Overview

The U.S. Department of Education’s Office of Career, Technical, and Adult Education (OCTAE) offers states and other career and technical education (CTE) providers technical assistance (TA) on topics related to CTE data collection, reporting, and accountability through its TA to States program. Montana applied for TA during the 2019–20 program cycle for support in CTE data collection and use, strategies to promote collaboration between secondary and postsecondary systems providing CTE and approaches to defining and tracking work-based learning (WBL).

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Introduction

The U.S. Department of Education’s OCTAE provides TA on data collection and accountability for state CTE programs every year. RTI International works directly with states to provide TA under contract to OCTAE.

The Montana University System applied for support in developing strategies for improving the quality and accuracy of CTE data, identifying opportunities for coordination and collaboration between secondary and postsecondary education agencies providing CTE, and defining quality WBL experiences and tracking student participation in WBL.

TA specialists from RTI (i.e., “the TA team”) coordinated with Jacque Treaster, Director of Dual Enrollment and CTE and Brock Tessman, Deputy Commissioner of Academic, Research, and Student Affairs to identify, clarify, and respond to Montana’s TA needs.
Questions

The TA and state team reviewed and refined the state’s TA needs during an October 2019 kick-off meeting and in check-in meetings in January, March, and July 2020. Based on state input during the meetings, the TA team identified the following topics and questions to guide its research:

- **Data collection and use for Perkins V**
  - What strategies have states used to improve the validity and reliability of CTE student data?
  - How are states using data to ensure CTE program alignment to industry needs?

- **Support for secondary CTE data collection and reporting**
  - What strategies have states used to build a culture of cross-agency collaboration around CTE data collection?

- **Defining WBL quality and ensuring accurate data collection**
  - How are states defining WBL to promote quality experiences for students?
  - What other strategies have states used to promote WBL quality?
  - How do states collect data on student participation in WBL?
  - How have states adapted WBL to distance learning as a result of the COVID-19 pandemic?
The transition to Perkins V represents an opportunity to review and refine data collection, reporting, and accountability practices to promote quality and continuous improvement. The TA team recommends that the Montana University System consider the following strategies:

**Work with the Office of Public Instruction and secondary CTE data analysts to review and update state-issued guidance on CTE data concepts and reporting processes.**

- Colorado and Oregon provide routine training webinars to local CTE data providers covering CTE data definitions and reporting processes that are timed around CTE data collection. The training webinars also provide an opportunity for local staff members to share their challenges or “pain points” in reporting CTE data.

- The Montana University System and the Office of Public Instruction could collaborate to offer similar training sessions, incorporating feedback opportunities for local staff, into a continuous review and improvement process for CTE data reporting.

- Alternatively (or in addition), the agencies could convene a dedicated focus group with local CTE data analysts to identify challenges and recommend improvements to CTE data collection and related guidance.
Recommendations (Slide 2)

Identify opportunities for secondary and postsecondary state agency staff to collaborate on CTE initiatives and process improvement.

The TA findings, based on a discussion with the CTE Director in Minnesota and review of state CTE monitoring practices, suggest two potential areas for collaboration in the near and middle term:

- Development of a joint communications plan related to Montana Career Pathways.
- Identification of methods to reframe the monitoring process as an opportunity for TA and identification of promising practices rather than monitoring compliance.
  - First, the state could elect to identify only clear violations of law or policy as “findings” and offer recommendations on issues that fall short of legal violations but impede a CTE provider’s ability to offer quality CTE, following the examples of New Mexico and North Carolina.
  - Internally, the state could frame the identification of findings as an interim goal of the monitoring process, with TA (and improved student outcomes) as the end goal.
  - Finally, the state and monitoring team should ask local districts to share what is going well during monitoring rather than focusing on areas in which providers are falling short. State monitoring can use the information to identify promising practices to share with other districts and postsecondary institutions.
Recommendations (Slide 3)

Consider adopting a definition of WBL quality that promotes hands-on, sustained engagement with industry.

- WBL can include a wide range of experiences—from career awareness and exploration to career training—that vary in intensity and duration.
- The legislation limits the types of experiences counted for the Perkins program quality measure (i.e., indicator 5S3) to experiences that feature intensive experiences. Some states’ WBL definitions specify the number of hours, location, or the types of experiences included. For example, Colorado’s 5S3 definition includes apprenticeship, on-the-job training, clinical experience, credit for work experience, internship, pre-apprenticeship, industry-sponsored projects, and school-based enterprise managed by students.
- Montana might consider adopting a similar definition to encourage consistent and high-quality WBL opportunities across the state.

Consider revisions to WBL course coding that would allow local staff and analysts to identify the types of experience students engaged in.

- Outside of Perkins reporting, revising course codes to capture other types of WBL experiences (e.g., participation in job shadows or career fairs) would afford Montana a detailed portrait of WBL in the state that could be used to identify gaps in access and inform future state and local strategies.
- For example, Wisconsin uses the component of School Courses for the Exchange of Data (SCED) codes that denotes a course’s level of rigor (e.g., remedial, honors) to identify WBL experiences by type.
The Data Validation Process: Overview

The following process reflects state practices and guidance from the National Center for Education Statistics (NCES).

The Data Validation Process: Five components

- Training and Guidance
- Data Submission
- Automated Review
- Human Review
- Follow-Up
The Data Validation Process: Training and Guidance

Background: The Montana University System is the state’s Perkins Eligible Agency and is responsible for secondary and postsecondary data submitted in consolidated annual reports. The Montana University System does not have direct access to secondary CTE data systems.

The timing and content of training activities depends on the data collection process

- Example: Separate CTE/K–12 Data Collection (Colorado)
  - Trainings are timed around data collection periods
  - Include information on CTE definitions and concepts as well as data submission and formatting
- Example: CTE data collected through K–12 Data Systems (Iowa, Kentucky, Nevada)
  - Information on CTE data reporting is included in training on the main K–12 system
  - Focus of training is CTE data definitions and topics

Guidance documents establish uniform data and concept definitions across local education agencies (LEAs)

- Data dictionaries and business rules should be available to data submitters to promote accurate reporting
  - NCES guidance on how to create a data dictionary
  - State example: Career pathways student participant (Florida)
Local districts, depending on their size, may not have data specialists to prepare data submissions. Staff turnover at the local level—and the loss of institutional knowledge on how to prepare CTE data submissions—can impact data accuracy at the state level, particularly when staff attrition is multiplied across districts. Careful and consistent documentation of data errors at the local and state level can help local analysts anticipate problems, spot patterns that lead to process improvements, and formalize best practices around data that persist even as staff come and go.

The Data Validation Process: Data Submission

- Data analysts at local sites should carefully review data prior to submission for the following:
  - Missing data
  - Data formatting errors
  - Incorrect data
  - Unexpected or unlikely trends (e.g., large year-to-year differences in student counts or performance metrics)

- States can offer resources to assist local providers in performing data validation checks at the point of submission
  - Kentucky’s Recommended Reports for Data Validation instructs users on how their data should look if submitted correctly
The Data Validation Process: Automated Review

- Often built into statewide student information systems (Iowa, Nevada)
- Focus on verifying that data do not defy logic or business rules (e.g., numerators that are larger than denominators, missing data)

The Data Validation Process: Human Review

- Data analysts pull samples and review for inconsistencies and errors
  - **Time-series**: Large or unexpected changes in student performance or enrollment data from year to year
  - **Cross-sectional**: Variations in student performance by school, program, or rural/urban area

In *judgmental sampling*, analysts use their experience from past data collections or knowledge of their data system to select data for review based on where errors are likely to occur. For example, LEAs in Colorado have the option of uploading datasets into the state’s CTE portal or entering student data manually. Large districts tend to upload datasets while small districts are more likely to enter data manually. Including both small and large districts in data validation samples allows data analysts to check for errors that may be connected to the data submission method an LEA uses.
The Data Validation Process: Follow-Up

Follow-up is used to address data errors and identify potential improvements to the data collection process and may occur at varying points in the data collection/review process, such as after the automated or human review stages or during annual program monitoring. The follow-up process depends on the data collection method:

- In Iowa, the Secondary CTE Reporting Application pulls student records from the main K–12 data system, and the Iowa Department of Education’s IT Department manages the K–12 data system. The first round of follow-up for CTE data questions that emerge during the data collection process is with the IT Department.

- Colorado collects CTE student data directly from LEAs through its CTE data portal and begins follow-up by contacting the relevant local sites.
CTE Program Alignment to Industry Needs: Process

State-level CTE leads consult with education and industry stakeholders to establish criteria for determining industry alignment.

- Typical stakeholders consulted include the following:
  - Education agencies (secondary and postsecondary)
  - Workforce or economic development agencies
  - Industry partners or advisory groups

- Typical stakeholders consulted may also include the following:
  - Governor’s office to ensure alignment with state economic development priorities (Nevada, Rhode Island)
  - Data and research agencies
CTE Program Alignment to Industry Needs: Criteria

Indications of labor market demand for program graduates, as indicated by the following:

- Relatively high entry-level and median wages for pathway-aligned occupations (meeting or exceeding the state’s living wage or other threshold)
- Current and projected job growth in pathway-aligned occupations: States set thresholds for the number of current job openings (Ohio, Wisconsin), current number of jobs (District of Columbia, Kentucky, Ohio), or a rate of projected job growth (District of Columbia, Kentucky, Ohio) for pathway-aligned occupations

Skill alignment

- Programs offer industry-recognized credentials valued by industry
- Skills taught in the course align with those included in job advertisements (using real-time labor market data)
- Industry groups and employer feedback
Support for Secondary CTE Data Collection and Reporting

Like Montana, Minnesota’s postsecondary state agency collaborates with the secondary state agency on CTE data collection. During a facilitated conversation, Jeralyn Jargo, State Director of Career and Technical Education at Minnesota State (the postsecondary state agency) shared the following recommendations:

- Leadership change presents an opportunity to establish new practices around collaboration
- Reframing the monitoring process: Framing the program monitoring process as a TA opportunity and including secondary and postsecondary staff can help alleviate subgrantee concerns and promote local state and cross-agency collaboration
- Developing joint projects on neutral topics (e.g., a joint communications strategy) helps to build a strong foundation for future collaboration on sensitive topics (e.g., data improvement, monitoring)
Defining WBL Quality and Tracking Participation (Slide 1)

Perkins V Definition
“Sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, firsthand engagement with the tasks required in a given career field, that are aligned to curriculum and instruction.”

State Definitions
Of the 21 states that have selected WBL as a program quality indicator:
- 16 states specify the types of activities that can be counted
  - Including internships, apprenticeships, cooperative education, and clinical experiences
- Some states specify the minimum number of hours for “sustained” interactions:
  - 250 hours of cumulative WBL experience throughout high school (Ohio)
  - 54 hours (New York) or 40 hours (North Dakota) of qualifying WBL experience
- Most states allow WBL experiences to take place in the workplace or the classroom; however, Kentucky requires that all secondary WBL experiences be in the workplace
### Examples of *Perkins V* state plan WBL definitions

<table>
<thead>
<tr>
<th>State</th>
<th>WBL Definition</th>
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<tbody>
<tr>
<td><strong>Alabama</strong></td>
<td>Work-based learning is a structured component of the Career and Technical Education (CTE) curriculum that integrates classroom instruction with productive, progressive, supervised, work-based experiences/apprenticeships (Paid) and internships (Unpaid), related to students’ career objectives. Content is planned for students through a cooperative arrangement between the school and employer as a component of work-based learning.</td>
</tr>
<tr>
<td><strong>Colorado</strong></td>
<td>Work-based learning provides hands-on or realistic experiences for secondary learners that relate to the students’ CTE Program of Study. For <em>Perkins V</em> reporting, qualifying experiences include Apprenticeship, On-the-Job Training, Clinical Experience, Credit for Work Experience, Internship, Pre-Apprenticeship, Industry-Sponsored Project, School-Based Enterprise Managed by Students.</td>
</tr>
</tbody>
</table>
| **North Dakota** | *Perkins V* definition, plus:  
Option 1: Sustained interactions (including cooperative experiences): supervised experiences of >= 40 hours on the worksite; Option 2: Simulated environments in an educational setting (which means any CTE-funded course) should strive for a minimum of 40 hours throughout a series of in-class projects/lab work, with each project/lab taking no less than 1 week or 5 successive hours of class time to complete. |
Defining WBL Quality and Tracking Participation (Slide 3)

How are states defining WBL to promote quality experiences for students?

According to state definitions, quality WBL does the following:

- Reinforces classroom instruction with hands-on applications
- Aligns to student career goals/plans
- Provides career exploration and exposure
- Fosters a connection to industry and real-world experiences
- Prepares students, teachers, and employers
- Assesses student growth and skill gain
- Requires or encourages participation in guided reflection

Sources: [Work-Based Learning Definitions: Themes from States and National Organizations](#); WBL toolkits from Iowa, North Dakota, Oklahoma, and Tennessee
## Defining WBL Quality and Tracking Participation (Slide 4)

How are states defining WBL to ensure high-quality experiences for students (examples)?

<table>
<thead>
<tr>
<th>Standard or expectation</th>
<th>Strategy</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to track whether WBL experiences are related to the industry or career cluster of the student’s CTE program</td>
<td>WBL course code as an add-on to a CTE course or cluster code</td>
<td>Florida, Georgia, Iowa, Wisconsin</td>
</tr>
<tr>
<td>Ability to track all types of WBL experiences while segregating those experiences by type and level of rigor</td>
<td>Collection of data on all types of WBL experience by, for example, assigning course codes for different types of WBL (e.g., awareness, exploration, immersion)</td>
<td>New Jersey, Oregon, Wisconsin</td>
</tr>
<tr>
<td>Define expected elements of the experience</td>
<td>Collect data on more than just WBL participation, such as a WBL plan, job description, hours, employer, and/or student goals</td>
<td>Massachusetts, Ohio, Oklahoma, Tennessee</td>
</tr>
</tbody>
</table>
Defining WBL Quality and Tracking Participation (Slide 5)

States are also using **training**, **guidance**, and **professional development** to ensure the quality of WBL offerings to students.

**Training**
- States may offer pre-recorded (Colorado) or live (Delaware, Massachusetts) trainings
- Some states host conferences with trainings and data quality discussions (Georgia, Iowa)

**Guidance**
- State-developed WBL handbooks, manuals, or guidance document
- Definitions and expectations for WBL by type, such as the minimum number of hours for internships (Massachusetts, New York, North Dakota, Oklahoma)

**Professional Development**
- WBL endorsements or certifications for staff to validate WBL quality
  - Cover the development and management of WBL programs as well as the preparation and supervision of WBL students
  - Most require non-teaching work experience and training on student safety protocols
  - Staff with endorsements sometimes oversee WBL data submission
## Defining WBL Quality and Tracking Participation (Slide 6)

### Professional development—WBL endorsement examples

<table>
<thead>
<tr>
<th>State</th>
<th>Purpose</th>
<th>Training requirements</th>
<th>Work experience requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tennessee WBL certificate</strong></td>
<td>Required to be a teacher of record for a WBL experience or course; these teachers submit data to the state</td>
<td>Online training and an in-person networking event</td>
<td>40 hours of non-teaching experience (volunteering, externship, or job)</td>
</tr>
<tr>
<td><strong>Iowa multi-occupations endorsement</strong></td>
<td>Endorsement to supervise student WBL experiences and submit data to state</td>
<td>CTE or cooperative education coursework</td>
<td>4000 hours of non-teaching work in two or more careers, or 1000 hours of non-teaching work or externships plus at least two years of PK–12 teaching</td>
</tr>
<tr>
<td><strong>Nebraska WBL supplemental endorsement</strong></td>
<td>Professional development opportunity for teachers overseeing WBL experience; not associated with data submission to the state</td>
<td>Three-credit hour university course</td>
<td>1000 hours of non-teaching experience</td>
</tr>
<tr>
<td><strong>Georgia WBL endorsement</strong></td>
<td>Used as one route to becoming a WBL coordinator who is responsible for data submission to the state</td>
<td>Three 40-hour courses, (in addition to the four-year college degree required for teaching)</td>
<td>At least two years of teaching experience</td>
</tr>
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</table>
Defining WBL Quality and Tracking Participation (Slide 7)

Common state and district WBL data collection methods fall into two categories: district and WBL course enrollment data.

**District-reported data:** LEAs collect data on students’ WBL participation and report participation through the following:
- An online system (Massachusetts, Ohio, Oklahoma)
- Templates (Tennessee)

**Course codes:** Reported through student transcript data and documented as follows:
- Part of a general course (West Virginia)
- Part of a career cluster-specific elective course (Florida)
- Add-on credit for a course (Georgia)
- Capstone course (Delaware, South Dakota, Tennessee, West Virginia)
- Wisconsin uses SCED codes to track WBL experiences by industry and type (e.g., apprenticeship, internship)

The Massachusetts Career Ready Database (MACR) tracks student WBL participation through data entered in Work-Based Learning Plans by WBL participants, employers, school staff and program coordinators, and cooperative education coordinators. The purpose of MACR is to summarize the landscape of career development activities for students across Massachusetts. Data are accessible to any youth employment, internship, or career development program in the state.
Adapting WBL to the COVID-19 Pandemic

As states closed schools and transitioned to distance learning in Spring 2020, state agencies did the following:

- Adjusted WBL hours requirements: Wisconsin reduced concurrent work requirements by ~25%
- Offered alternatives: Minnesota proposed project-based internships, work with remote technology (e.g., video or phone conferences), or industry-recognized credentials as alternative training activities

In preparation for the 2020–21 school year, states provided guidance to local districts on conducting outreach to employers, including the following:

- Recommended questions to ask employers: Will they be offering WBL opportunities? What safety precautions will they have in place? How have they adapted their day-to-day operations?
- Suggestions for techniques for reaching out: Surveys, invitations to contribute to a shared document, and direct contacts by CTE teachers
The COVID-19 Pandemic and Remote WBL

Online databases/websites with WBL opportunities
- In Wisconsin, employers post in-person and virtual opportunities on a proprietary platform called Inspire, accessible by all students and educators and connected with the state’s career planning site.
- Iowa’s WBL Clearinghouse and North Carolina’s Navigator are online platforms that connect students and educators with employers for virtual and in-person WBL activities.

Simulated WBL
- Alabama and West Virginia’s simulated workplaces offers school-based opportunities for students in rural schools to learn professional and technical skills.

Virtual WBL
- Louisiana’s Virtual Workplace Experiences platform.
- South Carolina uses Microburst for job shadow and soft skills certification.
- Virtual WBL will be offered in Texas Virtual School Network (pilots in 2020–21).

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*Louisiana’s Virtual Workplace Experiences II course was designed to provide WBL opportunities to students in rural areas, including opportunities to interact with unfamiliar adults in a professional setting. The course combines career exploration, project-based learning, and virtual industry interactions through Nepris, among other platforms.*
Additional Approaches to Managing WBL During the COVID-19 Pandemic

- In preparation for the 2020–21 school year, Louisiana reviewed existing credential fact sheets to identify which components of credential preparation could be accomplished remotely.
  - Louisiana also recruited teachers experienced in remote learning to create tutorial
- Western Maricopa Education Center, a school district in Arizona, leveraged the expertise of teachers hired from industry in assessing WBL opportunities and strategies.
- Virtual projects can replace workplace experiences and be included in student portfolios. In Tennessee, students engaged in virtual projects have produced training videos or documented safety plans for employers.
- Review student training goals—are they realistic in the current context?
TA Activities

For the 2019–20 TA to States project, the TA team conducted the following research activities to provide support to the Montana University System:

- Documentary research: Including review of 44 draft Perkins V State Plans, NCES Guidance on data validation, and review of additional resources and materials cited in the report
- Interviews with state CTE staff from Colorado, Iowa, Kentucky, Louisiana, and Nevada
- Facilitated discussion with Minnesota State University System staff
- Cross-state discussion: WBL in the era of the COVID-19 pandemic
- Final presentation to the Montana University System and Montana Department of Public Instruction
Examples of State Data Validation Practices

**Colorado**
- Data collection: Separate CTE submission portal
- TA webinars timed around data submission windows
- Initial data validation activities
  - CTE data portal performs basic logic checks
  - Colorado Community College System (CCCS) reviews student-level data
- Additional data validation review is conducted with districts selected for on-site monitoring
  - CCCS analysts pull a sample of student records
    - Include students from all demographic groups
    - Include large and small programs in a district

**Iowa**
- Snapshot/trend analysis (statewide and by region)
- Sampling
  - For each region, randomly select two rural and two urban/suburban districts
  - Also, randomly select 50% of eligible recipients
    - Consortia
    - Independent school districts