

# Building Robust District Work-Based Learning Data Collection Systems

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# Introduction

## Purpose of This Report

Work-based learning (WBL), a continuum of student experiences that begins with career awareness activities and progresses to more intensive and immersive experiences in workplace settings, is a core feature of many career and technical education (CTE) programs. Many different frameworks describe varying numbers of stages, but most generally begin with career awareness and exploration activities in the early grades to expose students to career possibilities, and advance in later grades to career preparation and practical training experiences (see callout box). WBL is one of the 12 elements of the Association for CTE’s research-based quality CTE program framework (Imperatore & Hyslop, 2018), and states, community colleges, school districts, high schools, and others invest significant resources in WBL.

WBL may be beneficial not only to students’ career preparation but, if designed appropriately, to their broader personal development (Bailey et al., 2004). Many policymakers and education organizations advocate for increasing investments in WBL under the assumption that it is an effective strategy to help students develop the range of academic, technical, and interpersonal skills needed to be successful in the workplace (for example, National Governors Association, 2020; American Student Assistance & Bellwether Education Partners, 2021). Yet, despite the enthusiasm for and resources invested in WBL, there is limited evidence substantiating its impact on student outcomes. Recent years have seen an increasing amount of positive evidence for the impact of CTE on high school student outcomes. However, a lack of data on WBL—which many CTE students participate in—prevents us from knowing what, if any, contribution WBL makes to student outcomes with CTE.

### The Work-Based Learning Continuum—Example

- Career Awareness: Students are exposed to different careers through activities such as attending presentations by guest speakers, workplace tours, or career fairs to build awareness of the variety of careers available.
- Career Exploration: Students explore career options for motivation and to inform their decision making through activities such as job shadows and mentorships.
- Career Preparation: Students apply learning through practical experience that develops knowledge and skills necessary for success in careers through activities such as school-based enterprise, simulated workplaces, workplace challenges, and industry-sponsored projects.
- Career Participation: Students train for employment and postsecondary education in particular occupations through activities such as internships, cooperative work experiences, and apprenticeships.

*Association for Career & Technical Education, 2022*

To inform and encourage expanded WBL data collection, we examined the implementation of WBL data collection systems and documented promising practices in six school districts that have gone beyond typical data collection and use. This research and report are part of the work of the CTE Research Network, a professional community of CTE research teams funded by the U.S. Department of Education. The overarching goal of the network is to encourage and strengthen CTE impact studies—those that can show causal relationships. Expanding the amount of WBL participation data for students enrolled in CTE programs, and increasing researchers’ access to these data, will improve measurement of CTE students’ experiences and outcomes and foster understanding of the value of WBL.

Our research questions were as follows:

1. In what ways are districts designing and implementing WBL data collection systems to produce complete, accurate, and useful data?

2. What components of WBL data collection systems are necessary to support causal and other research efforts, as well as program decision making?

The primary motivation for gathering district examples was to elevate practices that show promise for generating reliable, valid data that researchers can use to build an evidence base on what works in WBL. At the same time, such data have great value for practitioners for managing and improving their programs. District leaders may use the report to examine ways in which local policies and data collection efforts drive local WBL implementation and monitoring practices, as well as improvements to WBL. The findings also have implications for state leaders who are adding WBL to their longitudinal data systems and accountability models with local policies, practices, and constraints to consider.

Data collection on WBL participation serves multiple purposes, including research and evaluation, accountability, and program planning and improvement. This report emphasizes practices that yield data that have adequate reliability and validity for causal research while at the same time are also practical for districts and align with their own objectives. When districts perceive and communicate the value of collecting specific types of data reliably for their own objectives, staff members are more motivated to ensure accurate and complete data collection—a win for researchers and practitioners alike.

## Background

### Need for Rigorous Evidence

In recent years, CTE programs that include quality WBL opportunities for students have gained significant traction among educators, policymakers, and stakeholders as an effective way to prepare students for the labor market. Along with that growing interest in and policy support for CTE programming has come an expansion of rigorous causal evidence for the impact of CTE programs on student outcomes, much of which shows positive results (Brunner et al., 2021; Edmunds et al., 2022). However, despite the enthusiasm for WBL as a valuable part of CTE, evidence for the contributions of the WBL program component on student outcomes is sparse (Alfeld et al., 2013; Rosen et al., 2018). Thus, states, school districts, postsecondary institutions such as community colleges, and employers are pouring resources into WBL with little evidence showing the effect of WBL on student outcomes or guiding program improvement.

### The Challenge of Data Collection

The lack of evidence regarding WBL is not due to lack of interest; rather it can be attributed to the complex and varied nature of WBL experiences across the WBL continuum and the inherent difficulties in collecting systematic, high-quality data (Dalporto, 2019; Dougherty et al., 2020).

Collecting accurate and complete data on the numbers and types of activities students experience, as well as the duration and intensity of the experiences, among other aspects, is surely challenging. WBL can vary greatly in type, setting, intensity, duration, and scope. For example, WBL experiences can take place on and off campus; some are trackable through course codes or employment records and others are not, and some are offered as a sequence of program-related activities that builds in intensity and others may be more ad hoc or single events. In addition, the expected and measured outcomes of these WBL activities are equally diverse and can be difficult to capture, adding another layer of complexity to any efforts to assess their effectiveness systematically (Dougherty et al., 2020; Waterman et al., 2022).

Establishing rigorous data collection systems for WBL requires staffing capacity, expertise, and other resources, yet experience from the field (Office of Career, Technical, and Adult Education, 2021) suggests that many schools and districts already suffer from inadequate staffing and expertise for implementing and expanding WBL opportunities, let alone collecting data on these opportunities. If schools or districts lack the necessary staff and resources to systematically implement WBL, they may also face challenges designing and implementing accompanying data collection systems and procedures.

## The Policy Imperative

The urgency for reliable WBL data has been accentuated as states move to include career readiness indicators in their education accountability systems to meet federal reporting requirements (Cushing et al., 2019). Although the federal Perkins legislation that provides funding for CTE has long encouraged the provision of WBL, the most recent reauthorization in 2018, known as Perkins V, gave WBL even stronger significance by naming it as a component of a CTE program of study and designating it as one of three new secondary-level CTE quality indicators. States were required to adopt at least one CTE quality indicator, and 27 states selected the WBL indicator, meaning that they are collecting and reporting data on which CTE concentrators participate in WBL (Advance CTE, 2020).<sup>1</sup> Perkins Innovation and Modernization grants (U.S. Department of Education, 2023) also incentivize expanding access to WBL opportunities meeting certain criteria that require collecting information such as the number of hours, paid status, and credits earned.

To meet these federal requirements, as well as their own objectives, many states are implementing systems to collect WBL data. However, according to a recent report providing a state-by-state analysis of high school WBL policies, most states collect some WBL data but few have robust systems and processes in place to capture the full range of WBL in which students participate or use these data to make program improvements (American Student Assistance & Bellwether Education Partners, 2021). In addition, a nationwide survey of state CTE directors revealed that only 61% agreed that “the current CTE data system in my state provides the information needed to assist in making decisions about secondary program quality and CTE initiatives” (Advance CTE, 2019a, p. 6).

## The Role of Districts

This report focuses on school districts as key drivers of the implementation and tracking of WBL. This approach brings to light the unique insights and hands-on experiences of educators who are at the forefront of data collection efforts. While state-level policies and initiatives are essential, district-level perspectives offer invaluable insights into the practical realities and constraints of WBL data collection, which should inform state data system design. Numerous reports exist on state WBL data policies, but there is a lack of information about district-level practices (Advance CTE, 2016, 2020; Giffin et al., 2018). Also, focusing on districts allows for an exploration of practices carried out to meet local needs beyond state mandates, such as increasing equitable access to programs, improving the efficiency of program operations, and recruiting employer partners. As illustrated by the districts profiled in this report, some are setting more ambitious goals and are making innovations in their data systems. By understanding and responding to district- and school-level concerns, state agencies can foster the development of systems that are feasible and actionable, and earn the buy-in of staff responsible for providing the data. Moreover, researchers rely on complete and reliable data that states can only provide if their systems respond to school and district realities and needs.

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<sup>1</sup> The WBL participation data these 27 states report are publicly available on the Perkins Collaborative Resources Network website. The state-level data can be disaggregated by gender and student subgroup, and indicate whether states met their targets for student participation. <https://cte.ed.gov/pcrn/explorer>

## WBL Data Needed for Causal Research

To evaluate the contribution of WBL to student outcomes, researchers need access to reliable, valid data that consistently capture the nature and extent of individual students' WBL experiences and the outcomes connected to those experiences. As noted, policymakers and CTE researchers are increasingly focused on causal research, which moves beyond descriptive studies in its aim to understand the cause-and-effect relationship between an educational strategy or intervention and an outcome.<sup>2</sup> Table 1 presents a list of an ideal set of data for causal research and other research on WBL. WBL experiences encompass the structured learning activities that students engage in. Important features to document for a student's WBL experiences include quantity (hours and number of experiences), types of activities, if and how the experiences are sequenced or connected, and to what degree the experience meets quality standards (Dougherty et al., 2020). Outcomes refer to what the student gains from participating in WBL experiences in both the near and long term. Examples of near-term student outcomes related to the specific WBL experience could include transferable skills gained and industry-recognized credentials earned. Examples of longer term education attainment and employment outcomes could include whether postsecondary programs and jobs align with the career sector experiences during high school (Office of Career, Technical, and Adult Education, 2021). It is important to recognize that longer term student outcomes such as postsecondary education and employment are of broad interest outside of WBL. Although these data elements likely exist outside of WBL data systems, they are included in Table 1 because we recognize the importance of being able to link students' WBL experiences and short-term outcomes to longer term education and career trajectories.

**Table 1. Work-Based Learning Data Needed for Causal Research**

Elements of Student WBL Experiences
<b>Quantity</b>
Hours/days per activity per student
Number of activities per student
<b>Features of the experience</b>
Activity type (e.g., job fair, industry mentor, student-run enterprise, internship)
Career cluster and industry sector of experience
Work-site location and related transportation needs
Course, if any, with which experience is associated
Paid or unpaid designation
Timing of activity (e.g., during which school year and grade level)
<b>Connections among WBL experiences</b>
Level of progress through a sequence of aligned activities (e.g., where each activity falls on the WBL continuum from career awareness to career participation)
Alignment of the WBL experience with the student's career goals and interests (e.g., personalized learning plan, CTE program of study)
<b>Quality of the WBL experience provided</b>
Degree to which the experience meets state- or district-defined standards for high-quality WBL implementation

<sup>2</sup> <https://cteresearchnetwork.org/resources/demystifying-causal-impact-research-and-understanding-why-it-important-cte>

**WBL Outcomes—What did the student gain?**

**Near-term, closely related (proximal) outcomes tied to the specific WBL experience**

- Student and/or employer assessment of technical and transferable skills gained during the experience
- Course credits, if any, per activity per student
- Grades or ratings earned for courses related to WBL
- Industry-recognized credential earned

**Longer term, broader (distal) outcomes**

- Educational attainment and degree alignment (completing high school, enrolling in postsecondary education, completing postsecondary credential, classification of instructional program to assess alignment of degree)
- Employment status and earnings (including industry sector [North American Industry Classification System] and occupation [Standard Occupational Classification system], if available, and whether it aligns with the WBL and/or CTE experience)

## Methodology

We selected six districts for our study on the basis of the strength of their WBL data collection systems and procedures. We started by identifying a pool of potential districts through recommendations from informed stakeholders in the CTE Research Network and the ACTE WBL Policy Division. We also reviewed reports like those from ACTE and the Coalition for Career Readiness Center to identify states investing in CTE and WBL data improvement, integrating WBL into Perkins or Every Student Succeeds Act metrics, and refining WBL quality measures (e.g., Advance CTE, 2016; Advance CTE, 2019a, 2019b; Solberg et al., 2022).

Potential research sites were screened using a checklist we created based on existing frameworks of key variables and data collection practices that are necessary for conducting rigorous causal studies (see Table 1, above). Recognizing that no district would likely excel across all dimensions, we chose districts exhibiting innovation in at least one dimension. We tried to target districts that varied in dimensions such as locale and modality of CTE delivery (e.g., regional technical centers, programs within comprehensive high schools, career academies), district size, and geographic region. After screening calls with representatives from 18 districts across 12 states, we selected six districts. We used semistructured interview protocols that we modified according to the role of the interviewee and the insights gained during the screening calls (see callout box) to collect information on each district’s data system development and implementation.

Interviews were generally one on one and lasted about 1 hour. In each district, we sought to interview staff in various roles including those designing the system, collecting and inputting data (e.g., CTE instructors, WBL coordinators), monitoring and managing data collection (e.g., district data managers), and using data (e.g., district



CTE directors, school leaders, and local industry or Chamber of Commerce partners). We also analyzed artifacts such as tools used in the implementation of the WBL data collection system, reports, aggregated data tables, screenshots or websites for data collection platforms, and staff training materials to gain additional insights into the data collection process. In all, across the six sites, we conducted interviews with 24 individuals.

All interviews were audio recorded, transcribed, and qualitatively analyzed using a combination of deductive and inductive methods to ensure that our findings were grounded in existing knowledge and open to new interpretations. For deductive coding, we used a preliminary list of codes based on the literature and research questions to provide a structured framework for categorizing and organizing the data. We then analyzed the interview transcripts and incorporated additional codes, using an inductive process to identify emerging themes. The research team consulted closely throughout the data collection and analysis process to ensure the credibility and trustworthiness of our data (e.g., member checking, data and investigator triangulation; Creswell & Plano Clark, 2007).

#### Topics Covered in Interview Protocols

- Data collection platform design
- Data elements collected
- Impetus for the data collection, such as state requirements
- Staff involvement, training, and buy-in
- Needed resources to support the system (e.g., technology, staffing)
- How districts use and share the data
- Innovative and promising practices identified by districts

## Profiled Districts

The six selected districts represent a range of sizes and geographic settings, as well as different models for delivering WBL.

**Appoquinimink School District, in Delaware**, has a wall-to-wall pathway model in its three high schools, meaning that all students are enrolled in a CTE pathway or other type of career-focused pathway. WBL is required for all students, with a goal that all graduates will have participated in at least 10 WBL experiences along the WBL continuum from awareness to preparation, including a culminating “immersion” experience (e.g., an internship) of at least 50 hours in their senior year. The pathways initiative was gradually rolled out starting in 2013, with the WBL requirement beginning in 2018. Each of the high schools has a WBL coordinator (called a WBL specialist), and a district-level coordinator who focuses on students with Individualized Education Programs (IEPs) and those in alternative programs. Appoquinimink chose the Agricultural Experience Tracker (AET) for CTE because of the AET’s online platform as a centralized way to track participation, hours, and skill gains.

**Collier County Public Schools, in Florida**, has a district-wide WBL initiative from elementary through high school, and WBL is especially present and tracked in the 28 NAF career academies across its seven high schools. NAF is an education nonprofit that supports implementation of its career academy design in more than 600 academies nationally. In its NAF academies, Collier County Public Schools assisted in developing and is currently implementing a WBL data collection system—the NAF Work-Based Learning Participation Tracker and Reflection Form—through which the district collects WBL participation and outcome data on its 5,000 academy students. The district reports WBL data to Future Ready Collier, a collective impact network that comprises more than 60 local community organizations, funders, and businesses, along with the local education agency. With a focus on college and career readiness, Future Ready Collier uses the data to examine inequities and inclusion in WBL participation.

**Fresno Unified School District, in California**, provides a wide range of WBL activities across the curriculum that are available to all students from pre-K through Grade 12, not limited to those in CTE pathways. Each of the 12 high schools has a WBL coordinator, called a job developer, who is responsible for coordinating WBL experiences and entering data. District WBL coordinators work with elementary and middle schools to support WBL activities and data collection. All students who participate in WBL, regardless of CTE participation, are tracked through a custom-built system called TitanWBL.

**Lowndes County Schools, in Georgia**, has one comprehensive high school that serves more than 3,000 students across the district. Because of this structure, WBL is centralized under the direction of one district WBL coordinator, stationed at the high school. The focus of WBL in Lowndes is on placing students in structured work experiences through apprenticeships, internships, and other opportunities that match the student's career goals and pathways. Although WBL placements are open to all students, most WBL participants are in a CTE pathway. Given the size of the school, popularity of WBL, and limited technology and staffing resources, the district has developed a highly organized digital system of free or low-cost tools, primarily through Google resources, to manage all aspects of WBL from applications, enrollment, and placements, to data tracking and reporting of hours worked, wages, and earned credentials.

**Muskego-Norway Schools, in Wisconsin**, has a comprehensive tracking system for its single district high school that enables district staff to better understand their students' interests and enhance the discussions with industry partners. The district's WBL data collection system was developed using Qualtrics, an online survey platform, and is managed by the College, Career and Experiential Learning coordinator. The district tracks student data from middle school into high school and includes student disability status. Staff collect and monitor data on students' pay, hours worked, career cluster, employer partners, courses taken, mock interviews, internships, and industry-recognized certifications.

**Poudre School District R-1, in Colorado**, has a WBL coordinator in each of its five comprehensive high schools, supplemented by three district-level positions focused on developing relationships and WBL opportunities with local and regional businesses. The district began building out its WBL offerings and data systems in 2019, in part as a response to the state's selecting WBL as its Perkins quality indicator. Poudre uses Xello to document student career interests related to their individualized learning plans, including students in some middle schools. At the high school level, the district uses the platform to capture available WBL opportunities and track student participation in them. Poudre aims for CTE concentrators to meet the Colorado state Perkins metric of students' completing a WBL experience of at least 30 hours by graduation and tracks students' hours using Google Forms. Data for non-CTE students who participate in WBL are tracked in the same systems.

## Featured Practices

This section summarizes key features and practices from the six districts' WBL programs, data systems, data collection procedures, and data use, with some background information on how these approaches were developed. We also highlight innovative practices from selected districts.

**Table 2. Key Findings**

Innovative Practice	Description
<b>Inputs/participation data</b>	<ul style="list-style-type: none"> <li>▪ Tracking individual students over time</li> <li>▪ Linking student interests to WBL experiences, sometimes through individualized learning plans</li> <li>▪ Starting a longitudinal record in middle or even elementary school</li> <li>▪ Tracking WBL hours</li> <li>▪ Capturing all points along the WBL continuum, including career awareness and exploration—not limited to immersive experiences such as internships, apprenticeships, and school-based enterprises</li> </ul>
<b>Student outcomes data</b>	<ul style="list-style-type: none"> <li>▪ Tagging student skill gains to a specific WBL experience, tied to O*NET or career cluster standards</li> <li>▪ Collecting employer ratings on a set of employability and technical skills in a systematic way after a WBL experience</li> </ul>
<b>Data systems</b>	<ul style="list-style-type: none"> <li>▪ Eliminating/reducing paper-based and disconnected ad hoc systems</li> <li>▪ Experimenting with a range of solutions:               <ul style="list-style-type: none"> <li>• Commercially available online platforms</li> <li>• Custom-built platforms</li> <li>• Building automation with free online tools</li> </ul> </li> </ul>
<b>Quality of WBL offerings</b>	<ul style="list-style-type: none"> <li>▪ Efforts to define quality standards for WBL and capture data on quality are in the early stages; however, we identified some initial strategies:               <ul style="list-style-type: none"> <li>• Tracking alignment of the WBL experience with the student’s career pathway and goals</li> <li>• Capturing student satisfaction with the WBL experience in surveys</li> <li>• Developing district-specific toolkits with guidance on what constitutes a high-quality WBL experience (note that national- and state-level toolkits providing this type of guidance are available)</li> </ul> </li> </ul>
<b>Reporting and data use</b>	<ul style="list-style-type: none"> <li>▪ Using interactive dashboards to provide insights for different decision makers (e.g., a school-by-school comparison, deep dive into a particular set of programs, overall district view)</li> <li>▪ Using student interest data matched with WBL opportunity data to identify gaps and target employer recruitment</li> <li>▪ Using reports on student participation to identify equity gaps and spark advisory board discussions</li> </ul>

## Resources Required for Robust Data Systems

While the districts profiled in this report ranged in size, they all described committing resources to developing robust WBL data systems. Some common investments they cited as important to their systems included staff time and technology.

**Dedicated staff time:** All six districts employ at least one full-time WBL coordinator, whose role includes some aspects of data collection. In addition to the primary role of developing and implementing the WBL programs, WBL coordinators allocate some of their time to data-related tasks, including learning to use the technology; training teachers, students, or employers to use data systems; generating reports; and checking data entered by students or other users. Larger districts have a WBL coordinator responsible for each high school, and some have additional district-level coordinators to support particular student populations or to support and monitor school-level coordinators. These districts emphasized the need for such roles to reduce the data entry burden for teachers and bring consistency to the data. Some districts also rely on a data manager or analyst to support data entry and generate reports for educators and administrators. One WBL coordinator stated,

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*[You need] the Work-Based Learning coordinators that can sift through that data, be the gatekeepers, be able to connect to the students . . . If you're really going to be a district that's going to really be work-based learning focused, you have to have the people to be able to support it.*

– WBL Coordinator, Poudre School District R-1

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**Technology:** All the profiled districts had moved away from tracking WBL on paper or through ad hoc stand-alone spreadsheets. As the Fresno CTE director said,

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*When you think, 10 years ago, it really was about collecting information via emails and post-it notes and the half-slips of papers and napkins, etc., being able to look at where we've come over the last 10 years is phenomenal.*

–CTE Director, Fresno Unified School District

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To make the shift to electronic systems, several districts found it worthwhile to pay for licenses for third-party database products. One district developed a sophisticated system for itself entirely based on free Google products, and another developed a customized system through an external contractor (see Table 3).

## State Accountability Context

One motivating factor for developing these WBL data systems was a larger state or district imperative for meeting ambitious WBL goals. State accountability requirements—some of them spurred on by federal Perkins requirements—create conditions that can motivate more extensive WBL data collection at the district level. For example, five of the profiled districts are in states that have established a WBL indicator for federal Perkins reporting, meaning that, at a minimum, these districts must collect and report to the state the percentage of CTE concentrators graduating from high school who have participated in work-based learning as an indicator of their state's CTE program quality. A sixth district is in a state that did not adopt WBL as a Perkins quality indicator but requires detailed student-level WBL participation and outcome information from districts. Despite the fact that all

the profiled districts' are operating in states that require districts to collect some WBL data, one theme that emerged from our work is that, to meet their own strategic goals regarding program implementation and improvement, as well as to expand student access to WBL, the six districts are collecting data well beyond what their respective states require.

In some cases, local community support for WBL expansion created a need for better data tracking. For example, in Fresno, WBL is an initiative promoted across the district as an opportunity for all students in all grades, including WBL opportunities not tracked by the state. This led the district to expand its collection efforts to facilitate implementation and meet local needs.

## Data Elements Collected

All the interviewed districts capture longitudinal individual student-level information about WBL participation and outcomes to enhance and customize the learner experience (for example, aligning students' career interests with opportunities); to identify and address inequities in WBL participation; to advocate for resources from a variety of stakeholders, including business partners; to monitor student learning and skill development; and to guide continuous improvement efforts.

### Data on Characteristics of WBL Participation

The six districts profiled in this report collect a wide array of data elements documenting their students' participation in WBL.

- **Documenting the full range of WBL participation:** Rather than limiting their data collection systems to more intensive categories of WBL, like internships, most of the profiled districts capture data about individual student participation in WBL activities at all points on the continuum, including career awareness and exploration activities.
- **Starting WBL tracking as early as middle school:** With WBL becoming more prevalent in earlier grades, Fresno, Muskego-Norway, and Poudre gather some data about WBL activities in middle school, aiming to build a longitudinal record, starting with initial student interests and WBL experiences and continuing throughout secondary school.
- **Tracking hours per experience:** Some districts record the hours an individual student spends in all WBL experiences. While tracking hours for paid internships is more common nationwide, Appoquinimink, Collier County, and Fresno also track student hours spent on other types of activities, such as unpaid internships, job shadowing, guest speakers, and service learning related to the student's career pathway.

In the context of individualized learning plans now implemented in many states, data on student career interests and plans can also be combined with WBL participation in some districts. For example, students in Poudre complete career interest surveys and online virtual career exploration activities in some of the district's middle schools, using the Xello platform. The platform also houses data on WBL experiences, so that the district is building a longitudinal record of the students' interests, as well as experiences such as job shadowing and internships, and can examine whether students are engaging in a coherent set of activities connected with their interests.

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*For us starting even in middle school, they have the Xello tool . . . so students do a lot of career exploration, everything beginning in the middle school years, and then, when they come into high school, they continue that in their ninth-grade year, having opportunities like career tours [and] exploration through Xello. And then, as they move into their 10th-, 11th-grade years, even [as] seniors . . . they can still really get into the internships, apprenticeships, jobs, job shadows.*

– WBL Coordinator, Poudre School District R-1

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Lowndes district also collects student career interest information to support efforts to prioritize WBL placements that align with the students' interests and selected pathway.

**Fresno** collects an extensive set of data points about student participation in WBL activities across the continuum, in part motivated by the possibility of potential additions to state data-reporting requirements and future district planning needs. Fresno tracks individual student participation in such activities as guest speakers, industry informational interviews, mock interviews, college and industry tours, project coaching, mentoring, job shadowing, volunteering and service learning, internships, and preapprenticeships. In each activity record for a student, the district includes the course, teacher, and CTE pathway to which the activity corresponds, as well as the employer and industry sector (California categorizes its career pathways in 15 industry sectors). The district also records the dates of participation; whether the activity was virtual or in person; hours; paid or unpaid status; and a brief description of what the student did during the activity. For internships, the workplace supervisor completes an evaluation that includes the number of completed hours. For group activities, such as guest speakers, a staff member enters an activity record in the system and then links all participating students to that record. The district also maintains an employer information database linked to the student and activity records.

The WBL coordinator and teachers in **Collier County** use the NAF WBL Participation Tracker to capture which individual students participated in each WBL activity; the type of activity (e.g., informational interview, skills workshop, mentored industry project), including its place on the WBL continuum (career awareness, exploration, and preparation); hours spent on the activity; the dates when the activity took place; and details about the employer partner and its representative staff.

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*We can categorize the WBL activity by a primary and secondary type of work-based learning. Let's say there was a guest speaker that also did informational interviews. And we are able to input the organization that made the work-based learning activity possible. And then we're also able to input the people that were a part of the organization, and then link the students that participated, as well as provide descriptions. So rather than just "guest speaker in an engineering class," you can document that a biomedical engineer came in and did a specific demonstration with the students. So we're pretty detailed in what we're able to input.*

– WBL Coordinator, Collier County Public Schools

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## Student Outcomes Data Collected

All six districts track student outcomes related to WBL participation. These student outcomes data include grades for courses associated with WBL activities; gains in general employability skills, as well as technical skills; and certifications and industry-recognized credentials earned. Students, staff, and employers contribute outcomes data. For example, students complete self-assessments of skills gained from each WBL experience, sometimes with accompanying evidence, akin to a portfolio, and sometimes without it. Staff or employers provide ratings of student skill attainment. The skills on which students are rated may vary depending on the opportunity to develop these skills within the WBL experience.

In **Appoquinimink**, students use The AET for CTE platform to indicate specific technical or career readiness skills that they gain from a given WBL experience. When entering information about a completed experience, the student can select from a set of technical skills keyed to sector standards that they have learned, write an explanation of the ways in which they have demonstrated competency, and upload artifacts showing their mastery. A teacher or WBL coordinator can then review these entries as a quality check. Because a standard set of skills are built into the system, it is possible to access reporting on a consistent, structured set of student skill gains in aggregate. While this function has mostly been used in the agriculture pathways thus far, the district hopes to expand its use to capture broader transferable skills available in the system (e.g., “work productively in teams”) in other career pathways.

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*The students do weekly entries [on their WBL experience]. So they get to put in the number of hours that they've worked, what skill sets they've learned, they get to self-assess their mastery level. . . . And the unique part of this is on the business industry side, they get to say, so-and-so would rank an 8 out of 10 on the mastery level. . . . The cool thing is that I've learned that there is a mobile version. So the students literally could be in the greenhouse, take a picture of what they're doing . . . and they can upload it right in there, and then give a verbal explanation on it.*

– CTE Teacher, Appoquinimink School District

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In **Collier County**, students have started to complete reflection forms and can comment about the value that they feel the WBL experience brought them in developing their career aspirations, their connections to professionals and social capital, and their skills, including whether they feel that they were challenged and had opportunities to receive constructive feedback. Reflection form questions vary depending on the length and type of experience. At the conclusion of internships or other immersive WBL experiences, employers complete a Future Ready Skills assessment to provide students with feedback on skills developed and areas that need improvement. And a new feature of the NAF Work-Based Learning Participation Tracker and Reflection Form platform allows professionals to give students briefer feedback on skills after interactions like mock interviews. For ease of use, the professionals do not have to log in to the system but can access the feedback form through a link or QR code.

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*On the internship assessment, students are evaluated by employers on six future ready or “durable” skills, and it’s a longer format because they spent more time with them and could see evidence of a student’s abilities in each of those areas. But within a career exploration activity like job shadows, mock interviews, or résumé reviews, we are asking the professional that works with those students to rate students on just a few applicable skills. Communication is an example; it’s maybe three questions total. The professional is rating the student on “Actively listens to understand and asks clarifying questions” and “Presents information in an organized manner for the purpose of message, context, and audience.” There is also one open-ended question in case they want to add an extra note on something.*

– Outcomes-Driven WBL Director, NAF

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In **Fresno**, once students complete an internship, the TitanWBL system generates an online evaluation form that work supervisors complete. This form includes ratings of different career readiness skills and allows comment on each skill. Although employers are not required to rate students on technical skills, some supervisors use an option to input technical skills unique to the job into the rating form, give a rating, and then provide comments. Finally, supervisors can provide additional comments, electronically sign the form, and submit the evaluation, which automatically populates back into the TitanWBL system.

**Lowndes** collects outcomes data as part of a customized student WBL training plan developed in collaboration with the student, employer, and WBL coordinator to evaluate the technical and employability skills that a student demonstrates through the work experience. These training plans include a customized list of technical tasks for each student that is unique to the specific job duties and employer, as well as a general list of employability skills (e.g., punctuality, work quality, responsible behavior). The state provides WBL coordinators with the O\*NET (Occupational Information Network) database of job classifications and related duties and tasks in the statewide data collection system (C-NET) as an optional resource to aid in the creation of the training plan. Students must be assessed a minimum of three times per semester, two of which may be on employability skills and one on technical skills specified in the training plan. The WBL coordinator is required to make two in-person visits to the job site per semester to collaborate with the employer to evaluate the student’s performance. These evaluations are collected through Google Forms and attached to student records.

At the end of each semester, **Muskego-Norway** sends a survey to employers for them to provide feedback on their student’s progress. Topics covered include overall job knowledge, respect for the work environment (e.g., willingness to learn proper procedures), attitude toward colleagues, self-confidence, adaptability, dependability and motivation/initiative. Students also rate their own performance in these categories. These data are managed and monitored by the college career and experiential learning coordinator. The school uses competency-based grading to assess students’ WBL experiences.



*We send out a 10-question employability survey. . . We will then track that data to see where our students are strong, where they need opportunities for improvement. And then we can communicate that data back to not only our CTE teachers, but we can communicate that data back to our staff as a whole, and they embed that into their current coursework. [They embed] that messaging to help support not only what they're doing here, but then better prepare their kids for the future.*

– College, Career and Experiential Learning Coordinator, Muskego-Norway Schools

Muskego-Norway employers who conduct mock interviews with students also complete a brief survey on each student’s interview performance. Employers respond to items such as whether the student provides a quality resumé; has a professional appearance; is alert and understands questions; has the right balance of not speaking too much or too little, and appears to have a positive attitude toward the job. The employer is also asked to indicate if she or he would consider hiring the student based on the interaction.

Thus, in addition to staff and students’ weighing in on any outcomes of WBL experiences, industry partners provide a valuable employer perspective on students’ gains in different skill areas.

## Data Collection Systems: Data Entry and Quality-Monitoring Processes

Making data entry as user friendly as possible while maintaining consistency and quality is critical to gathering research-ready data at scale. The wide variety of settings, staff, and activity types involved in WBL presents a challenge to developing comprehensive systems. The profiled districts used a range of approaches to meeting this challenge in the ways they structured their WBL data collection systems and protocols for data entry. This section describes the software used by each district, gives examples of the way each manages data entry, and the districts’ approaches to monitoring data quality.

### Data Systems Used

Most districts use a combination of different electronic systems to capture the full range of WBL data. While some chose a commercially available package designed for WBL, others used custom-built systems; course/gradebook systems, as well as stand-alone Google tools (e.g., Sheets, Forms), were often in the mix. Only one of the interviewed districts, Fresno, currently integrates its WBL data fully with its main student information systems, although all districts collect student identifiers in the WBL system and can link datasets when needed, for example, in order to build reports on participation related to demographic characteristics or to fulfill state reporting requirements. The profiled districts have also largely eliminated manual or paper-based data collection.

**Table 3. Data Systems Used to Track WBL**

**Appoquinimink School District, in Delaware**, has used The AET (**The Agricultural Experience Tracker**) for some time as its online CTE platform to centralize tracking of participation, hours, and skill gains for students in Agriculture, Food, and Natural Resources pathways. In fall 2022, the district expanded this tracking to all students using The AET for CTE, a broader version of the platform. The data system brings together tracking of WBL activity participation, related student assignments, and systematic documentation of skills gained.

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**Collier County Public Schools, in Florida**, implemented a WBL data collection system beginning in the 2019–20 school year through its NAF career academies; this system has grown over time. **The NAF WBL Participation Tracker and Reflection Form** allows teachers and other staff to monitor and reflect on the overall types and the intensity of WBL participation per student, including student reflections on the quality and alignment of the WBL experience.

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**Fresno Unified School District, in California**, tracks WBL participants through its **TitanWBL** system, which was custom built for the district and launched during the 2022–23 academic year to track and report on a wide range of WBL activities. There is interoperability between TitanWBL and the district's student information system (SIS).

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**Lowndes County Schools, in Georgia**, developed a digital system of free or low-cost tools in 2019, primarily through **Google resources**, to manage all aspects of WBL, from applications, enrollment, and placements to data tracking and reporting of hours worked, wages, and earned credentials.

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**Muskego-Norway School District, in Wisconsin**, developed its current WBL data collection system in 2019 using **Qualtrics**, an online survey and analysis platform that is managed by the College, Career and Experiential Learning coordinator. Student career interest inventories from Xello are incorporated into the system.

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**Poudre School District R-1, in Colorado**, introduced the **Xello** online platform in 2020 to track student interests and WBL activities. The district also uses Xello to house students' career interests related to their individualized learning plans.

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In **Collier County Public Schools**, the WBL Participation Tracker and Reflection Form captures data on the industry partners that participate in WBL activities. The system stores industry partner feedback to individual students for brief WBL interactions, as well as more in-depth feedback from the Future Ready Skills assessment completed after longer engagements like internships. This assessment is required for students to earn credit for their more immersive WBL experiences. NAF supports implementation of the tool in all of its academies nationally as of the 2023–24 school year, and a suite of training materials is available. Intensive WBL activity tracking does not currently take place for the remaining students in the district outside of the NAF academies.

**Lowndes** makes use of free or low-cost tools to create a district-designed system that automates the collection, storage, and reporting of WBL data to increase administrative efficiency and to ensure better quality data. The district's advanced data collection system is designed to facilitate reporting into the Georgia state online data collection system, C-NET, which requires detailed student-level WBL data. The utility and low cost of the system has sparked interest among other districts in Georgia. On the application and enrollment side, the district uses Google Forms, Sheets, Autocrat, and Blueink to automate the process. Students submit their applications online, triggering immediate staff reviews. Emails are automatically sent among students, school counselors, parents, and employers, ensuring real-time communication and quick decision making. As the WBL coordinator put it, "It eliminates breakage" in interest and participation that can occur with a long application process. The system is also seen as a reason that the program has been able to grow, with the WBL coordinator reporting,

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*This semester, I'm running 270 students. So the program has been able to grow. We have one of the largest if not the largest school-based programs in Georgia. I attribute a lot of it to this system.*

– WBL Coordinator, Lowndes County Schools

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On the data collection side, the district has created sheets with multiple tabs and formulas to track WBL participation in order to meet local and state reporting needs. These sheets include features that make them adaptable by other districts. For example, an initial setup tab allows users to populate a key table with school-specific information including WBL staff identifiers, available program pathways, and career clusters information and populates the drop-downs in subsequent enrollment tabs, reducing entry errors. One challenge is accurately creating the appropriate state-mandated WBL course code, which embeds multiple indicators including the Classification of Instructional Programs code, WBL designation code, number of years the student has enrolled in WBL, semester, and number of WBL hours off campus. The enrollment tab combines data across fields into the final code to minimize errors and generates an enrollment list for the registrar. The WBL coordinator commented on the success of this function:

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*I have not had one FTE [full-time equivalent] reporting error since I started this job using the sheet. Not one and that's with hundreds of students, different students per semester. And my registrar said they used to have sometimes 20 to 30 [errors] per semester when they had to start coding these things by hand. So I built a sheet that automated this.*

– WBL Coordinator, Lowndes County Schools

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Similarly, as students participate in WBL, their hours and pay are tracked; students upload documentation signed by their employers of their work hours, and the system contains formulas that total the results and flags students who have not accumulated the necessary hours. On the reporting side, information collected in the enrollment and hours/wage tabs are used to auto-populate a series of tables of placements by WBL activity type to monitor implementation efforts, as well as tables that aggregate WBL participation to meet state reporting formats.

**Fresno**, a large district, transitioned through several WBL data collection platforms before creating its own to maximize user-friendliness, data quality, and flexible reporting. In 2014, the district started with a beta tool from a third-party provider but transitioned in 2018 to collecting WBL data through the district student information system (SIS). Concerns regarding the original system were that it was not owned by the district, could not collect student details, could not edit mistakes, and resulted in inconsistent data. In transitioning to the SIS, the district continued to experience challenges in correcting mistakes. In addition, the system was not designed to accommodate the data entry volume, and there was concern that too many staff members had access. In 2021, the district transitioned to Microsoft Forms, but the district officials felt that this platform also had too much room for human error. Moreover, all calculations and data reporting had to be performed manually. The new data collection system, TitanWBL, which was launched in 2022, addresses many of the shortcomings of the previous systems and greatly improves the district's ability to make decisions based on real-time reporting.

**Muskego-Norway** customized its WBL data collection system using a paid-license version of Qualtrics, an online survey and analysis platform. The WBL data collection system was built by the College, Career, and Experiential

Learning coordinator and a programmer. The system is customizable and is adapted on an ongoing basis to better capture the student experience. The system also has a dashboard with many functions (e.g., student information/registration, involved employer partners, student semester evaluations). In addition, the system enables the user to track hourly student pay from student-uploaded biweekly pay stubs.

## Who Can Enter Data

The profiled districts have different philosophies about the best way to manage system access for data entry. Some districts prefer to maintain a tighter hold on data quality and thus restrict data entry to a small set of users (e.g., WBL coordinators), while others make data entry broadly accessible to students, teachers, and other staff.

**Fresno** grants broad access to the TitanWBL system for data use but limits the number of people who can enter data. The district's data manager shared the following:

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*It's a very restricted system [for data entry] at the moment; only our staff here in the [district] office, and then [high school] coordinators and job developers have logins to get in. So it was part of one of the data quality controls we implemented because, [for] one of our older systems, everyone in the district had access to enter whatever they wanted.*

—District Data Manager, Fresno Unified School District

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School-level CTE coordinators and WBL coordinators called job developers, as well as district-level WBL coordinators and data managers, monitor data entry to identify errors or cases in which teachers may have forgotten to report WBL activities to the job developers. For example, one staff member shared that it is common for job developers to check the main school visitor logs to detect any visits potentially related to WBL activities to ensure that nothing is missed. Also, because some WBL activities are coordinated by district staff, these staff regularly check to ensure that the activities they are aware of are recorded by the job developers. The district holds monthly meetings with job developers to review WBL data and address any unclear experiences that were entered, as well as to ensure proper district categorization for each WBL activity. Finally, the district holds quarterly data review meetings to ensure that activities are properly categorized and accurately entered, with the goal of prioritizing accurate and consistent reporting of data on hitting targets. To aid this review process, the district has developed a WBL toolkit that defines each type of WBL activity to help job developers properly categorize the activities as they are entered into the system.

**Appoquinimink** uses the full range of options for data entry offered in The AET for CTE system to maximize the ease of capturing WBL experiences. Students and teachers can use a mobile app or an online interface to log experiences, skill gains, and certifications earned. Teachers can use a calendar function to batch-enter all participants in a particular event. WBL coordinators are responsible for some data entry as well. District staff noted that the user-friendly interface, with multiple ways to enter data and built-in help videos and tools, goes a long way toward increasing student and teacher buy-in as a WBL coordinator stated.

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*There's the ability for students to write a journal entry. . . . Or on the other end, the teacher could go in and say we had this guest speaker on this date, and then the teacher could select . . . they can just click on that class and say that class participated. . . . There's also a calendar feature where they can add events to the calendar, and then they can direct their students to that, and then students can register for the event and document participation that way. So there's a couple different ways to approach it, which is very helpful.*

–WBL Coordinator, Appoquinimink School District

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Having more users means the need for quality monitoring is greater. In **Poudre**, which also asks students to enter some of the data themselves, some high schools set aside time periodically (e.g., during a homeroom period) for students to enter data. To make sure student data entry is accurate, WBL coordinators and teachers review student entries. WBL coordinators also review user login reports to identify students who may be falling behind in logging their activities. As one WBL coordinator reported,

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*Everybody in the school is responsible for helping students get [Xello WBL data entry] completed. . . . [In addition to routine data entry throughout the year,] one of the other comprehensive high schools in town set aside first period, and then third period after lunch, one particular day, last fall, and said, "We're all doing Xello, all teachers, all students, to help them get that accomplished."*

–WBL Coordinator, Poudre School District

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## Data Use

Districts often note that school and district staff responsible for data collection are more likely to put effort into entering accurate, complete data if they can see value in its use. Although districts share researchers' interest in using data to evaluate the effects of WBL experiences on student outcomes, district staff have additional related but distinct needs for WBL data. In the profiled districts, staff actively use their WBL data and find it valuable for many purposes, including enhancing the student experience, recruiting industry partners, aiding program planning and improvement, communicating the value of WBL to constituents, and monitoring progress toward district goals for access and equity.

## Student Experience and Voice

Some districts such as Appoquinimink, Fresno, and Collier use participation data to check that students are getting a range of experiences across the WBL continuum, from awareness to experience in their chosen fields, and adjust programming accordingly.

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*We've also tried to collect that data . . . the guest speaker, the job site visits, the informational interviews, all of those awareness and exploratory activities, we want to increase that . . . . Our goal is that each student in our district has a minimum of 10 of those experiences prior to an immersion [culminating senior year WBL activity]. . . . If we look at a student who from Grade 6 to Grade 11 only has six experiences, that's data we need to know, we need to know that we're providing those opportunities. And so, if we see that a student has made it to 11th grade and they've only had five or six or seven guest speakers, that's work for us. So, we're hoping to utilize that data to continue to enhance our experiences across the continuum, because that immersion piece is only one piece.*

–WBL Coordinator, Appoquinimink School District

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**Collier County Public Schools** incorporates student voice through the student reflection form within the NAF WBL Participation Tracker, in which students can record their perspectives on what they gained from an experience and the way, if at all, it influenced their perception of their career options and their professional connections. Staff members then draw on this student input to drive continuous improvement of the WBL experiences.

### Employer Recruitment and WBL Placement Development

Data on student career interests serve as a guide for targeted employer recruitment. For example, in Muskego-Norway, Poudre, and Collier, an employer liaison reviews the data to identify instances in which student interest in an industry sector outnumbers available WBL opportunities, and then pursues local employers in that sector.

In **Poudre**, data on students' career interests drive employer recruitment. A regional industry liaison works with a group of districts in the Fort Collins area to develop WBL opportunities, from lighter lift engagement through guest speaker presentations all the way to deeper involvement through offering internship placements. The liaison reviews Xello data reports summarizing student interests by industry sector to identify gaps, and then contacts regional employers in that sector. Having the data helps her make the pitch to employers, because she can document the demand by students to work with them.

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*What I might do when I sit down with a business is show them . . . we have this many students that could possibly connect to you. . . . When I say things like keep workforce local . . . and show them the numbers of students who are interested, that always kind of piques interest. . . . I can go into Xello and say, "Oh, my goodness, there's 1,000 students interested [in a particular career] and we only have five businesses. . . ." It's valuable data because you can see the need, you can see the gaps, and then in my role, you can help fill those gaps.*

– County Business Liaison, Poudre School District

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**Collier County Public Schools** works within an Education Collective Impact Network called Future Ready Collier, which brings together businesses, nonprofit organizations, and school systems in the larger community to focus on many education and business connection goals, one of which is increasing WBL through internships for

all career academy students. The organization uses data from the NAF WBL Participation Tracker and Reflection Form to try to establish a baseline of the number of students who were receiving WBL and to point employers to where gaps in internship availability exist.

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*We use their NAF [WBL Participation] Tracker report data. . . . We would look at how many students were interested in internships versus how many were paired to an internship or were hired as an intern. It was really beneficial information for us. And then, also, it was really beneficial for the employers to see how many other employers were actually engaging with interns, and how many other potential interns were left. So that was really helpful information for us to share that out, bring awareness to it, and show the need for interns.*

– Partnership Manager, FutureMakers Coalition/Future Ready Collier

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## Program Planning and Improvement

**Fresno** allows a broad range of stakeholders, including advisory boards, industry partners, and district and school staff access to both high-level and detailed WBL activity data in real time to monitor implementation and support continuous improvement. The TitanWBL system provides various data dashboards and customizable query tools that enable stakeholders to customize their view depending on their role and informational needs. A district leader might select a district summary dashboard to gain an overview, while a school principal may review the school's dashboard for more focused insights. Likewise, a district WBL coordinator could compare schools or evaluate WBL data by school type (e.g., middle schools, high schools). Users can view data in preferred formats, whether it be pie charts, graphs, or raw numbers. Importantly, these dashboards enable cross-functional visibility, meaning that district leaders can access individual school dashboards and vice versa, allowing school leaders to view district summaries, fostering a comprehensive understanding of the data across levels.

In addition to the dashboards, users can use nested query tools to create their own customized reports. For example, a principal could quickly build a school report that summarizes the number of guest speakers from a particular industry partner that occurred during a specific date range. A district data manager commented on the utility of stakeholders building their own reports, saying,

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*What I used to have to do is pull it [data] all out and then put it all together to answer their question. There was a turnaround time. Now anybody who has access to the system can go in and just look at it if they have a question that they know how to ask.*

– District CTE Data Manager, Fresno Unified School District

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These real-time dashboards and query tools offer multiple stakeholders the ability to identify gaps in opportunities and areas for improvement. Also, we learned through our interviews that the comparative features in the dashboards have created some healthy competition among schools to expand WBL opportunities.

## Broad Stakeholder Support

Accurate data help districts make the case for funding to district superintendents, school boards, industry leaders, and to the broader community when funding is on the ballot. **Lowndes** uses its WBL data to generate annual economic impact reports to show local education and business stakeholders the effects that the WBL program has on the local economy. This report includes the total number of hours students worked, total wages earned, and the estimated economic impact this has on the local economy. The WBL Coordinator said,

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*My stakeholders are not just students and parents; my stakeholders are industry, and if I can get people like the county commissioner, the mayor, they sit on my board of directors, and they need to know that if there are ever educational budget cuts, I want them to know how valuable my program is. That's why I communicate this number.*

– WBL Coordinator, Lowndes County Schools

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**Appoquinimink** also includes WBL data in the district's annual report that is distributed to the community.

**Muskego-Norway's** comprehensive tracking system yields data and reports on students beginning in middle school through high school. Data such as on WBL experiences, industry-recognized credentials earned, hours of on-the-job site per week, internship pay, employer evaluations, the career cluster each employer partner represents, and participation by students with disabilities and IEPs are reported to the school board to show WBL progress and successes. This has led to more community buy-in from students, parents, families, and school stakeholders for their program.

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*Every year, I have to report to the school board . . . with my team. And it has always been a very positive and successful meeting. And it's led to a lot of community buy-in, that I can come back with the data, the data is, here's what we've done, here's where we are at and here's where we need to go. This is where we've done a great job here, here, and here. Our students and our families are asking for this; this is our next step to move forward with it. So, when you can provide the data around what you're doing, you are going to get more buy-in by all stakeholders. And it's going to help move the needle forward.*

– College, Career and Experiential Learning Coordinator, Muskego-Norway Schools

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## Access and Equity

All districts review WBL participation regularly to assess how they can improve WBL availability and participation for all students, particularly students with disabilities and multilingual learner students. As the WBL coordinator in Appoquinimink described:



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*For the first time ever work-based learning is in the strategic plan. And so there are goals in the strategic plan that we're going to have to hit, and AET is going to help us to be able to document all of those immersions [senior year WBL activity], all of those experiences along the workplace learning continuum, as well as the number of hours that our students are completing in immersion experiences. And for our students with diverse abilities, making sure that they're getting to the front of the line, and we're able to document that they're successfully completing their pathways as well as immersion experiences.*

—WBL Coordinator, Appoquinimink School District

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The **Muskego-Norway** College Career and Experiential Learning coordinator uses the data the district collects through Xello student career interest inventories to examine student demand for WBL experiences in various career clusters and whether the district has provided enough sites to meet students' interests, as well as whether the curricula and coursework exist to expand in these career clusters. A part of examining this demand is determining whether students with diverse backgrounds and abilities are able to access the type of experiences they are interested in. The coordinator also monitors inequities among a host of factors, such as nontraditional gender representation, by career cluster; internship pay, by gender; socioeconomic status; student disability status (IEP or 504 plan); and completion rates of WBL experiences, by student background.

The director of Outcomes-Driven Work-based Learning at NAF described observing an increase in monitoring equity in WBL opportunities across academies using the WBL Participation Tracker:

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*Districts find it's a way to monitor equity across the whole space of work-based learning . . . and we're seeing some immediate changes happening. For example, there may be 25% of students who are not doing any kind of work-based learning, but they were unknown to the district. So now they're making changes to intentionally recruit participants for WBL. And then we also have academies who are sharing this with advisory board members, to help them understand what the gaps are. And they're able to plan work-based learning to be more inclusive to really think through what are the high-impact activities for those students.*

— Director of Outcomes-Driven Work-Based Learning at NAF

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## Quality of WBL Experiences

Overall, the profiled districts collect very limited systematic data on the quality of WBL offerings available to students. Some states have established standards for what constitutes high-quality implementation of WBL along with indicators or rubrics for whether those standards have been met (see, for example, Rhode Island's WBL rubric [Prepare Rhode Island, 2020] and Tennessee's WBL standards [Tennessee Department of Education, 2019]). Practitioner associations define quality implementation as including such elements as alignment with learning standards and the student's career goals, meaningful interactions with industry professionals, and reflection opportunities (Imperatore & Hyslop, 2018). None of the profiled districts is currently rating the quality of specific WBL experiences and centrally capturing such data so that they can be connected with individual

students' outcomes. Still, the districts are trying some different approaches to addressing and documenting quality in WBL.

For example, **Appoquinimink** conducts a structured quality review process when onboarding a new employer partner, which entails conducting site visits and determining whether an employer meets certain standards. **Fresno** is attempting to more systematically capture the quality of the WBL experiences, in addition to the quantity, to improve the experiences of all stakeholders. At the time of our interviews, the district was working to create postevent feedback forms for students, staff, and employers for understanding of the quality, relevance, and benefits of the experiences offered. The district is working to integrate this feedback into its data systems, to further inform program improvements. In addition, the district has created an extensive WBL resource guide and toolkit to guide teachers and staff on ways to create high-quality WBL experiences. The guide and toolkit include planning, implementation, and assessment tools tailored to each WBL activity that the district offers.

One of the ways that **Lowndes** defines quality of WBL experiences is the degree to which the WBL job placement aligns with the student's career goal and career pathway. The district prioritizes WBL placements in which all three components—placement, goal, and pathway—align. The goal of the WBL coordinator is to maximize the number of students participating in the Youth Apprenticeship Program, cooperative education (co-ops), or internships and to minimize participation in what the state calls employability skills development (ESD) placements. ESD placements do not align with a student's goals or pathway but are provided in recognition that students must experience entry-level work and gain experience in the workforce. Placing students in the Youth Apprenticeship Program is prioritized because it represents the highest level of alignment of the placement with the student's goal and pathway, and leads to an industry-recognized credential. Co-ops and internships must also align with at least the student's career goal or pathway. The district regularly monitors the WBL placements by pathway and career cluster to assess the share of placements that falls into each category. When ESD placements are high in certain clusters and pathways, the district investigates the reasons for these placements and makes efforts to create more aligned WBL opportunities for students. As the WBL coordinator described the process,

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*This [query in the data system] tells me how many ESD [Employability Skills Development] placements I have. The state wants us to have less than 25%. If it's less than 25%, it's green. If it goes over 25%, it turns red. So, I know I'm in a bad area and need to fix that. I can say I am looking at my ESD numbers and say, "Oh, my gosh, in my family consumer science, 11% of all my family consumer science placements are ESD," which means there's not a direct correlation between what they study and what their job is. So, now I need to go out and start recruiting more jobs in that instructional area.*

—WBL Coordinator, Lowndes County Schools

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A potentially fruitful way to assess WBL quality might be through student satisfaction ratings. As mentioned previously, **Collier County** has recently started to prompt its NAF academy students to complete reflection forms after certain WBL experiences so that these students can comment about the skills that they developed, reflect on the experiences, and provide feedback. To this end, students rate their level of satisfaction with the placement, company, and supervisor. They also comment on what they liked about the placement, the most memorable aspect of the experience, and any changes that would make it more beneficial to their college and career readiness growth. Employers also complete a form that provides students with feedback on skills developed and

areas that need improvement, and rates the student. Many districts (including Collier and Fresno) ask students to complete feedback forms, and it may be possible to build on this practice by adding questions about the presence of particular high-quality elements of the experience.

## Cross-Cutting Findings

### What practices show promise for generating more robust WBL data?

The districts featured in this report have demonstrated that it is possible to collect a wide variety of student-level WBL data that capture the detail and progression of student experiences over time in a variety of district contexts. If more widely adopted, the practices summarized below would support greater availability of data that researchers could use in causal studies. These practices can generate valuable information for district decision making for program improvement, a worthy goal in itself. Further, systematic collection of WBL data can support studies that will help the CTE field at large understand the features and dosage of WBL that drive better outcomes for students.

#### **Beginning student longitudinal data collection earlier.**

As educators increasingly move toward offering career exploration and readiness activities in the middle grades, data collection can start earlier, as well. Some districts in this report are working toward developing data systems that create a longitudinal record of a student's career interests and activities spanning Grades 6 to 12, and one district has begun to track WBL in the elementary grades. These kinds of longer term records can help researchers understand the impact of WBL activities in relation to their timing, as well as the ways students' interests evolve over time and the way WBL mediates these changes.

#### **Promising Practices**

- Beginning student longitudinal data collection earlier
- Systematically capturing student skill gains so that they can be assessed as an outcome measure
- Capturing data on student career interests to assess alignment with WBL opportunities
- Implementing a plan to ensure WBL data quality

**Systematically capturing student skill gains so they can be assessed as an outcome measure.** When talking about student outcomes from WBL, practitioners often discuss the high value of specific technical skills and transferable employability skills. Indeed, WBL experiences are often designed explicitly to develop these kinds of skills. However, these outcomes are difficult to measure and document in a systematic way across a whole district or state. Some districts in this report have found ways to systematically rate and report on student skill gains attributed to a particular WBL experience, for example, by tagging a predefined set of skills in the WBL experience record. Similarly, creating structured employer evaluation forms for rating student gains and incorporating results into electronic records offers a systematic, easily-accessed source of information on skill outcomes. While a district may primarily use these data points for individual student advising, a researcher could extract and use such data for an outcomes analysis. Although less immediately accessible, compared with structured data fields, the open-ended student reflection forms and employer evaluations used in some districts also offer a source of data that could be mined to construct measures of student outcomes.

**Capturing data on student career interests to assess alignment with WBL opportunities.** As more states adopt individualized learning plans for secondary-level students and more technology platforms become available to house and manage such plans, these records offer a promising opportunity for tracking WBL in relation to

student interests and goals. Some districts in this report use individualized learning plan databases to track WBL opportunities offered, student uptake of these opportunities, and student interests. The ability to connect student interest in a particular occupation or career pathway with subsequent WBL experiences makes for valuable data to answer questions such as whether a more aligned experience yields better student outcomes.

**Implementing a plan to ensure WBL data quality.** None of these practices will generate research-ready data unless districts have procedures ensuring data consistency and accuracy. On the entry side, in an effort to ensure consistency and minimize errors, some of the profiled districts place greater restrictions on the number of people who can enter data. Other districts, in an effort to reduce the burden on any one group and obtain data from first-hand sources, expect multiple users—including teachers, students, employers, school-level WBL coordinators, and district staff—to enter WBL data. In both approaches, districts have formal or informal systems in place to monitor quality, such as one user’s data entry being cross-checked by others or automations within the system to reduce error.

Although the profiled districts vary in their approaches to entering and monitoring data, all are leveraging technology to make data collection more user friendly or to cut down on errors and missing values. Districts make use of reports or tools (e.g., dashboards, auto-generated reports, and formulas in spreadsheet applications) from the systems themselves to more closely monitor and address data quality issues. In smaller districts, data entry or monitoring is often more centralized as the responsibility of one individual or a small group of staff members. Larger districts typically have in place routines, practices, and procedures, such as regularly scheduled data review meetings, to make data monitoring routine.

As districts innovate to collect more and better WBL data, some areas continue to pose a challenge even to the districts profiled here. Support for building state infrastructure to capture these critical types of data could help.

## Areas for Future Investment and Growth

### **Linking post-high school employment outcomes.**

Although college enrollment data can be linked effectively to high school records with names and birthdates through the National Student Clearinghouse, a parallel nationwide system accessible to a broad range of stakeholders has yet to be built for employment data. At the state level, some longitudinal data systems have succeeded in negotiating access to state unemployment insurance records to understand employment and earnings outcomes. However, in most states these critical outcomes are very difficult to link with high school experiences. Some districts do not collect students’ social security numbers because of concerns about data privacy and protecting undocumented students, and even with this identifier, linking the data requires cross-agency data sharing that can be costly and burdensome. Alumni surveys are a potential source of information if districts have the resources for more intensive follow-up, although response rates are typically too low or nonrepresentative to be useful for research purposes.

**Assessing the quality of WBL experiences.** As noted earlier, district-level data collection has not yet caught up with efforts of some states and CTE associations to develop standards defining a high-quality WBL experience. The ability to analyze student outcomes in relation to the quality—not just the quantity—of WBL experiences they received would be a good area for future work.

**Integrating WBL data systems with student information systems.** Only one of the profiled districts has directly linked its WBL data with its primary SIS. Some districts rely on multiple stand-alone systems, either for

### **Areas for Future Investment and Growth**

- Linking post-high school employment outcomes
- Assessing the quality of WBL experiences
- Integrating WBL data systems with student information systems

different types of activities (e.g., internships versus field trips) or for different sets of students (e.g., CTE concentrators versus non-CTE students). All profiled districts are able to generate reports fairly easily by linking WBL datasets with SIS datasets with a student identifier. However, an integrated system has the potential to support smoother state reporting and better data quality and consistency.

## Considerations for Researchers in Using WBL Data

Both researchers and practitioners recognize the value of collecting robust and accurate WBL data for data-driven decision making. However, these two groups of stakeholders often have different perspectives and uses for the same data. Drawing on the data collected from these districts, this section notes features of WBL data that researchers should consider when planning to work with states and districts to use WBL data.

**Data completeness/representativeness.** Practitioners and researchers may have different conceptualizations of data missingness and representativeness of data. Some of the profiled districts collect student-level WBL data for all students across all grades, whereas others limit data collection to certain grade levels or groups of students. For example, some districts focus on student populations required for state and federal reporting requirements (e.g., CTE concentrators) or limit detailed data collection to a particular group of schools or CTE pathways. To avoid incomplete or skewed analyses, researchers should develop a clear understanding from district staff of which students are included in the data collection.

**Data granularity.** State-level data are likely to be less detailed than district-level records. All profiled districts collect some form of WBL data beyond state requirements for reporting. For example, some of the profiled districts document the hours a student spends in each WBL activity but only report total WBL hours or indicators of WBL completion to the state, as required. Other data sources worth investigating include documentation of WBL activities lower on the continuum (e.g., guest speakers), qualitative data that can be mined (e.g., portfolios, work artifacts), and implementation data (e.g., detailed employer information, stakeholder satisfaction surveys). Researchers relying on state administrative data may miss out on some of these additional sources. Whenever possible, researchers should communicate with districts to identify such data elements and consider feasible research designs that capitalize on district-level data.

**Consistency and standardization.** When including multiple districts or states in their studies, researchers need to learn about and understand the systems and procedures for collecting WBL data, especially those entered by multiple users. Because of the diversity in the ways WBL activities are structured, implemented, and classified across districts and states, researchers need to understand the specific context for each dataset to inform analytic decisions and to shape the inferences they can draw from the data. Researchers should inquire into and have a good understanding of the ways in which the districts in their sample classify WBL activities and the degree to which collection efforts are consistent within and across districts. When reporting findings across districts, researchers should include information about any inconsistencies and the way they were handled.

**Data integration.** Researchers conducting district-based studies should be aware that WBL data may exist in multiple platforms and may require data merges by the district or the researchers. The profiled districts typically use a primary platform for collecting WBL data but supplement it with other sources, such as gradebook software, Google Sheets, and an additional database. In addition, the limited integration of these data sources with the main SIS means that researchers need to inquire into additional data repositories.

## Summary and Recommendations

The innovative WBL data system development at the district level is encouraging. These profiled districts are demonstrating a proof of concept: that these complex types of data can be successfully collected in a form that would support causal and other types of research and that these same data have great value for local decision making and program improvement.

**Avenues for WBL research drawing on district data.** Across these districts, data are collected on the overall student WBL experience and can point to opportunities for growth and improvement. Feedback is provided from student and employer perspectives, and skill development is measured. These data are valuable in that they enable the district to continuously assess the experiences of all stakeholders while acquiring data to make decisions and report to the larger community. In addition, the data collected in these districts can support research studies that would be valuable to the field in fostering quality and equity. With reliable data collected in individual longitudinal records, researchers can address such questions as: How do early middle school career exploration activities relate to high school CTE pathway choices? What features of the WBL experience are related to greater student skill gains and other learning outcomes? What are the WBL inequities in practice that should be addressed to improve equitable access? Which programs are closing equity gaps in WBL participation, and what strategies have they used to do so?

**Trade-offs between completeness and feasibility.** As states consider requirements for more robust WBL data systems, input from their districts about feasibility and the data points that serve the districts' needs is critical. Some detailed data may best be collected in smaller samples for limited periods to gather evidence and conduct research—without becoming part of an annual reporting requirement. Other data points have broad usefulness for program operations at both local and state levels, as well as for researchers.

**The need for investing in better data systems.** Improving any type of data collection in schools requires resources. As states mandate more extensive reporting on WBL, districts have articulated that they need resources to support technology and staff training for more robust data collection, as well as the staff time to support WBL programs and data collection. Gathering information from the local level about the time and effort required for data collection, as well as the current method of capturing data, would be useful in the design of compatible, feasible state data systems.

**Ways states could support development of better district data systems.** A valuable form of support that states can provide to districts is helping them vet and select technology tools that work for them. With the proliferation of products, information about user experiences, appropriateness of different features for different settings, and staff time and skills needed for using the products would all be useful information to share with districts, to help them make choices. Creating user-friendly tools for preparing data for state reporting would also benefit districts.

Districts profiled in this report face similar challenges in collecting WBL data, but these districts are employing diverse strategies to address these challenges. For example, while some districts enhanced their WBL data collection by developing their own data systems, others opted for third-party solutions, reflecting differing priorities and resources. The variety in stakeholder involvement in data entry and monitoring—from limited access to broad participation of students, teachers, and employers—further illustrates the complexity of these systems. Such decisions and other design trade-offs underscore the need for a better understanding of the decision-making processes behind these approaches and the ways in which they are shaped by local needs, available resources, stakeholder engagement, and data privacy concerns. Findings from this report provide a snapshot of these decision-making processes and illustrate the important work that districts are doing to drive innovations in WBL data collection systems.

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## Appendix. District Summary Information

<b>APPOQUINIMINK SCHOOL DISTRICT • DELAWARE</b>	
<p>Appoquinimink has a wall-to-wall pathway model in its high schools, meaning that most students are enrolled in a CTE or other type of career-focused pathway. WBL is required for all pathway students, with a goal that all graduates will have participated in at least 10 WBL experiences along the continuum, and a culminating “immersion” experience (e.g., an internship) of at least 50 hours. These opportunities are managed by a WBL coordinator in each high school, plus a district-level coordinator focused on students with IEPs and those in alternative programs. They chose the AET for CTE online platform as a centralized way to track participation, hours, and skill gains.</p>	
<b>District characteristics<sup>a</sup></b>	Fringe town 64% White, 19% Black, 5% Hispanic, 8% Asian, 7% families with income below poverty level
<b>Size</b>	3,755 students at 3 comprehensive high schools
<b>State selected WBL as a quality measure for Perkins accountability</b>	Yes
<b>Type of WBL data system</b>	Online database system: The AET for CTE
<b>Roles of people interviewed</b>	1 CTE director, 3 WBL coordinators, 2 teachers
<b>Who enters data into the system?</b>	WBL coordinators, teachers, students
<b>Which student populations are included in the system?</b>	Both CTE and non-CTE students (in process of rollout, starting with CTE students)
<b>Types of data included in the system</b>	Information about WBL experiences (full continuum, industry sector, hours for higher-level experiences), student outcomes (industry-specific technical skills gained, certifications/industry-recognized credentials)
<b>Featured practices</b>	<ul style="list-style-type: none"> <li>▪ Students complete entries weekly (number of hours worked, skills learned, self-assessment, etc.).</li> <li>▪ District sets aside time for students to complete data entry and for learning to use the data collection system.</li> <li>▪ Quarterly stocktaking report includes number of students in WBL; goal is 100% by class of 2024.</li> </ul>
<b>How long current system has been in place</b>	Pathways initiative was gradually rolled out starting in 2013, and a WBL requirement was introduced in 2018. AET database was used in agriculture pathways for many years; rolled out The AET for CTE to all students in fall 2022.

*Note.* CTE = career and technical education; WBL = work-based learning; AET = Agricultural Experience Tracker.  
<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

**COLLIER COUNTY PUBLIC SCHOOLS • FLORIDA**

Work-based learning in Collier County Public Schools is a district-wide initiative from elementary school through high school and aligns with the district’s strategic plan for creating equitable opportunities for all students. In addition to CTE pathways and WBL opportunities for non-CTE students, the district has 28 NAF career academies. To capture data on their 5,000 NAF academy students, the district piloted and implemented the NAF WBL Tracker and Reflection Form, a WBL data collection system designed by NAF. WBL data are entered by teachers, students, and employers and overseen by a district WBL coordinator.

<b>District characteristics<sup>a</sup></b>	Large suburban city 52% Hispanic, 35% White, 11% Black, 2% Other 14.2% families with income below poverty level
<b>Size</b>	15,000 students at 7 comprehensive high schools, 42 career academies (28 NAF academies)
<b>State selected WBL as a quality measure for Perkins accountability</b>	Yes
<b>Type of WBL data system</b>	Custom online database system specific to NAF academies: NAF WBL Participation Tracker and Reflection Form
<b>Roles of people interviewed</b>	1 manager of CTE, 1 assistant director of teaching and learning, 1 NAF senior director of WBL, 1 NAF senior manager of WBL, 1 workforce coalition partner
<b>Who enters data into the system?</b>	WBL coordinators, teachers
<b>Which student populations are included in the system?</b>	All students in NAF academies (5,000 students in the district)
<b>Types of data included in the system</b>	Individual student participation in WBL activity, type of activity within the continuum, number of hours and the dates when the activity took place, employers that participated, individual industry representatives who participated
<b>Featured practices</b>	<ul style="list-style-type: none"> <li>▪ Students complete reflection forms and can assess and comment on the skills they developed.</li> <li>▪ Employer evaluation forms provide students with feedback on Future Ready Skills (employability skills or “durable” skills) developed and areas that need improvement.</li> </ul>
<b>How long current system has been in place</b>	Since 2020, Collier has been part of a pilot program to develop the NAF WBL Participation Tracker and Reflection Form.

*Note.* CTE = career and technical education; WBL = work-based learning; NAF = National Academy Foundation.  
<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

**FRESNO UNIFIED SCHOOL DISTRICT • CALIFORNIA**

With the support of the community around making learning more relevant for students, Fresno Unified School District provides a wide range of WBL activities across the curriculum that are available to all students from Pre-K through grade 12, not just those in CTE pathways. Each high school has a WBL coordinator called a “Job Developer” who is responsible for coordinating WBL experiences and entering data. District WBL coordinators work with elementary and middle schools to support WBL activities and data collection. All students who participate in WBL, regardless of CTE participation, are tracked through a system called TitanWBL that was custom-built for the district and launched in 2022-23 to track and report on a wide range of WBL activities.

<b>District characteristics<sup>a</sup></b>	Large City 24% White, 7% Black, 56% Hispanic, 10% Asian 33% families with income below poverty level
<b>Size</b>	18,054 students at 12 high schools
<b>State selected WBL as a quality measure for Perkins accountability</b>	No
<b>Type of WBL data system</b>	Custom online database system: TitanWBL
<b>Roles of people interviewed</b>	1 CTE director, 1 CTE data manager, 1 WBL coordinator, 1 career readiness manager
<b>Who enters data into the system?</b>	District limits entry to district WBL coordinators and school-based “job developers” out of concern for potential entry errors.
<b>Which student populations are included in the system?</b>	All students (pre-K through Grade 12) across the district have the opportunity to take part in WBL and are included in the system; if student is in the CTE pathway, this information is linked to the WBL experience.
<b>Types of data included in the system</b>	System tracks 14 categories for WBL across the continuum; all activities are linked to industry partner, course/teacher, and date; hours/pay and industry credentials collected.
<b>Featured practices</b>	<ul style="list-style-type: none"> <li>▪ Can track students across time and across WBL continuum.</li> <li>▪ System is user friendly, which promotes buy-in and greater use.</li> <li>▪ Data dashboards and nested query functions are available to multiple stakeholders providing real-time analytics.</li> <li>▪ Multiple school and district-level CTE staff, including a dedicated data manager, provide robust monitoring of data entry.</li> </ul>
<b>How long current system has been in place</b>	System was implemented during the 2022–23 school year, replacing previous data collection strategies including use of Microsoft forms, and district student information system (SIS).

*Note.* CTE = career and technical education; WBL = work-based learning.

<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

**LOWNDES COUNTY SCHOOL DISTRICT • GEORGIA**

The focus of WBL in Lowndes County is on placing students in structured work experiences through apprenticeships, internships, and other immersive opportunities that match students’ career goals and pathway. Although WBL placements are open to all students, the majority of WBL participants are in a CTE pathway. WBL in the district is centralized under the direction of the district’s WBL coordinator at its single high school. Given the size of the school, the popularity of WBL, and limited technology and staffing resources, the district has developed a highly organized digital system of free or low-cost tools, primarily through Google tools, to manage all aspects of WBL from applications, enrollment, placements, and data tracking to reporting of hours worked, wages, and earned credentials. These tools help the district report into the Georgia state online data collection system, called C-NET, in which districts are expected to submit detailed student-level WBL data.

<b>District characteristics<sup>a</sup></b>	Small City 69% White, 20% Black, 7% Hispanic, 1% Asian 16% families with income below poverty level
<b>Size</b>	3,079 students at 1 comprehensive high school
<b>State selected WBL as a quality measure for Perkins accountability</b>	Yes
<b>Type of WBL data system</b>	District-created online database built on Google Sheets and Forms
<b>Roles of people interviewed</b>	1 district WBL coordinator
<b>Who enters data into the system?</b>	WBL coordinator enters participation and outcome data; students/families complete online applications/enrollment paperwork; employers complete online survey on students.
<b>Which student populations are included in the system?</b>	All students taking part in a WBL placement
<b>Types of data included in system</b>	System includes student demographics, WBL type (internship, apprenticeship, co-op), hours/pay, learning plan, employer evaluation, employer/sector information, connections to CTE pathway/coursework, credentials earned for apprenticeship, course grades/credit.
<b>Featured practices</b>	<ul style="list-style-type: none"> <li>▪ System based on free or low-cost tools</li> <li>▪ Automation of paperwork through electronic forms, triggered emails, etc., cutting down on “breakage” of students’ interest in WBL by not being promptly served and freeing up staff time</li> <li>▪ Automation of state reporting through formulas that tabulate raw data into aggregated tables</li> <li>▪ System auto-generates complex WBL course codes, cutting down on FTE and course enrollment calculation errors</li> <li>▪ Robust tracking of technical skills; students complete learning plan with skills tied directly to the job and these skills evaluated by WBL coordinator and employer during site visits</li> </ul>
<b>How long current system has been in place</b>	Since 2019.

*Note.* CTE = career and technical education; WBL = work-based learning; FTE = full-time equivalent.  
<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

### MUSKEGO-NORWAY SCHOOL DISTRICT • WISCONSIN

Through its Connect Academy, Muskego-Norway School District manages all work-based and experiential learning for students across CTE career clusters. Students are encouraged to engage in six levels of experience: (1) career fairs; (2) professional panels; (3) job shadows, work-site tours, and mentoring; (4) micro-internships; (5) training and certifications; and (6) career internships. Competency-based grading is used across all student experiences. The district has a comprehensive WBL tracking system for middle and high school students that pulls in data from student completion of career interest inventories to project WBL needs and assess WBL alignment. Students submit WBL hours weekly through uploaded pay stubs, complete self-evaluations twice per semester, and engage in a mock interview and networking luncheon. Employers rate student skills after the mock interview (5-question survey) and internship experience (10-question survey). District staff also examine inequities in WBL participation and completion by student characteristics.

<b>District characteristics<sup>a</sup></b>	Large suburb 89% White, 6% Hispanic, 1% Asian 2.7% families with income below poverty level
<b>Size</b>	1,638 students at 1 comprehensive high school
<b>State selected WBL as a quality measure for Perkins accountability</b>	Yes
<b>Type of WBL data system</b>	District-developed online system built on Qualtrics, with student career interest inventories completed on Xello
<b>Roles of people interviewed</b>	1 WBL coordinator (College, Career and Experiential Learning coordinator), 1 executive director of Chamber of Commerce
<b>Who enters data into the system?</b>	Students; College, Career and Experiential Learning coordinator; teachers (at request); employers (rating student skills)
<b>Which student populations are included in the system?</b>	CTE and non-CTE students
<b>Types of data included in system</b>	Hourly pay, hours worked, associated career cluster, employer partners, courses taken, mock interview completion and skill rating from employers, internship completion and skill rating from employers, student characteristics such as IEP or 508 plan, student self-evaluations, industry-recognized certifications
<b>Featured practices</b>	The use of WBL data to make decisions: <ul style="list-style-type: none"> <li>▪ Used to track and monitor inequities in student WBL experiences: e.g., pay inequities related to student characteristics.</li> <li>▪ College, Career and Experiential Learning coordinator monitors employer ratings of student skill attainment.</li> </ul>
<b>How long current system has been in place</b>	Since 2019

*Note.* CTE = career and technical education; WBL = work-based learning.

<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

<b>POUDRE SCHOOL DISTRICT R-1 • COLORADO</b>	
<p>Poudre offers WBL through its CTE pathways as well as to non-CTE students. The district has a WBL coordinator in each high school and three district-level positions focused on developing relationships and WBL opportunities with local businesses, including as part of a regional effort. The district aims for all CTE concentrators to meet the Colorado state Perkins metric of completing a WBL experience of at least 30 hours by graduation. As part of its investment in building up WBL programming, the district introduced the Xello online platform to track student career interests, and availability of and participation in WBL opportunities.</p>	
<b>District characteristics<sup>a</sup></b>	<p>Midsized city</p> <p>80% White, 13% Hispanic, 3% Asian, 1% Black</p> <p>7% families with income below poverty level</p>
<b>Size</b>	8,500 students at 5 comprehensive high schools
<b>State selected WBL as a quality measure for Perkins accountability</b>	Yes
<b>Type of WBL data system</b>	Xello, a commercially available college & career readiness software
<b>Roles of people interviewed</b>	1 district CTE director, 3 WBL coordinators, 1 high school principal, 1 business liaison
<b>Who enters data into the system?</b>	WBL coordinators, business liaison
<b>Which student populations are included in the system?</b>	Primarily high school CTE students; includes non-CTE students who participate in WBL
<b>Types of data included in system</b>	Student career interests, student requests, and employer opportunities for WBL (full continuum), WBL experience details (industry sector, employer information, hours for higher level experiences), student outcomes (course credits, certificates/IRCs)
<b>Featured practices</b>	<ul style="list-style-type: none"> <li>▪ Link career interest data to WBL experience opportunities and completed activities, for a longitudinal record starting as early as middle school. Data help identify opportunity gaps, make the case for employer recruitment, and assess match between student interest and WBL experiences.</li> <li>▪ Proactively monitor data completeness and quality: Review student login reports and periodically set aside a period for data entry.</li> </ul>
<b>How long current system has been in place</b>	In response to the state’s selecting WBL as their Perkins quality indicator, Poudre School District began building out their WBL offerings and data systems in 2019, and introduced the Xello online platform in 2020.

*Note.* CTE = career and technical education; WBL = work-based learning; IRC = industry-recognized credentials.  
<sup>a</sup> District characteristics from American Community Survey District Demographic Dashboard 2017–2021 and Common Core of Data (2021–2022).

# CTE | Career & Technical Education RESEARCH NETWORK

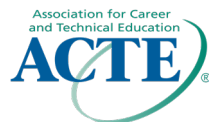
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The American Institutes for Research (AIR) and its partners—the Association for Career and Technical Education (ACTE), Boston College, and JFF—serve as the CTE Research Network Lead. The network lead provides network administration and coordination, as well as research, training, and dissemination, to increase the number and quality of CTE impact evaluations and strengthen the field's research capacity.



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