Are there elements of systems-level quality that must be in place in order to achieve high levels of quality at the program level?

These emerging questions have led us to think more deeply about the definitions of and relationship between programs of study and career pathways systems. Programs of study are often considered a crucial element within career pathways systems, and we observed many similarities between program of study and career pathways system frameworks: Both commonly address the provision of a sequence of courses, with credential attainment as a goal, conducted within a context of enrichment such as work-based learning and dual enrollment, supported by partners as part of developing a workforce with the skills employers need. There are differences as well, though, and clarifying these distinctions, particularly as they relate to evaluation activities, appears critical to providing the type of program improvement information that would be useful to individual teachers and administrators working in CTE.

To complete and expand our initial evaluation, we will follow up on some of the outstanding issues raised in this paper, such as identifying the research and development base for frameworks that did not specify details on this topic, and we will incorporate findings from the state policy documents that our colleagues at REL Central have analyzed, from the frameworks we previously excluded from our analysis because they address a single program element in-depth and from the companion documents that we did not include in this phase of our evaluation.

For the next step in our multi-stage process, we intend to use what we have gleaned from the structure and content of existing CTE quality frameworks to draft an ACTE high-quality CTE program of study framework, and later a rubric, with particular attention paid to alignment with most commonly used frameworks already in the field, and the role of CTE programs in

the growing career pathways system. This next step will include a deeper look at what each of the frameworks we reviewed actually says about the most commonly featured elements, and what aspects of those elements are most important to defining high-quality CTE. The following research questions will underlay our work.

1. What research exists to support specific elements of high-quality CTE programs of study, and what does quality look like within each element?
2. What characteristics of a framework—such as formulation of criteria, number of criteria and level of detail of criteria—are best at helping CTE programs of study self-evaluate?

Our draft framework will be subject to a multi-pronged validation approach, conducted with the assistance of our REL Central partners, and will likely include the following in order to address the questions above:

- a targeted literature review of the research available on the efficacy of each element in our proposed framework
- focus groups conducted with CTE experts and practitioners
- revision of the framework based on the two prior steps
- pilot testing of the revised framework with local CTE programs of study

The completion of the validation process will mark the end of the "define" phase of our project.

The development of a validated framework is only the beginning of ACTE's larger effort to recognize high-quality CTE. Upon completion of the validated framework, ACTE will begin working on the next two phases of the project: providing evaluation tools and opportunities to local programs of study and recognizing the results of those evaluation activities. Further details on this initiative will be available at www.acteonline.org/high-qualityCTE.

Appendix A

Framework Development and Structure

"PROGRAM OF STUDY (POS) COMPONENTS," *CAREER AND TECHNICAL PROGRAMS OF STUDY: A DESIGN FRAMEWORK*	
Link to primary document	http://cte.ed.gov/file/POS_Framework_Unpacking_1-20-10.pdf (framework on pp. 2-5)
Developing organization	Office of Career, Technical, and Adult Education, U.S. Department of Education (Federal agency)
Research base/development process for criteria	*Expert input:* The framework was developed "in collaboration with major national associations, organizations, and states."
Evaluation purpose	*Formative and summative evaluation:* The framework was originally designed to "help states and local recipients meet [Perkins] requirements," but has also been used in funding opportunities and grant evaluations.
Unit of analysis	Program of study (also applicable at the state level)
Number of criteria	10 main components, total of 42 subcomponents
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Self-assessment and third-party assessment options
Complexity of scale	No response scale included in framework; separate self-assessment document includes a simple response scale with three categories: *None, In progress, Operational*

"NATIONAL STANDARDS OF PRACTICE," *NATIONAL STANDARDS OF PRACTICE FOR CAREER ACADEMIES*	
Link to primary document	http://www.ncacinc.com/sites/default/files/media/documents/nsop_with_cover.pdf (standards on pp. 2-8)
Developing organization	National Career Academy Coalition (National education organization)
Research base/development process for criteria	*Expert input:* "A broad group of organizations supportive of career academies came together to develop a set of ten standards." Revisions were made in 2013 with input from the field and additional organizations (which included ACTE).
Evaluation purpose	*Formative and summative evaluation:* The standards are the basis for NCAC's Career Academy Review process and used to award Certification or Model status. In addition, a separate baseline analysis is offered to evaluate academy strengths and areas needing attention.
Unit of analysis	Career academy
Number of criteria	10 main standards, total of 42 criteria
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Some specifications, variation in detail throughout
Administration of criteria	Career Academy Review is a third-party assessment; separate Baseline Analysis is provided as a self-assessment with third-party review option.
Complexity of scale	No response scale included in standards; separate Baseline Analysis includes a response scale of simple complexity with three categories: *Developing, Emerging, Exemplary*

ACADEMY STANDARDS (2014 Version)	
Link to primary document	2014 version not available online (standards on pp. 2-10); Newer version available at http://naf.org/wp-content/uploads/2015/07/standards2015.pdf
Developing organization	National Academy Foundation (Network of career-themed academies)
Research base/development process for criteria	*Expert input and research-based indicators:* "The standards have been established in cooperation with the National Career Academy Coalition (NCAC), ConnectEd, and the Career Academy Support Network (CASN). In addition, the standards are aligned with current research and policy."
Evaluation purpose	*Formative and summative evaluation:* The standards are used in NAF's annual academy assessment, but are part of a continuous improvement process and determine customized support to help academies improve. In addition, results of the annual assessment are used to recognize "Distinguished" academies.
Unit of analysis	Career academy
Number of criteria	15 standards under four broad elements, total of 38 actions
Formulation of criteria	Inputs; one outcome
Level and consistency of detail within criteria	Some specifications, variation in detail throughout
Administration of criteria	Third-party assessment process including self-evaluation component
Complexity of scale	No response scale included in standards; NAF's academy assessment includes a fairly complex scale for each action

RUBRIC FOR LINKED LEARNING PATHWAY QUALITY REVIEW AND CONTINUOUS IMPROVEMENT	
Link to primary document	http://www.connectedcalifornia.org/direct/files/certification/Certification_Rubric_Booklet_121112_secure.pdf (rubric on pp. 2-15)
Developing organization	ConnectEd, Career Academy Support Network, The Education Trust–West, National Career Academy Coalition, National Academy Foundation (A collection of national and state-level organizations)
Research base/development process for criteria	*Expert input:* "This rubric was created collaboratively by a team of representatives from lead organizations in the Linked Learning field."
Evaluation purpose	*Formative and summative evaluation:* The rubric is intended for four main purposes—visioning, self-assessment, planning and quality review. Achievement on the standards leads to Linked Learning certification.
Unit of analysis	Linked Learning pathway
Number of criteria	16 criteria in four broad categories, total of 40 subcriteria
Formulation of criteria	Primarily inputs; a few outcomes
Level and consistency of detail within criteria	Substantially detailed specifications used consistently throughout
Administration of criteria	Self-assessment and third-party assessment options
Complexity of scale	Response scale is of simple complexity with three categories: *Criteria not met, Met, Exceeded*

"CAREER AND TECHNICAL EDUCATION STANDARDS STATEMENTS," *CAREER AND TECHNICAL EDUCATION STANDARDS, 2ND EDITION*	
Link to primary document	http://boardcertifiedteachers.org/sites/default/files/Standards/EAYA_CTE.pdf (standards on pp. 16-81)
Developing organization	National Board for Professional Teaching Standards (National education organization)
Research base/development process for criteria	*Expert input:* "Standards are developed and revised by a committee of 12–15 members who are representative of accomplished professionals in their field." Public comment periods and outreach to other organizations and experts was also included in the development process.
Evaluation purpose	*Primarily summative evaluation:* Standards are used as the basis for the award of National Board Certification to individual teachers. Documents also note that the standards are useful in professional development and initial teacher preparation—they reflect "what accomplished teachers should know and be able to do" and "are meant to reflect the current professional consensus about the essential aspects of accomplished practice."
Unit of analysis	CTE teacher
Number of criteria	10 standards
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Substantially detailed specifications used consistently throughout the "elaboration statements"
Administration of criteria	Third-party assessment process
Complexity of scale	No response scale included in standards; however, a very complex scale is used in evaluation of the standards for National Board Certification

"CAREER/TECHNICAL EDUCATION—TOOL FOR EVALUATING THE QUALITY OF A CT PROGRAM," *EVALUATING THE QUALITY OF CAREER/TECHNICAL PROGRAMS*	
Link to primary document	http://www.sreb.org/uploads/documents/2009/11/2009112014442129/CT_Program_Quality_Evaluation_Tool_Shaded.pdf (rubric on pp. 2-13)
Developing organization	Technology Centers that Work, Southern Regional Education Board (National education organization)
Research base/development process for criteria	*Expert input:* "Drawing on knowledge and experiences from HSTW and Technology Centers That Work (TCTW), program leaders have developed a rubric for evaluating the quality of CT programs" (Source: http://publications.sreb.org/2008/08V23w_BestPractices_Quality_CT.pdf).
Evaluation purpose	*Formative evaluation:* The rubric suggests a number of uses focused on program improvement, such as to "pinpoint strengths and gaps" and "to conduct a self-assessment prior to a Technical Assistance Visit (TAV)."
Unit of analysis	Program of study
Number of criteria	18 quality indicators
Formulation of criteria	Primarily inputs; some outcomes
Level and consistency of detail within criteria	Some specifications, variation in detail throughout
Administration of criteria	Self-assessment
Complexity of scale	Response scale is of medium complexity with four categories: *Level 1 – Little or No Development and Implementation, Level 2 – Limited Development or Partial Implementation, Level 3 – Operational Level of Development and Implementation, Level 4 – Exemplary Level of Development and Implementation*

"UNDERSTANDING THE INDICATORS FOR THE COMPREHENSIVE HSTW FRAMEWORK" AND "INDICATORS FOR THE COMPREHENSIVE HSTW FRAMEWORK," *ESTABLISHING BENCHMARKS AND MEASURING PROGRESS AT HSTW SITES*	
Link to primary document	http://www.hstwohioregions.org/sitefiles/2014%20HSTW%20Benchmarks.pdf (10 Key Practices and 7 Key Conditions on pp. 2-4; indicators on pp. 7-27)
Developing organization	High Schools That Work, Southern Regional Education Board (National education organization)
Research base/development process for criteria	*Research-based indicators:* "The impact of these key practices was examined in a study of how 424 schools adopted them" (Source: http://www.centerforcsri.org/research/improvement.cgi?st=s&sr=SR002542).
Evaluation purpose	*Formative and summative evaluation:* This document is designed as a 6- or 10-year action plan to help schools fully implement the High Schools That Work (HSTW) model and meet the HSTW student achievement goals.
Unit of analysis	Institution (secondary)
Number of criteria	202 indicators loosely organized around 10 Key Practices and 7 Key Conditions
Formulation of criteria	Primarily inputs; some outcomes
Level and consistency of detail within criteria	Substantially detailed specifications used consistently throughout indicators
Administration of criteria	Self-assessment and third-party assessment options (as part of technical assistance)
Complexity of scale	Responses to indicators are designed to be percentages describing performance; 10-year targets are included

"ACCREDITATION STANDARDS, OBJECTIVES, AND CRITERIA," *HANDBOOK OF ACCREDITATION: 2014 EDITION*	
Link to primary document	http://www8.spinen.net/council-org/files/downloads/2014/04/2014-Handbook-of-Accreditation-4-1-14-FINAL.pdf (standards on pp. 45-66)
Developing organization	Council on Occupational Education (National accrediting agency)
Research base/development process for criteria	"The standards, objectives, and criteria for accreditation by the Council are derived from the mission, goals, and objectives of the Council as an accrediting agency."
Evaluation purpose	*Summative evaluation:* Standards are used to determine institutional accreditation.
Unit of analysis	Institution (postsecondary)
Number of criteria	10 standards with 55 objectives and 173 specific criteria
Formulation of criteria	Primarily inputs; some outcomes in Standard 3, Required Benchmarks
Level and consistency of detail within criteria	Some specifications, variation in detail throughout
Administration of criteria	Third-party assessment process including self-evaluation component
Complexity of scale	No response scale included

PARTNERSHIP FOR 21ST CENTURY SKILLS LOCAL/REGIONAL K-12 EXEMPLAR EVALUATION TOOL	
Link to primary document	http://www.p21.org/storage/documents/exemplars/Exemplar_Evaluation_Tool.pdf (rubric on pp. 1-6)
Developing organization	Partnership for 21st Century Skills (National education organization)
Research base/development process for criteria	*Expert input:* "The rubric, which was developed in consultation with external advisers and evaluation design experts…"
Evaluation purpose	*Summative evaluation:* A multi-step evaluation process determines schools awarded "Exemplar" status.
Unit of analysis	Institution (secondary)
Number of criteria	6 criteria, total of 35 subcriteria
Formulation of criteria	Primarily inputs; some outcomes
Level and consistency of detail within criteria	Few specifications used consistently throughout
Administration of criteria	Third-party assessment process including self-evaluation component
Complexity of scale	Response scale is fairly complex with six categories: *No evidence, Planning, Initial implementation, Clearly evident, Embedded practice, NA*

COLLEGE AND CAREER TRANSITIONS INITIATIVE—INSTITUTIONAL ASSESSMENT AND SUSTAINABILITY: SELF-ASSESSMENT RUBRIC (Secondary and Postsecondary Versions)	
Link to primary document	Secondary version – http://www.league.org/league/projects/ccti/files/Rubrics/Rubric%20Secondary%20Institutionalization%20of%20CCTI.doc (rubric on pp. 1-8); Postsecondary version – http://www.acteonline.org/uploadedFiles/What_is_CTE/Research_Clearinghouse/CCTI_Postsecondary_Rubric_Final.pdf (rubric on pp. 1-7)
Developing organization	League for Innovation in the Community College (National education organization)
Research base/development process for criteria	Not specified
Evaluation purpose	*Formative evaluation:* The rubric was designed as a self-assessment tool for institutionalization of the model.
Unit of analysis	Secondary version – Institution (several indicators reference school system policies); Postsecondary version – Institution
Number of criteria	Secondary version – 5 dimensions, total of 21 components; Postsecondary version – 5 dimensions, total of 26 components
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications used consistently throughout
Administration of criteria	Self-assessment
Complexity of scale	Response scale is of simple complexity with three categories: *Stage One – Critical Mass Building, Stage Two – Quality Building, Stage Three – Sustained Institutionalization*

"CRITERIA AND INDICATORS FOR A QUALITY STATE CAREER PATHWAY SYSTEM" AND "CRITERIA AND INDICATORS FOR A QUALITY LOCAL/REGIONAL CAREER PATHWAY SYSTEM," *SHARED VISION, STRONG SYSTEMS: ALLIANCE FOR QUALITY CAREER PATHWAYS FRAMEWORK VERSION 1.0* (State and Local/Regional Versions)	
Link to primary document	http://www.clasp.org/resources-and-publications/files/aqcp-framework-version-1-0/AQCP-Framework.pdf (frameworks on pp. 17-25)
Developing organization	Center for Law and Social Policy (Nonprofit advocacy organization)
Research base/development process for criteria	*Expert input and research-based indicators:* "The criteria for state systems, as well as those for local/regional systems, are based on a review of the literature and wisdom from the field gathered through reviews by Alliance partners and reviews with national, state, and local audiences conducted by CLASP from July 2013 through May 2014."
Evaluation purpose	*Formative evaluation:* Frameworks are designed to "use to build and continuously improve career pathway systems," and documents specifically mention formative evaluation.
Unit of analysis	State version – State pathways system; Local/regional version – Local or regional pathways system
Number of criteria	State version – 5 main criteria, with 17 indicators and 11 additional indicators for "enhanced systems"; Local/regional version – 6 main criteria, with 20 indicators and 11 additional indicators for "enhanced systems"
Formulation of criteria	Inputs (a separate set of outcome metrics is provided as a companion)
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Self-assessment
Complexity of scale	No response scale included in framework; separate self-assessment includes a response scale of medium complexity with five levels: *1 – No Action, 2 – Planning/Emerging, 3 – Capacity Building, 4 – Implementation, 5 – Sustained*

"ESSENTIAL ELEMENTS OF A QUALITY LINKED LEARNING PATHWAY" AND "CRITICAL CONDITIONS FOR DEVELOPING A SYSTEM OF LINKED LEARNING PATHWAYS," *FRAMEWORK FOR DEVELOPING A SYSTEM OF LINKED LEARNING PATHWAYS*	
Link to primary document	http://www.connectedcalifornia.org/direct/files/resources/District%20Framework%20for%20System%20of%20Pathways%202014.pdf (Essential Elements and Critical Conditions on pp. 4-23)
Developing organization	ConnectEd: The California Center for College and Career (State-level education organization)
Research base/development process for criteria	*Expert input and research-based indicators:* The framework is informed by varied sources, including researchers, research reports from other organizations, experts in the field and documents from other organizations.
Evaluation purpose	*Formative evaluation:* "... intended to deepen and clarify the district's thinking about the infrastructure needed to support the design, implementation, and sustainability of a system of quality pathways."
Unit of analysis	District pathways system
Number of criteria	7 essential elements; 5 critical conditions, total of 30 subcategories
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Some specifications, variation in detail throughout
Administration of criteria	Not specified; appears to be self-assessment
Complexity of scale	No response scale included in public framework

"KEY DESCRIPTIVE CHARACTERISTICS AND SERVICE STRATEGIES IN CAREER PATHWAYS," *CAREER PATHWAYS AS A FRAMEWORK FOR PROGRAM DESIGN AND EVALUATION: A WORKING PAPER FROM THE INNOVATIVE STRATEGIES FOR INCREASING SELF-SUFFICIENCY (ISIS) PROJECT*	
Link to primary document	http://www.acf.hhs.gov/sites/default/files/opre/inno_strategies.pdf (framework on pp. 5-10)
Developing organization	Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services (Federal agency)
Research base/development process for criteria	*Expert input and research-based indicators:* The framework was developed by "abstracting from a large literature." It reflects work in progress on the first national evaluation of career pathways programs as part of the Pathways for Advancing Careers and Education initiative (formerly the Innovative Strategies for Increasing Self-sufficiency project).
Evaluation purpose	*Formative and summative evaluation:* The framework was developed for use in both program design and evaluation work. "In addition to providing a guide for describing and assessing specific programs, the framework can inform the development of both discrete programs and systems change initiatives that seek to integrate services and resources" (Source: http://www.acf.hhs.gov/sites/default/files/opre/isis_policy_brief_3_21_14_001.pdf).
Unit of analysis	Career pathways
Number of criteria	3 characteristics; 5 broad categories, total of 17 strategies
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications used consistently throughout
Administration of criteria	Framework is the basis of third-party research; could be used for self-assessment
Complexity of scale	No response scale included

COLLEGE AND CAREER PATHWAYS SYSTEM DESIGN SPECIFICATIONS (April 2015 Draft)	
Link to primary document	Not available online (framework on pp. 5-11)
Developing organization	National Center for College and Career Transitions (National education organization)
Research base/development process for criteria	*Expert input and research-based indicators:* "This work is built upon 40 years of research and innovation carried out by multiple organizations and high school improvement models."
Evaluation purpose	*Formative evaluation:* Referenced as a "systematic approach to designing and implementing," it emphasizes the need for continuous improvement based on results.
Unit of analysis	Local pathways system
Number of criteria	4 components, total of 41 criteria
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Self-assessment and third-party assessment options (designed to be used in technical assistance and coaching)
Complexity of scale	No response scale included

"CORE ELEMENTS OF THE COMPREHENSIVE CAREER PATHWAYS FRAMEWORK," *CAREER PATHWAYS AS A SYSTEMIC FRAMEWORK: RETHINKING EDUCATION FOR STUDENT SUCCESS IN COLLEGE AND CAREERS, A CALL TO ACTION*	
Link to primary document	http://www.league.org/league/projects/ccti/files/Systemic_Framework.pdf (framework on pp. 5-9)
Developing organization	League for Innovation in the Community College/National Council for Workforce Education (Two national organizations)
Research base/development process for criteria	*Expert input:* "25 experts and practitioners in the field of career pathways were convened and charged with the task of identifying ways to transition pathways."
Evaluation purpose	No specified evaluation purpose
Unit of analysis	Career pathways
Number of criteria	6 Core Elements, total of 23 features
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Not specified; appears to be self-assessment
Complexity of scale	No response scale included

"EIGHT AREAS FOR STATE ACTION—A STATE SECTOR STRATEGY FRAMEWORK," *SECTOR STRATEGIES COMING OF AGE: IMPLICATIONS FOR STATE WORKFORCE POLICYMAKERS*	
Link to primary document	http://c.ymcdn.com/sites/www.ncwe.org/resource/resmgr/workforce_dev_reports/state_sector_strategies_comi.pdf (framework on p. 12)
Developing organization	National Governors Association (NGA), NGA Center for Best Practices, Corporation for a Skilled Workforce, National Skills Coalition (A collection of national organizations)
Research base/development process for criteria	*Expert input:* The framework is based on the experiences of states implementing sector strategies.
Evaluation purpose	No specified evaluation purpose
Unit of analysis	State-level sector strategy initiatives
Number of criteria	8 areas for state action
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications used consistently throughout
Administration of criteria	Not specified; appears to be self-assessment
Complexity of scale	No response scale included

CAREER CLUSTERS CRITICAL COMPONENT SELF-ASSESSMENT FORM FOR IMPLEMENTATION (State and Local Versions)	
Link to primary document	State version – http://careertech.org/sites/default/files/Quality_ImplementationRubric_STATE.doc (rubric on pp. 1-6); Local version – http://careertech.org/sites/default/files/Quality_ImplementationRubric_LOCAL.doc (rubric on pp. 1-5)
Developing organization	National Association of State Directors of Career Technical Education Consortium (National membership organization representing state CTE directors)
Research base/development process for criteria	*Expert input and research-based indicators:* The rubrics are based on research and pilot testing done by the National Consortium for Health Science Education (NCHSE) in the development and implementation of the Health Science Career Cluster. The work, validated over multiple years in multiple states and settings, was then updated by NCHSE to remove specific references to Health Sciences, thus making both rubrics applicable for any Career Cluster.
Evaluation purpose	*Formative evaluation:* Questions accompanying the rubrics direct users to identify strengths and weaknesses and reflect on results in the next strategic plan.
Unit of analysis	State version – State Career Cluster system; Local version – Local Career Clusters
Number of criteria	State version – 15 critical components, with some duplicative content across components; Local version – 15 critical components
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Self-assessment
Complexity of scale	Response scale is of simple complexity with three categories: *No progress, In progress, Excellent*

CAREER PATHWAYS: SIX KEY ELEMENTS—READINESS ASSESSMENT TOOL	
Link to primary document	https://learnwork.workforce3one.org/view/2001126552919702183 (rubric on pp. 2-11)
Developing organization	Employment and Training Administration, U.S. Department of Labor (Federal agency)
Research base/development process for criteria	*Expert input:* The U.S. Department of Labor, Employment and Training Administration (ETA) convened a design team of representatives from the U.S. Department of Education Office of Career, Technical, and Adult Education, Jobs for the Future, and Social Policy Research Associates to design the framework used to guide the initiative.
Evaluation purpose	*Formative evaluation:* "This tool will help teams assess their state's career pathways initiative by looking at progress, priorities, gaps, technical assistance needs, and next steps."
Unit of analysis	State career pathways system (including local implementation)
Number of criteria	6 Key Elements, total of 48 components
Formulation of criteria	Inputs
Level and consistency of detail within criteria	Few specifications, variation in detail throughout
Administration of criteria	Self-assessment
Complexity of scale	Response scale is of medium complexity with four categories: *Initiation Phase, Planning Phase, Implementation Phase, Sustain/Enhance Phase*

Appendix B

Content Coding of Frameworks

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
POLICY – Legislation/state policies	X											X	X		X	X	X	X	X		X
PROGRAM/SCHOOL/SYSTEM – Funding/budget	X	X		X	X	X		X		X	X	X	X	X	X	X	X	X			X
PROGRAM/SCHOOL/SYSTEM – Funding/budget – Non-public funding					X							X	X	X	X		X	X			X
PROGRAM/SCHOOL/SYSTEM – Mission, vision and/or support from leadership		X	X	X	X		X	X	X	X	X	X	X	X		X	X		X	X	X
PROGRAM/SCHOOL/SYSTEM – Advisory committee/governing board		X	X	X	X	X		X		X	X			X		X		X	X	X	X
PROGRAM/SCHOOL/SYSTEM – Equity and access	X		X	X	X				X			X	X	X		X					X
PROGRAM/SCHOOL/SYSTEM – Special/targeted populations		X	X		X			X				X	X	X	X	X					
PROGRAM/SCHOOL/SYSTEM – Continuous/data-driven improvement	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X				X
PROGRAM/SCHOOL/SYSTEM – External communications, messaging and/or advocacy		X	X	X	X	X		X		X	X	X	X	X		X		X		X	
PROGRAM/SCHOOL/SYSTEM – Shared definitions of key terms (college and career readiness, etc.)										X	X	X	X	X		X					X
PROGRAM/SCHOOL/SYSTEM – Designated staff/technical assistance		X	X	X						X	X	X	X	X		X		X			
TEACH – Recruitment/retention			X	X	X									X							
TEACH – Credentialing/qualifications		X	X	X			X	X	X					X		X					
TEACH – Professional development	X	X	X	X	X	X	X	X	X			X	X	X		X			X	X	X
TEACH – PD – Community of practice			X	X	X	X								X							
TEACH – Evaluation								X			X			X							
TEACH – Collaboration with other teachers/programs	X	X	X	X	X	X	X							X		X	X		X	X	
ASSESS	X	X		X	X	X	X	X	X			X	X	X	X	X	X		X	X	X
ASSESS – Academic skills		X		X	X	X	X		X					X	X	X					
ASSESS – Technical skills	X	X		X	X	X	X	X						X		X			X		
ASSESS – Technical skills – Industry based	X	X		X	X	X	X	X						X		X			X		
ASSESS – Employability skills					X	X			X					X	X	X	X				
ASSESS – Assessment strategies	X	X		X	X	X	X							X	X				X	X	
DELIVERY – Cohort scheduling		X	X	X										X	X	X					X
DELIVERY – Technology/instructional materials		X			X	X	X	X	X												X
DELIVERY – Credit transfer opportunities	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X		X
DELIVERY – Industry certification opportunities		X	X		X	X										X	X				X
DELIVERY – Flexible options (online, etc.)							X	X						X	X		X		X	X	X
DELIVERY – Acceleration within a course/program												X	X		X						X
DELIVERY – Prior learning												X	X		X		X				X

See page 24 for the frameworks that correspond to each number in the chart.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
DELIVERY – CTSO/leadership opportunities	X	X			X	X				X	X					X					
DELIVERY – Project-based learning	X	X	X	X	X	X	X		X					X	X	X				X	
DELIVERY – Work-based learning	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
DELIVERY – Work-based learning - Logistics			X					X						X							
DELIVERY – Work-based learning – Standards/guidelines			X	X		X	X	X						X						X	
DELIVERY – Work-based learning – Evaluation			X		X	X		X						X							
DELIVERY – Academic integration	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X			X	
DELIVERY – Other instructional strategies	X			X	X	X	X		X					X	X	X				X	
CONTENT – Alignment to academic standards	X	X		X	X	X	X		X			X	X	X		X	X		X	X	
CONTENT – Alignment to technical standards	X	X		X	X	X	X	X				X	X	X		X	X		X	X	X
CONTENT – Employability skills	X	X	X		X	X	X	X	X				X	X	X	X	X			X	X
CONTENT – Vertical alignment/course sequences	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X		X	X	X
CONTENT – Vertical alignment/course sequences – Program of study (specific terminology)	X	X	X	X	X	X	X							X		X					
CONTENT – Vertical alignment/course sequences – Exit/entry points												X	X		X		X				X
STUDENT – Recruitment/enrollment		X	X	X	X	X		X						X		X					
STUDENT – Motivation/interest	X	X	X	X	X	X	X						X	X	X	X	X		X	X	
STUDENT – Support services		X	X	X	X	X	X	X				X	X	X	X		X				X
GUIDANCE – Career development	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X		X	X	
GUIDANCE – Personal learning plans	X	X	X	X	X	X	X							X		X	X		X	X	X
GUIDANCE – Job search assistance/job placement					X			X		X	X	X	X		X		X				X
GUIDANCE – Academic/postsecondary planning	X	X	X	X	X	X	X	X		X		X	X	X	X	X					X
INVOLVE – Business partners (employers, labor organizations)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INVOLVE – Workforce/economic development partners	X											X	X		X	X	X	X	X		X
INVOLVE – Education partners	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
INVOLVE – Community partners	X	X		X	X		X		X	X	X	X	X	X	X	X	X		X	X	X
INVOLVE – Parents/families	X	X	X	X	X	X	X		X					X		X	X		X	X	
INVOLVE – Partner policies and procedures	X	X	X	X		X		X				X	X	X		X					X
INVOLVE – Partners provide input into, design and/or validate curriculum/programs	X	X	X	X	X	X	X	X					X	X	X	X	X			X	
INVOLVE – Partners provide funds or in-kind contributions			X		X	X						X	X				X			X	
INVOLVE – Partners provide/facilitate work-based learning		X	X	X	X	X	X						X	X					X	X	
INVOLVE – Partners provide career awareness activities and/or classroom support		X	X	X	X		X							X	X	X	X			X	
INVOLVE – Labor market alignment	X	X		X	X	X		X		X	X	X	X	X	X	X	X	X			X
DATA – Accountability/outcomes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
DATA – Tracking students after exit	X	X		X	X	X		X				X	X	X	X						X
DATA – Training to use data				X			X							X		X					
EQUIP – Equipment, physical space, and/or safety/health		X			X			X						X							
PROGRESS – Maintain/sustain	X		X		X			X	X			X	X	X	X		X				
PROGRESS – Scaling												X	X	X	X		X				

See page 24 for the frameworks that correspond to each number in the chart.

LIST OF FRAMEWORKS AND CORRESPONDING NUMBERS IN CHART

1. "Program of Study (POS) Components," *Career and Technical Programs of Study: A Design Framework*; Office of Career, Technical, and Adult Education, U.S. Department of Education
2. "National Standards of Practice," *National Standards of Practice for Career Academies*; National Career Academy Coalition
3. *Academy Standards*; National Academy Foundation (2014 version)
4. *Rubric for Linked Learning Pathway Quality Review and Continuous Improvement*; multiple organizations
5. "Career and Technical Education Standards Statements," *Career and Technical Education Standards, 2nd Edition*; National Board for Professional Teaching Standards
6. "Career/Technical Education—Tool for Evaluating the Quality of a CT Program," *Evaluating the Quality of Career/Technical Programs*; Technology Centers That Work, Southern Regional Education Board
7. "Understanding the Indicators for the Comprehensive HSTW Framework" and "Indicators for the Comprehensive HSTW Framework," *Establishing Benchmarks and Measuring Progress at HSTW Sites*; High Schools That Work (HSTW), Southern Regional Education Board
8. "Accreditation Standards, Objectives, and Criteria," *Handbook of Accreditation: 2014 Edition*; Council on Occupational Education
9. *Partnership for 21st Century Skills K-12 Local/Regional Exemplar Evaluation Tool*; Partnership for 21st Century Skills
10. *College and Career Transitions Initiative Institutional Assessment and Sustainability: Self-assessment Rubric*; League for Innovation in the Community College (Secondary version)
11. *College and Career Transitions Initiative Institutional Assessment and Sustainability: Self-assessment Rubric*; League for Innovation in the Community College (Postsecondary version)
12. "Criteria and Indicators for a Quality State Career Pathway System," *Shared Vision, Strong Systems: Alliance for Quality Career Pathways Framework Version 1.0*; Center for Law and Social Policy (State pathway version)
13. "Criteria and Indicators for a Quality Local/Regional Career Pathway System," *Shared Vision, Strong Systems: Alliance for Quality Career Pathways Framework Version 1.0*; Center for Law and Social Policy (Local/regional pathway version)
14. "Essential Elements of a Quality Linked Learning Pathway" and "Critical Conditions for Developing a System of Linked Learning Pathways," *Framework for Developing a System of Linked Learning Pathways*; ConnectEd
15. "Key Descriptive Characteristics and Service Strategies in Career Pathways," *Career Pathways as a Framework for Program Design and Evaluation: A Working Paper from the Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project*; Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services
16. "Eight Areas for State Action—A State Sector Strategy Framework," *Sector Strategies Coming of Age: Implications for State Workforce Policymakers*; National Governors Association (NGA), NGA Center for Best Practices, Corporation for a Skilled Workforce and National Skills Coalition
17. *Career Pathways: Six Key Elements—Readiness Assessment Tool*; U.S. Department of Labor
18. *Career Clusters Critical Component Self-Assessment Form for Implementation*; National Association of State Directors of Career Technical Education Consortium (State version)
19. *Career Clusters Critical Component Self-Assessment Form for Implementation*; National Association of State Directors of Career Technical Education Consortium (Local version)
20. "Core Elements of the Comprehensive Career Pathways Framework," *Career Pathways as a Systemic Framework: Rethinking Education for Student Success in College and Careers, A Call to Action*; National Council for Workforce Education/League for Innovation in the Community College
21. *College and Career Pathways System Design Specifications*; National Center for College and Career Transitions (April 2015 draft)

Appendix C

Definitions

In addition to operational definitions devised by the researchers that are shared throughout this report, there are several terms important to this work that have established statutory and/or common definitions.

Programs of study: As defined in the Carl D. Perkins Career and Technical Education Act of 2006, programs of study:

(i) incorporate secondary education and postsecondary education elements;
(ii) include coherent and rigorous content aligned with challenging academic standards and relevant career and technical content in a coordinated, non-duplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education;
(iii) may include the opportunity for secondary education students to participate in dual or concurrent enrollment programs or other ways to acquire postsecondary education credits; and
(iv) lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree (Carl D. Perkins Career and Technical Education Act of 2006, Section 122(c)(1)(A)).

Career pathways: A joint letter from the U.S. Departments of Education, Labor, and Health and Human Services, while acknowledging a number of definitions of career pathways, states that the phrase generally refers to "connected education and training strategies and support services that enable individuals to secure industry relevant certification and obtain employment within an occupational area and to advance to higher levels of future education and employment in that area" (U.S. Departments of Education, Labor, and Health and Human Services, 2012, pg. 1). A more detailed definition can also be found in the Workforce Innovation and Opportunity Act of 2014, 29 U.S.C. § 3102.

This term is sometimes used with low-skilled adults in mind as the target population, while some organizations apply the term more broadly across various populations. In addition, career pathways are often conceptualized as part of a systemic approach involving education, workforce development, industry and community agencies, in which programs of study are the educational component of a multi-faceted system. A career pathway can also be a plan of study and accompanying skill and knowledge statements for specific occupational areas under the Career Clusters® organizing schema. However, most frameworks in our evaluation either explicitly provide or seem to be implicitly operating under definitions similar to that provided in the joint letter.

Career academies: As defined in ACTE's Issue Brief, *The Role of Career Academies in Education Improvement*, common features of a career academy are:

- a small learning community, comprised of a group of students within the larger high school, who take classes together for at least two years and are taught by a team of teachers from different disciplines;
- a college preparatory curriculum with a career theme, enabling students to identify relationships among academic subjects and their application to a broad field of work; and
- partnerships with employers, the community and local colleges that bring resources from outside the high school to improve student motivation and achievement (ACTE, 2009).

Linked Learning pathways: According to ConnectEd California's website, a Linked Learning pathway "integrates rigorous academic instruction with a demanding technical curriculum and field-based learning—all set in the context of one of California's 15 major industry sectors, such as business and finance, building and environmental design, biomedical and health sciences, engineering, information technology, manufacturing, or arts, media, and entertainment" (ConnectEd, n.d., para. 1).

Linked Learning can also be described as a more systemic state-specific approach, with integrated student supports and multiple pathways available for students across the state.

These two levels of Linked Learning are evident in the *Rubric for Linked Learning Pathway Quality Review and Continuous Improvement*, which we classified as a program-level framework, and the *Framework for Developing a System of Linked Learning Pathways*, which we classified as a systems-level tool.

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About ACTE

The Association for Career and Technical Education (ACTE) is the nation's largest not-for-profit association committed to the advancement of education that prepares youth and adults for successful careers. ACTE represents the community of CTE professionals, including educators, administrators, researchers, guidance counselors and others at all levels of education. ACTE is committed to excellence in providing advocacy, public awareness and access to resources, professional development and leadership opportunities.

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