2018–19 OCTAE Customized Technical Assistance to States
Final Summary Report for the Colorado Community College System

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Introduction

The U.S. Department of Education provides state educational agencies that administer federally funded career and technical education (CTE) programs the opportunity to request technical assistance (TA) every year to improve the quality of their CTE data and accountability systems. One purpose of the TA is to help states comply with accountability and reporting requirements of the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), however, TA projects can also support the use of data to drive decision-making and program improvement.

The U.S. Department of Education’s Office of Career, Technical, and Adult Education (OCTAE) TA provider is RTI International, which worked directly with states selected for TA in 2018–19, including Colorado. The Colorado Community College System (CCCS) applied for TA to determine promising practices in each of the topic areas of interest to Colorado:

- **State-level identification of CTE concentrators and completers**: Review data collection and analysis practices that allow states to accurately identify secondary CTE participants, concentrators, and completers at the state level.

- **Quality assurance and data collection for IRC attainment**: Survey state practices for collecting data on students’ IRC attainment at the secondary and postsecondary levels and ensure that the IRCs students earn are relevant to industry needs.

- **Definitions and data collection for WBL**: Review and summarize state definitions of WBL and data collection practices for tracking students’ WBL participation.

Researchers from RTI (“the TA team”) consulted with Victoria Crownover, Perkins Plan Manager and Lauren Victor, Director of CTE Accountability, of CCCS during the project and developed the following approach to identify promising practices in each of the topic areas of interest to Colorado:
Technical Assistance Activities

The TA team first investigated state approaches to identifying secondary CTE concentrators by surveying publicly available and web-based information on state data collection practices in 15 states (Arizona, California, Delaware, the District of Columbia, Florida, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Montana, and Wisconsin). These states were included in the initial review primarily due to the availability of documentation on their CTE data collection practices. Among those states, the TA team focused on those of similar size to Colorado. The TA team also sought out states with a similar Perkins administrative structure to Colorado—in which the Perkins Eligible Agency was a postsecondary agency and solely responsible for data collection at both the secondary and postsecondary levels. However, among the states studied where postsecondary agencies administer Perkins funds (Iowa, Kansas, Louisiana, Minnesota, Montana, and Wisconsin), the secondary agency is responsible for collecting secondary CTE data in all of them.

After an initial review of documentation, the TA team and CCCS staff selected Nevada for a follow-up interview on state CTE concentrator and completer identification practices (the TA team was aware that Nevada had a process for identifying concentrators and completers through prior work with the state). The TA team also interviewed state data leads in Kentucky and Iowa, as they also identify concentrators at the state level.

As with the research on concentrator status, the TA team began by examining state data collection and quality assurance practices for IRCs in 12 states (Kansas, Kentucky, Louisiana, Massachusetts, Missouri, Nevada, New Jersey, Ohio, South Dakota, Tennessee, Virginia, West Virginia). These states were included because of their IRC data collection experience, their geographic proximity to Colorado, or on recommendation from CCCS staff. After reviewing the TA team’s findings from this review, CCCS requested additional information about the approval processes for state lists of approved IRCs and on national initiatives related to credential inventories and data collection. In response, the TA team gathered information on Credential Engine, interviewed a partner working on the National Student Clearinghouse Data Pipeline Initiative, and collected additional information on state IRC approval criteria and processes.

For WBL, the TA team began with a review of state and national documentation on definitions of quality WBL and the collection of data on students’ WBL participation. After sharing this information with CCCS, the TA team conducted phone interviews with CTE representatives in Ohio, Massachusetts, and Tennessee, the states that CCCS staff believed have WBL data collection and reporting systems most relevant to Colorado’s.
Findings

The following sections summarize the research team’s findings relating state-level identification of CTE concentrators and completers, quality assurance and data collection for industry-recognized credentials, and work-based learning.

State-Level Identification of Career and Technical Education Concentrators and Completers

Students are designated as CTE concentrators by virtue of having completed a minimum number of courses in a program sequence, in accordance with nonregulatory guidance under the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) and the new statutory definition of concentrator included in Perkins V. States use one of two approaches to identify CTE concentrators. In most states, CTE instructors or administrators identify concentrators in their local education agency (LEA) and send counts of students who have reached concentrator status, overall and disaggregated by subcategory (which will include, under Perkins V, Career Clusters) to the state. In a few states, state-level data analysts identify students who have reached concentrator status based on an analysis of student course-taking at the state level. The risk of LEA-level identification is inconsistency by LEAs in the criteria used. State-level identification, however, requires the collection of detailed transcript data and common course numbering. In Colorado, LEAs identify students as concentrators prior to submitting student-level records to CCCS. CCCS would prefer to determine whether students have achieved concentrator or completer status based on student transcript data through a standardized, uniform process, but does not receive course-level data through its secondary CTE data collection process.

To ensure the relevance of the TA findings for Colorado, the TA team sought to collect information from states that identify concentrators at the state level and, like Colorado, have a CTE data collection process that is separate from other K–12 data collection. The TA team did not find any states that satisfied both criteria, either because their CTE data were drawn in whole or in part from the other K–12 data collection processes (e.g., Nevada and Iowa) or because they do not collect course-level data and identify concentrators at the state level (e.g., Kentucky’s Technical Education Data System). Discussion of the evolution of CTE data reporting in those states and in Delaware, Nebraska, and Wisconsin suggest a general trend toward incorporation of CTE data elements into general K–12 data collection processes.
The states did, however, offer policies and practices that could inform state-level identification of CTE concentrators and completers in Colorado, should CCCS collect course-level data from local CTE providers or as an extract from the main K–12 data system in the future. States take two approaches to determine whether students have completed the requisite number of courses: sum the total number of course credits earned in a program sequence or verify that students have completed a course at the appropriate level to be identified as concentrators or completers, based on course number, in the program sequence (as in Delaware and Nevada).

The latter approach allows states to identify concentrators based on completion of a single course, rather than completion and aggregation of multiple courses within a CTE program sequence. Delaware describes course numbering for CTE courses in its 2017 Fiscal and Accountability Policies and Procedures document, using the course sequence for its Academy of Finance Program (part of the Business Finance career cluster) as an example (exhibits 1 and 2). Exhibit 2 shows the structure of a specific course number (for Principles of Accounting): The program level course code (the final digit) indicates whether completion of the course is associated with participant, concentrator, or completer status.

Exhibit 1. Career and technical education course code structure (Delaware, effective 2017–18)

<table>
<thead>
<tr>
<th>Cluster code</th>
<th>Program of study code</th>
<th>Program of study title</th>
<th>Course code</th>
<th>Course title</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.02</td>
<td>6.02601</td>
<td>Academy of Finance</td>
<td>6.02601011</td>
<td>Fundamentals of Finance (FOF)</td>
</tr>
<tr>
<td>6.02</td>
<td>6.02601</td>
<td>Academy of Finance</td>
<td>6.02601022</td>
<td>Principles of Accounting (POA)</td>
</tr>
<tr>
<td>6.02</td>
<td>6.02601</td>
<td>Academy of Finance</td>
<td>6.02601033</td>
<td>Financial Services (FS)</td>
</tr>
</tbody>
</table>

Exhibit 2. Detail of course code: Principles of accounting

<table>
<thead>
<tr>
<th>6</th>
<th>02</th>
<th>6</th>
<th>01</th>
<th>02</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster code</td>
<td>Pathway sequence code</td>
<td>Program of study code</td>
<td>Program of study code</td>
<td>Course sequence code</td>
<td>Program-level course code*</td>
</tr>
</tbody>
</table>

*Program-level course codes: 0 = Middle School/Exploratory, 1 = Career and Technical Education (CTE) Participant, 2 = CTE Concentrator, 3 = CTE Completer, 5 = Early Career Experience

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Quality Assurance for Industry-Recognized Credentials

As more schools and districts offer IRCs, a key to expanding high-quality IRCs is determining which of the many hundreds of IRCs available effectively measure students’ skills and have value in the labor market. The states reviewed use two related mechanisms for quality assurance: clear criteria for IRC state approval and a rigorous application process for adding IRCs to the state-approved list.

Setting Criteria for a State-Approved Industry-Recognized Credential List

Many states have developed or are developing state-approved IRC lists as a way of setting a statewide bar for IRC quality. The agencies responsible for developing and maintaining the lists vary by state, but generally both state education and labor (or commerce) agencies collaborate on both list development and annual maintenance. States using these processes report satisfaction with the quality of IRCs offered throughout the state, particularly in cases where the state education agency worked closely with a state department of labor or commerce to align approved IRCs with industry needs. States, such as South Dakota, that began with an IRC list developed solely by the state education agency describe the need to consult industry professionals and the state department of labor, moving forward, to get a better sense of which IRCs have labor market value.

Regardless of the agencies involved, states provide public documentation of the approval process that describe the steps involved and name the committees reviewing submissions and criteria for approval. States use similar steps to develop their IRC lists (exhibit 3).

The minimum criteria for inclusion on the list vary across states but generally cover four areas:

- **Industry recognized and valued:** States set criteria for approving IRCs and determine whether IRCs meet the criteria by consulting industry members, associations, or CTE industry advisory councils (Nevada, New Jersey, South Dakota, Tennessee); reviewing labor market information on local or regional needs for the occupation aligned with an IRC (Florida, Kansas, Massachusetts, Missouri, Ohio); or a combination of both (Kentucky).

- **Accessible to high school students:** For state approval, IRCs must be attainable by minors with limited work experience (Florida, Kansas) and aligned with secondary CTE courses and/or programs of study.
• **Postsecondary articulation**: In some states, approval criteria include the option for students to use IRCs earned in high school to earn postsecondary credits or hours toward a technical degree or nondegree program (New Jersey, South Dakota, Tennessee).

• **Transference to high-quality employment**: States may require IRCs to be aligned with an occupation that yields a livable wage, as determined by the state (Kansas, Kentucky); aligned with occupations defined as high demand by the state commerce or labor department (Kansas, Louisiana, Ohio); or a prerequisite for above entry-level jobs in an industry (South Dakota, Tennessee).

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**Exhibit 3. Common steps for developing Industry-Recognized Credential (IRC) lists**

1. **Step 1.** Define a “valued” IRC. Valuation criteria may include whether the IRC is required to enter a high-paying occupation or is aligned with a growing industry. States learn which IRCs are valued by meeting with career and technical education (CTE) advisory board members, connecting with the state labor or commerce department, consulting employers and industry associations, and/or using state or regional labor market information.

2. **Step 2.** Collect local education agency input on IRCs already offered. States use listening tours or a call for districts to submit IRC recommendations to a state agency.

3. **Step 3.** Create crosswalks between IRCs and CTE courses or programs of study. States may consult with industry professionals to determine which skills or competencies are required to pass an IRC exam.

4. **Step 4.** Review and update the IRC list at least annually. This involves an application process for new IRCs and review process for exams already on the list.

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**Maintaining Quality Through Regular Reviews of the Industry-Recognized Credential List**

States report that well-defined processes and specific criteria help limit issues with vendors pushing to get their IRCs onto the state list. Several state agencies formally review their state’s IRC lists either quarterly or annually (Kansas, Kentucky, New Jersey, Virginia). In Kentucky, for instance, the Kentucky Workforce Innovation Board Business and Education Alignment Committee works with the state education agency to update the state list annually using labor market information provided by local workforce investment boards. The committee also gathers updates directly from employers through an online survey.

Most states use an application process to allow LEAs to propose IRCs for the state lists each year (Florida, Louisiana, Missouri, Nevada, Ohio, South Dakota, Tennessee). In most cases,
only LEA staff are permitted to propose new IRCs to prevent vendors from proposing IRCs that may not be relevant to school curricula or labor market needs. The format of the application processes varies across states. Other states (e.g., Louisiana, Missouri, South Dakota) use a formal application process that involves filling out an online form, a review by at least one committee, and required statements of support from industry.

- **Louisiana**: Applications must be submitted to the state workforce investment council at least one month prior to the Industry-Based Credential council meeting. The form asks for evidence of alignment between the IRC and occupations on the state in-demand job list, a list of employers who support the IRC, details on related curriculum and training, and evidence of career advancement opportunities for individuals who receive the IRC. State secondary and postsecondary education agency staff, and representatives from the state labor department, all review the applications using a reviewer checklist.

- **Missouri**: Applications for approval for new or revised IRCs are accepted in March through June each year and the final list is posted each October. The application requires schools to work with industry to determine if the credential is valuable. School or district staff submit the application using a state-developed template that includes the number of schools using the assessment, national industries that recognize the credential, CTE programs the IRC aligns to, and required IRC assessment components. All applications are reviewed by a team of CTE experts, consisting of the IRC Review Committee (12 career center and comprehensive high school leaders) and the CTE Advisory Council (industry members). If there are differences of opinion, the CTE Advisory Council has final say.

- **South Dakota**: Schools email an application for IRC approval to a South Dakota Department of Education employee by October 1, and a new list is posted online by December 1 of each year. The application asks for information such as testing site, related teaching aids, whether special accommodations to student test takers are allowed, and extensive research and documentation on an IRC’s industry value. The applications are reviewed first by the South Dakota Department of Education, then by the CTE advisory committees for each cluster area; each committee has its own review criteria.

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2 See [http://www.laworks.net/PublicRelations/WIC_IndustryBasedCertification.asp](http://www.laworks.net/PublicRelations/WIC_IndustryBasedCertification.asp).
3 See [https://dese.mo.gov/college-career-readiness/career-education/technical-skills-attainment-industry-recognized-credential](https://dese.mo.gov/college-career-readiness/career-education/technical-skills-attainment-industry-recognized-credential).
4 See “Request a New Industry Recognized Credential on State Approved List” at [https://doe.sd.gov/cte/industry.aspx](https://doe.sd.gov/cte/industry.aspx).
Collecting Data on Industry-Recognized Credentials

States use two methods to collect data on IRCs attempted or earned by students: agreements or contracts with vendors and self-reporting from LEAs. On one end of the spectrum, Tennessee has memorandums of agreement (MOA) with most vendors offering IRCs on its state list. To be included on the list, vendors are expected to sign an MOA to report data on credential attempts and completions directly to the state education agency. A benefit of this data collection method is high data accuracy since the vendor is reporting whether a student attempted, passed, or failed an exam. A major drawback is the complexity of matching vendor data onto student education records. Certifying bodies may not collect enough data on students (e.g., first and last name, address, date of birth) to allow for an accurate match to student records, limiting data utility. Tennessee reports matching about half of the IRC data to student records and relying on self-reports from LEAs to fill in the missing data.

On the other end of the spectrum, most states collect IRC data directly from LEAs. State agencies using this method may provide templates for IRC reporting (Virginia) or include IRC data in existing systems for transcript data or accountability reporting (Kansas, South Dakota). The benefits and drawbacks for this data collection are the opposite of those of vendor-supplied data: while LEA-reported IRC is easier to match to student records, the accuracy and completeness of the data are more difficult to assess. However, states report finding few inaccuracies in their quality checks of IRC self-reports from LEAs. Kentucky, for example, only found one invalid IRC report (i.e., the school could not produce evidence of the student completion) in a recent audit of 150 school districts across the state.

LEAs use multiple methods to collect IRC data that they report to the state. In cases where the school serves as exam proctor, the LEA can collect completion data directly from vendors. In other cases, LEAs use student or alumni surveys to gather information on completions. Students may also have to self-report their IRC results to teachers or administrators to fulfill course, program of study, or graduation requirements. In addition, states may require LEAs to maintain or submit documentation supporting their data on student IRC attainment—e.g., virtual copies of IRC completion certificates. In some states, such as Kentucky, the state education agency reviews a sample of this documentation each year at sites selected for program monitoring. In other states where the documentation is tied to monetary incentives for districts, such as Kansas, documentation is submitted to and reviewed by the state.

Many LEAs choose to host, or proctor IRC exams. Among the states reviewed, LEAs typically offer IRC exams through vendors that are state approved or recognized in states that specify a vendor for each approved IRC. In cases where the state does not specify approved vendors, LEAs select IRCs and associated vendors that are recognized by local industry. Exams may be administered by a CTE coordinator or counselor in cases where the
teacher is not allowed to proctor the exam, though sometimes involvement from a professional in a related field or another local professional outside of the school is also required. For example, the National Institute for Metalworking Skills has requirements regarding which staff are or are not allowed to proctor the exam. LEAs will often partner with a regional technical or community college to host and proctor the exam if they do not have the appropriate facilities, staff, or equipment to do so.

National Initiatives Related to Industry-Recognized Credentials

With thousands of IRCs offered across industries, several organizations are attempting to create national directories of IRCs to assist with the identification, understanding, and tracking of IRCs.

- **Credential Engine**: This organization is creating a web-based national registry of IRCs and other types of credentials to encourage transparency and understanding of the many credentials available. Credential Engine is still building partnerships with states and credential vendors to catalogue and create profiles for each type of credential offered that include testing sites, cost, evidence of alignment with industry, and competency requirements. Eventually, businesses and students will be able to use a tool called the Credential Finder to learn about credentials offered by education institutions and find credentials of interest.

- **National Student Clearinghouse (Clearinghouse) Data Pipeline project**: In partnership with community colleges, credential vendors, and the Bureau of Labor Statistics, the Clearinghouse is developing a database that connects postsecondary student-level data to IRC completion and labor market outcome data. The project began by connecting existing Clearinghouse college enrollment and postsecondary degree attainment and credential vendor data. The database has since expanded to include data on nondegree, non-credit-bearing programs aligned with IRCs provided by a pilot group of community and technical college systems. This project is expected to yield a repository of matched postsecondary student data for the pilot institutions and states in the next three years. More information is available in Appendix A.

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5 See [https://credentialengine.org](https://credentialengine.org).
6 See [https://credentialfinder.com](https://credentialfinder.com).
Work-Based Learning

Twenty-eight states have established formal, state-level definitions of WBL. These definitions vary from brief descriptions of valid WBL experiences to detailed statements outlining the purpose, evaluation criteria, and anticipated outcomes of WBL experiences. An example of the former from Florida describes which experiences count as WBL: “WBL includes a combination of supervised student-centered instruction and work-based job experience. Students in these work-based learning programs must be paid for their on-the-job work experience.”

One state (West Virginia) has developed a definition of WBL that includes criteria for assessing WBL quality. Several other states include these criteria in other guidance documents such as state-issued WBL manuals. National organizations such as Advance CTE and the Association for Career and Technical Education also feature quality metrics in their WBL definitions. While quality criteria can vary across state definitions and guidance, common elements include:

- hands-on learning applications;
- student goal and career plan alignment;
- career options and pathways exposure;
- real-world experiences and skills connections;
- student, teacher, and employer preparation and support;
- assessment of student growth and skill gain; and
- guided student reflection activities.

Colorado’s definitions of quality WBL and continuum of WBL activities are examples of WBL definitions that address quality (exhibits 4 and 5). This guidance was developed through the TalentFOUND initiative sponsored by the Colorado Workforce Development Council. The definition and continuum incorporate two common quality elements: career exploration and exposure and connections between WBL experiences, industry, and the workplace, or the “real world.” The materials also feature less commonly found quality components, such as definitions of WBL activity types and defined roles for educators and employers who participate in WBL.

Exhibit 4. Colorado’s definition of Work-Based Learning (WBL)

Learning opportunities that occur in part or in whole in the workplace and provide the learner with hands-on, real world experience. WBL opportunities include but are not limited to: internships, apprenticeships, and residencies and incumbent worker training.

Source: TalentFOUND Terms

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States collect data on students’ participation in WBL in two ways:

- **Self-reported WBL data** is submitted to the state by LEAs through a statewide system or survey. For example, the Massachusetts Career Ready Database,\(^8\) is an online system that collects data on students’ WBL experiences from students, employers, and school staff. Businesses submit placement details, a list of skills, and student portfolio items including a performance review. Students may log on to review feedback from employers and enter reflections on their experiences, while schools may log on to view skill gains and placement information. The information gathered through this system helps inform program offerings for youth employment, internships, and career development programs in Massachusetts.

- **Course enrollment–based data** is collected using WBL course numbers. In some states, including Florida, Tennessee, and West Virginia, students are required to enroll in a WBL course to receive credit for their experience. WBL courses can be open to CTE and non-CTE students or limited to students enrolled in specific CTE pathways or career clusters. High school students in Tennessee, for example, can substitute for advanced coursework in any program (CTE or non-CTE) using the WBL: Career Practicum Course.\(^9\)

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\(^8\) See [https://masswbl.org](https://masswbl.org).

Exhibit 5. Colorado’s work-based learning continuum

Exhibit 6. Information on statewide work-based learning (WBL) programs and WBL data collection and reporting systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Ohio</th>
<th>Massachusetts</th>
<th>Tennessee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale of WBL initiative</td>
<td>Statewide. The Ohio Career Connections initiative began in 2012 to</td>
<td>Statewide. Connecting Activities began as a</td>
<td>Statewide, but some decisions are left to</td>
</tr>
<tr>
<td></td>
<td>align efforts to help enhance student’s college and career readiness.</td>
<td>statewide initiative in 1998, although funding</td>
<td>districts. The Tennessee Department of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>limitations restrict the number of students</td>
<td>Education (TDOE) funds the statewide WBL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>who can participate. About 50 percent of</td>
<td>Leadership Council that has regional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Massachusetts high schools are full partners</td>
<td>representatives. WBL coordinators can be hired</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the Connecting Activities network, and</td>
<td>at the district level to serve as the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>additional schools are partial participants.</td>
<td>“teacher of record” for WBL courses.</td>
</tr>
<tr>
<td>Component</td>
<td>Ohio</td>
<td>Massachusetts</td>
<td>Tennessee</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Overcoming of employer resistance to engage minors</td>
<td>Ohio has an agreement with Adecco to serve as the &quot;employer of record&quot; for minors participating in paid WBL. Adecco handles student payment and liability insurance.</td>
<td>Not identified as a barrier. TDOE and employer champions who understand child labor laws help educate and recruit employers to offer WBL to minors. Most employers are too busy to do this research themselves, so providing state resources is beneficial.</td>
<td></td>
</tr>
<tr>
<td>Data collection system</td>
<td>Ohio is creating the &quot;Career and Technical Education (CTE) Manager&quot; data collection system. Using this system, students will choose their program and courses, identify which academic and technical standards match their WBL experience, create portfolios of their work, and get feedback from employers. This system will be piloted in the 2019–20 school year.</td>
<td>The Massachusetts Career Ready (MACR) database has been in place since 1998. Data from this system gets recorded and reported using the state-level student information management system (SIMS). The MACR database collects additional information not collected in SIMS (see explanation below).</td>
<td>Tennessee conducts transcript reviews to identify students enrolled in their “C20H17 WBL: Career Practicum” course.</td>
</tr>
<tr>
<td>Data collected</td>
<td>Ohio’s CTE Manager system will collect self-reported data. Districts will use the system to create aggregate reports and send these to the state, which does not plan to collect student-level WBL data.</td>
<td>Data in the MACR database is self-reported by students, teachers, and employers through the Massachusetts WBL Plan, which 70 percent of WBL students complete. The plan was developed in response to employers’ requests for a tool to guide student work and goals, track student technical and employability skill attainment, and share information with program stakeholders.</td>
<td>Tennessee uses transcript reviews to collect course enrollment and completion data for CTE and non-CTE students in the WBL: Career Practicum course. Successful completion of this course indicates that a student has completed an internship, apprenticeship, or other paid work experience.</td>
</tr>
<tr>
<td>Funding sources</td>
<td>Ohio laid the groundwork for the WBL data collection system by creating a toolkit of WBL templates and resources, which was funded through a grant from the JP Morgan Chase foundation’s New Skills for Youth initiative. The explanation of WBL programs and infrastructure will be paid for with state funds.</td>
<td>Connecting Activities, the Massachusetts WBL Plan, and the MACR database are funded through line items in the state budget. These funds are disbursed to state workforce investment boards whose staff recruit employers and act as career specialists for students. Employers are required to match WBL student wages at a 2:1 ratio. These funds are reinvested in the program.</td>
<td>The WBL infrastructure in Tennessee is supported using state department of education funds.</td>
</tr>
</tbody>
</table>
Summary

The TA team identified trends and promising state practices in identifying CTE concentrators and completers at the state level, quality assurance for industry-recognized credentials (IRCs), and work-based learning (WBL) for consideration by Colorado, including the following:

- **States have been consolidating career and technical education (CTE) and other K–12 data collection processes:** Research into CTE transcript data collection and state-level identification of CTE concentrators and completers suggested a general trend toward consolidation of CTE and general K–12 data collection. In most of the states consulted, CTE data analysts access the main K–12 system directly (e.g., Nebraska, Nevada) or through a CTE-specific system or module that pulled data from the main K–12 system (e.g., Iowa, Kentucky).

- **Alignment between CTE accountability and program requirements may facilitate identification of participants, concentrators, and completers:** Delaware and Nevada use CTE course codes, which include a program-level or sequence identifier, to determine when students have completed participant-, concentrator-, or completer-level courses. This allows these states to assign CTE student status based on their completion of a single course rather than by counting the number of courses or credits. In states using this approach, CTE program guidelines require students to complete lower level CTE courses prior to (or concurrent with) concentrator-level courses.

- **IRC data collection techniques vary across states:** To ensure that they receive complete and accurate IRC data, states have instituted monetary incentive systems (similar to Colorado’s Career Development Incentive Program) and administered student alumni surveys. As a quality assurance mechanism during data collection, the Colorado Community College System may consider requiring LEAs to collect and retain virtual...
copies of IRC completion certificates, to be provided to the CCCS upon request during routine monitoring activities.

- **Movement toward a national repository of postsecondary IRC data:** States collect data on student attainment of IRCs from vendors and as self-reported data submitted by LEAs. Both have their drawbacks, and several states the TA team spoke with noted a need for a national repository of IRC data. The National Student Clearinghouse Data Pipeline Project aims to match postsecondary student data with IRC data. While a pilot of this project is underway with several states, full implementation of a repository for all IRC data on postsecondary students is at least three years away.

- **Incorporating quality criteria into WBL definitions helps states ensure consistency:** Definitions of quality WBL help states set expectations for programs of varying types and locations statewide. Colorado may consider integrating additional common quality components to those included in its current definition, including reinforcement of classroom content in the hands-on application or alignment of the experience with student goals and career plans, into the state WBL definition to support consistent experiences and programming across LEAs.

- **States have instituted WBL data collection systems to collect data on students’ WBL experiences:** States collect self-reported WBL data from local education agencies through surveys or other reporting tools or using WBL courses to track student WBL participation through transcript audits. CCCS may explore building an online WBL platform where school staff, students, and employers can enter and review information, and the state can pull WBL data on all LEAs.
Appendix A. National Student Clearinghouse Data Pipeline Project

What Is the Project?

The Data Pipeline Project connects postsecondary student-level data the National Student Clearinghouse (Clearinghouse) with industry credential data. Eventually, the data repository will include employment data from the Bureau of Labor Statistics to identify workforce outcomes. This multiyear project is in its pilot phase, focusing on the manufacturing industry and data from select states available through the Clearinghouse and provided by the states or partnering postsecondary institutions (e.g., non-credit-bearing program data).

How Did the Project Begin?

The federal government previously funded an initiative to connect postsecondary student data with CompTIA credential data. After observing this process, The Manufacturing Institute approached the Clearinghouse about conducting a similar match using manufacturing data and multistate postsecondary education data available from the Clearinghouse. The Institute wanted to learn how widespread certification attempts and completions were among postsecondary students, whether certifications were embedded into postsecondary programs, and if recipients of certifications entered manufacturing jobs.

Implementation Issues

Several aspects of this initiative have proved challenging, including collecting data from the types of programs through which students earn IRCs and the availability of matching identifiers.

- Many postsecondary programs aligned with industry training are in continuing education and/or noncredit programs that are not Title IV eligible, and thus would not be expected to report data to the Clearinghouse. Several state technical and community college systems have offered to collect and submit data on students in programs aligned with industry training for this pilot.

- State education agencies may not have a centralized reporting system for student demographic and academic data for non-credit-bearing programs. As a result, the
start-up costs of gathering this data and setting up a system to submit to the Clearinghouse may create a burden.

• The identifying information collected from exam takers varies by credentialing body. As a result, project staff members are developing standards on the collection of identifying information from exam takers to facilitate matching to postsecondary student records. At minimum, the standards recommend collecting name, address, date of birth, and (where applicable) sending institution. Future addenda to the standards may include the collection of additional information to facilitate matches to internationally based credentialing bodies and employment data, or more detailed specifications for data elements (e.g., components of date of birth).

• Few credentialing bodies ask exam takers for permission to share their credential data with other entities, leaving it unclear whether exam data previously collected may be shared with the Clearinghouse or other groups. Moving forward, credentialing bodies are adding waivers that permit data sharing to their exams.

What Education or Training Institutions Are Included?

The project focuses on postsecondary institutions. Any data reported to the Clearinghouse is eligible to be matched to industry certification data. Additionally, North Carolina, Indiana, and Louisiana are providing community college data on noncredit and technical college program data. Secondary schools may be considered for inclusion in the future but are not planned for inclusion in the next three years.

The Future of the Project

In the next three years, the project aims to develop the infrastructure and standards needed for credentialing bodies to report their data to the Clearinghouse and for other education institutions or training programs not in the Clearinghouse (e.g., adult training programs funded by Workforce Innovation and Opportunity Act [WIOA]) to report their student data. Next steps include the following:

• Expanding the number of credentialing bodies involved to more industries. Currently, three manufacturing, one health care, and one construction credentialing bodies participate.

• Engaging noneducation institutions, such as WIOA-eligible community-based organizations, that provide job-related training connected to certifications.
How Might States Get Involved?

States may speak with their state-level Clearinghouse contact about the project to learn more, or directly contact Gardner Carrick at The Manufacturing Institute or Vanessa Brown at the Clearinghouse.
Appendix B. Report Summary Slides

Technical Assistance (TA) to States 2018–19

COLORADO

Jon Boyette, Rebecca Moyer, Natassia Rodriguez Ott

Summary of Findings from the 2018–19 TA to States Project

July 2019
Contents

- Identification of concentrators at state level
- Quality work-based learning (WBL) definitions and data collection strategies
- Industry credential data collection and validation strategies
Identification of concentrators at the state level
CTE Concentrator Data Collection (Recap)

- Postsecondary agency is the Perkins-eligible agency in 7 states
  - Colorado
  - Iowa
  - Kansas
  - Louisiana
  - Minnesota
  - Montana
  - Wisconsin

- Only in Colorado does postsecondary agency collect both secondary and postsecondary CTE data
CTE Concentrator Data Collection

- Findings suggest general trend toward incorporation of CTE data collection into main K–12 data collection
- Two methods for identifying concentrators
  - Summing courses/course credits (e.g., Washington, DC)
  - Verifying completion of course at a given position in program sequence (e.g., Delaware and Nevada)
  - Example: Delaware’s Academy of Finance
    - Program-level codes highlighted (last digit)
      - 1 = participant
      - 2 = concentrator
      - 3 = completer

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<thead>
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<tr>
<td>6.02601011</td>
<td>Fundamentals of Finance (FOF)</td>
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<tr>
<td>6.02601022</td>
<td>Principles of Accounting (POA)</td>
</tr>
<tr>
<td>6.02601033</td>
<td>Financial Services (FS)</td>
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</table>
Quality work-based learning (WBL) definitions and data collection strategies
Quality WBL: Definitions (Recap)

- Analyzed definitions of WBL from *Work-Based Learning Definitions: Themes from States and National Organizations*
- Additional source: *Work-Based Learning Toolkit*
### WBL: Definitions (Common Elements)

<table>
<thead>
<tr>
<th>7 common definition elements</th>
<th>Colorado</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforces classroom instruction</td>
<td></td>
</tr>
<tr>
<td>Aligns to student career goals/plans</td>
<td></td>
</tr>
<tr>
<td>Provides career exploration/exposure</td>
<td>X</td>
</tr>
<tr>
<td>Connects to industry/real-world</td>
<td>X</td>
</tr>
<tr>
<td>Prepares/supports students, teachers, employers</td>
<td></td>
</tr>
<tr>
<td>Assesses student growth and skill gain</td>
<td></td>
</tr>
<tr>
<td>Participates in guided reflection</td>
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</tbody>
</table>

- Definitions may also include the following:
  - A definition of WBL activity types and tiered levels of intensity
  - Defined roles for educators and employers

- Colorado’s (TalentFOUND) definition
  - “Learning opportunities that occur in part or in whole in the workplace and provide the learner with hands-on, real world experience. WBL opportunities include but are not limited to: internships, apprenticeships, and residencies and incumbent worker training.”
WBL: Data Collection

- **Two methods of data collection**
  - **Student self-report**
    - Ohio: Piloting CTE Manager data system (2019–20)
      - Individual student data collected within districts
      - Districts report aggregate data to state
    - Massachusetts: Massachusetts Career Ready Database
      - Pulls data from state’s student information management system (SIMS)
      - Collects WBL data not collected through SIMS (e.g., wages, number of students in structured internships)
  - **Transcript review**
    - Tennessee (participation in C20H17 WBL: Career Practicum)
      - Also used in Florida and West Virginia
Industry credential data collection and validation strategies
Industry Credentials: Data Collection (Recap)

Four methods at the secondary and postsecondary levels

1. Surveys
2. Data sharing with certification providers
3. Incentive programs
4. Hosting of exams
Industry Credentials: Data Collection

- **National Student Clearinghouse Workforce Pipeline Project**
  - Goal is to connect postsecondary, credential, and workforce data
  - Began with 4-year institutions, but realized many industry-aligned programs are not in Clearinghouse database
  - Three years from completion of a pilot with community and technical college systems, where these programs are most often found
  - To get involved, contact Gardner Carrick at The Manufacturing Institute, Vanessa Brown at the Clearinghouse, or Colorado’s Clearinghouse liaison

- **Validation of student industry credential attainment**
  - Local education agencies (LEAs) store or submit virtual copies of credential completion certificate
  - States review a sample during monitoring process
Industry Credentials: Alignment with Industry Needs

- Common criteria for industry credentials to be state-approved
  - Industry recognized and valued
  - Accessible to secondary and postsecondary students
  - Postsecondary articulation
  - Transference to high-quality employment (i.e., high-paying, in-demand industry)

- Other criteria to consider
  - Capacity of industry credential exam vendor to report data to state (Tennessee)

- States maintain list of industry credentials through the following:
  - Regular reviews of industry credential list by education and industry stakeholders (e.g., Kentucky)
  - Application process for adding new industry credentials (Florida, Louisiana, Missouri, Nevada, Ohio, South Dakota, Tennessee)
    - Require evidence of alignment
    - Must be submitted by an LEA staff member
### Industry Credentials: Promising Practices

- Clear criteria for industry credential selection, including type of evidence needed to show alignment with education and industry needs
- Transparent cross-sector process for reviewing industry credentials
- Requirement that LEAs collect and retain virtual copies of industry credential completion certificates

Contact the Clearinghouse to learn how Colorado may become involved in the Data Pipeline Project.