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# WORK-BASED LEARNING DATA COLLECTION TOOLKIT

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A **GUIDE** FOR  
EDUCATORS &  
RESEARCHERS

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## INTRODUCTION

WBL Continuum .....	4
Why This Toolkit? .....	6
Why Collect Student-Level WBL Participation Data? .....	6
Intended Audiences for This Toolkit.....	7
Organization of This Toolkit .....	7



## Identify Your **GOALS** for WBL Data Collection

Identify Your Goals .....	8
Assess Your Context.....	9
Establish a Stakeholder Planning Group .....	10



## Decide What to **COLLECT** and How to Define It

Determine Which Aspects of WBL to Measure .....	11
Review Existing WBL Data.....	11
Types of WBL Activities: Agree on What Counts.....	12
Time: Decide How to Document Hours .....	13
Document WBL Definitions and Examples.....	14



## Establish **PROCESSES** for Data Collection

Choose a Software Platform .....	17
Create Systems to Check and Maintain Data Quality .....	19
Train and Support Staff to Collect WBL Data .....	24
Promote a Culture of Data Use .....	25



## USE the Data

Create Reports That Support Your Goals.....	26
Sample Reports .....	27



## Additional Considerations for **RESEARCHERS AND EVALUATORS**

Identifying Research Questions .....	30
Sampling .....	30
Reviewing Existing Data and Identifying Gaps.....	30
Increasing the Reliability of Data .....	31
Identifying Sources of Missing Data .....	31
Analyzing Data.....	31



# INTRODUCTION

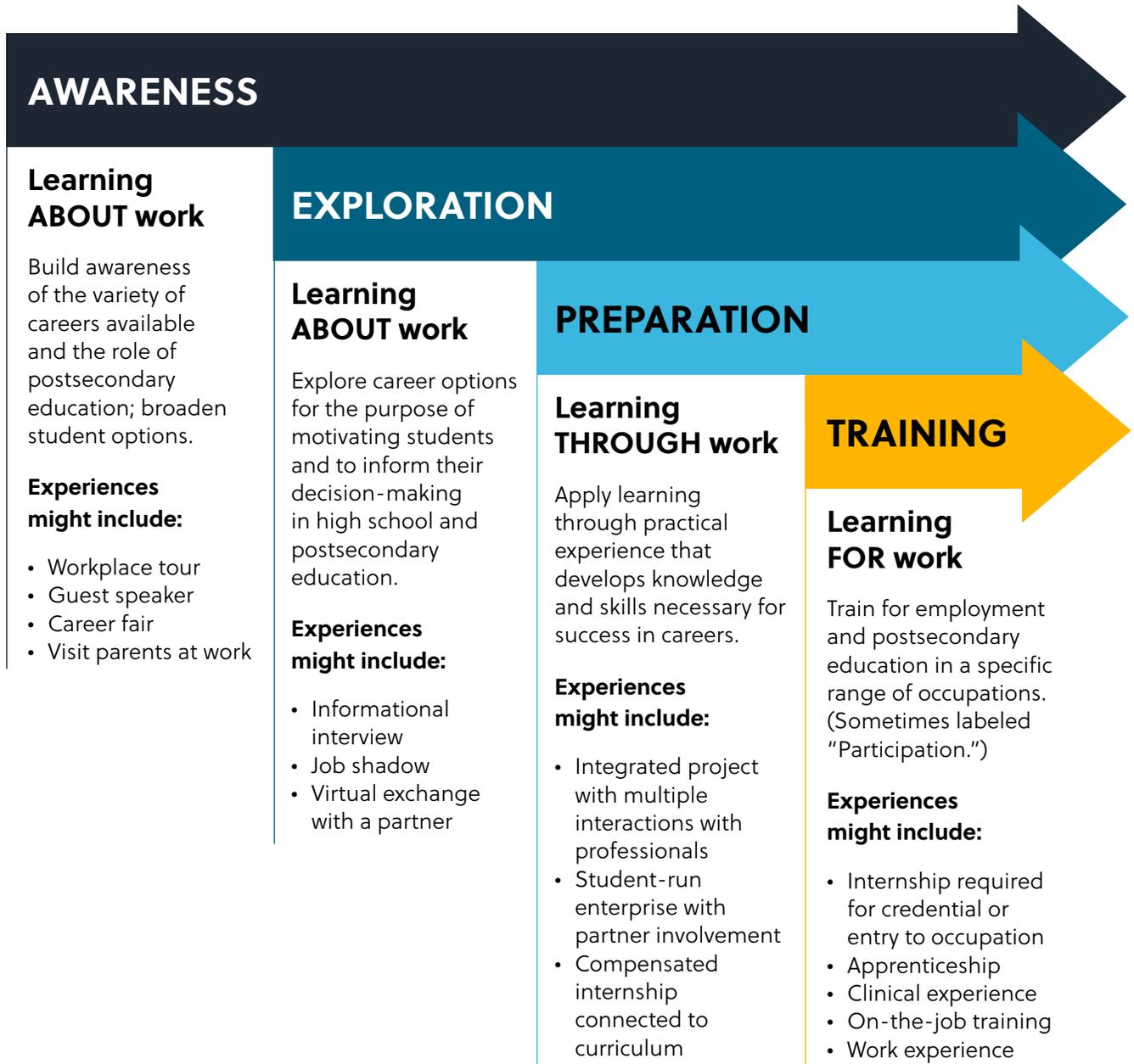
**In 2017, researchers at Education Development Center (EDC) embarked on a multi-year collaboration with Elk Grove Unified School District (EGUSD), a large public school district in northern California, to study the relationship between participation in career academies and student outcomes.**

As part of this study, the research team worked closely with the district's career and technical education (CTE) office to implement a new system of data collection to capture student-level participation in work-based learning (WBL) activities. These data allowed EDC researchers to study the relationship between participation in WBL and student outcomes, and at the same time provided the district with the data it needed for program improvement and new state reporting requirements. This toolkit presents lessons learned from the process of implementing a new system of collecting student-level WBL participation data.

## WBL CONTINUUM

Throughout this toolkit, our examples are based on a WBL continuum developed through the Linked Learning initiative (ConnectEd, 2021). We chose this framework for understanding WBL because it is widely used in CTE programs, including those in EGUSD. The district and researchers also found the framework useful because it differentiates WBL activities along a progression based on the degree of engagement with community or industry partners, the depth of student engagement and responsibility for the activity, and the student outcomes involved. However, the process described here can be adapted for other WBL frameworks, such as your state's WBL quality framework. The Linked Learning continuum is shown in [Figure 1: Work-Based Learning Continuum](#) [ConnectEd. (2021). Work-based learning system continuum].

**Figure 1: Work-Based Learning Continuum**



**Source:** ConnectEd. (2021). Work-based learning system continuum. <https://connectednational.org/learn/key-resources/work-based-learning/>



## What is work-based learning?

Perkins V defines work-based learning as “**sustained interactions with industry or community professionals** in real workplace settings . . . that **foster in-depth, firsthand engagement** with the tasks required in a given career field, that are **aligned to curriculum and instruction.**”<sup>\*</sup> For the purposes of this toolkit, we define *WBL* more broadly to include earlier, foundational learning experiences that increase students’ **awareness** of careers and foster **exploration** of different occupations and industries.



<sup>\*</sup> [Strengthening Career and Technical Education for the 21st Century Act](#) (Public Law 115-224) § 3 (2018).

## WHY THIS TOOLKIT?

To meet Perkins V and other federal data reporting requirements, many states have added new indicators related to WBL participation to their accountability systems. Reporting on the WBL activities of students requires a shift in districts’ approach to collecting information on WBL. Historically, districts rarely collected student-level information about which WBL activities a particular student attended or the number of hours an individual student engaged in each activity. Rather, WBL data collection typically focused on aggregate data that provided a snapshot of the number of students engaging in a given WBL activity.



“It’s important to build your work-based learning offerings around a continuum and have an awareness of it across the program—then staff can identify gaps in the types of opportunities offered.”

—Work-based learning coordinator



## WHY COLLECT STUDENT-LEVEL WBL PARTICIPATION DATA?

- Individual-level WBL data provide a more *accurate* picture of the proportion of students accessing WBL experiences. Collecting only the total count of students participating in activities will double-count students who participate in multiple activities.
- These data also allow districts to examine important *equity issues* by comparing participation rates across student populations. Are girls participating in manufacturing internships at the same rate as boys? Are English learner students accessing WBL activities as often as other students? Individual student data give a district the tools to answer these questions.
- More detailed data on the *type* of WBL experience also help a district monitor the degree to which students have access to the full range, from exploratory activities to preparation and training experiences. This information can drive improvement in programs.

Shifting from aggregate to student-level data collection, whether to meet state reporting requirements or to drive program improvement, necessitates new data collection procedures. This



toolkit presents lessons learned from our work. We hope it will provide guidance on key decisions to consider and steps to follow when implementing new procedures for collecting student-level WBL participation data.

## INTENDED AUDIENCES FOR THIS TOOLKIT

Primarily, this toolkit is designed for **education leaders responsible for CTE in their districts or schools** who are planning for WBL data collection. This toolkit offers suggested process steps and examples from a district that has developed such a data collection system. It aims to ease the burden of implementing a new, complex process of data collection.

A secondary audience for this toolkit is **researchers**. Many research questions about career readiness and CTE programs require student-level data on WBL activities and participation, but in some districts, existing data collection systems may not produce complete, reliable data of high-enough quality for research purposes. This toolkit can help researchers work with schools and districts to increase the quality of data. By highlighting common challenges and potential solutions, the toolkit suggests processes researchers could follow and questions to ask practitioner partners when planning for data collection.

## ORGANIZATION OF THIS TOOLKIT

This toolkit begins with an overview of general considerations when embarking on the implementation of a new process for collecting student-level WBL data, followed by specific recommendations and process steps:

- **WHY:** [Identify Your Goals for WBL Data Collection](#)
- **WHAT:** [Decide What to Collect and How to Define It](#)
- **HOW:** [Establish Processes for Data Collection](#)

The toolkit then offers suggestions for how to [Use the Data](#) to advance your goals and concludes with [Additional Considerations for Researchers and Evaluators](#). Embedded within the toolkit are examples from our work.



# IDENTIFY YOUR GOALS FOR WBL DATA COLLECTION

## IDENTIFY YOUR GOALS

**Why do you want to collect WBL data? Reasons may include:**

- Accounting for the use of district WBL funds
- Meeting state or federal reporting requirements
- Evaluating specific programs
- Improving program quality
- Researching the effects of WBL on students
- Providing students with a record of WBL participation for their transcripts or résumés

These different goals lead to different decisions about how to define, collect, and report data. Different data collection software platforms may be better suited to different purposes as well (see [Choose a Software Platform](#)). Clearly articulating the reasons for collecting data, and how the information will be used, also helps build faculty

and staff support for implementation of any new practices.

**Detailed WBL participation data can be a valuable resource for answering important questions about your programs to inform decisions about policies and practices.**

- For example: In the partner school district for this study, administrators used the data to inform decisions about expanding access to WBL in general, as well as increasing equitable access to WBL opportunities. The research team also used the data to explore how students' participation in different types of WBL relates to their educational outcomes, such as persisting in CTE pathways, maintaining a high attendance rate, and graduating high school.

**Your goals help you decide what data to collect and how. For example:**



**GOAL**

To increase the proportion of girls participating in WBL activities in historically male-dominated industry sectors by the end of the school year.

**DATA REQUIRED**

- List of WBL activities offered
- Number of students attending each WBL activity
- Industry sector of each WBL activity
- Gender identity of participating students

**Some questions educators can address with detailed student participation data include:**

- What proportion of students participate in WBL at least once during the year?
- What are the most common types of WBL activities offered?
- Are students offered WBL activities at all points on the continuum from career exploration to occupational training? Are there gaps in WBL offerings in some levels of the continuum?
- Are some groups of students underrepresented in WBL activities—especially higher-level experiences such as paid internships?

that leaders understand the goals of the effort and why WBL data should be a priority.



“Talking with principals and showing them how these data are informing programs in other schools helps with buy-in.”

—District CTE administrator



**ASSESS YOUR CONTEXT**

As you start a data collection planning process, take stock of the contextual factors that may help, hinder, or shape your approach. These include leadership by decision-makers, relationships with stakeholders, and resources available for the effort.

**Decision-makers.** Any new data collection effort needs to fit within or align with existing systems of data collection. District and school leaders are already responsible for collecting a LOT of data! To build support for adding another data collection requirement, an important first step is to ensure

**Stakeholder relationships.** Undertaking a new data collection system, especially using new technology, can be a daunting task for administrators and educators. When rolling out new data requirements districtwide, some schools may prioritize the effort more than other schools—this is why relationships with key stakeholders at the district, school, and classroom levels are paramount to engaging in a new data collection effort. Maintaining relationships and communication pathways with district and building leaders will help ensure that resources are in place, such as release time for educators to attend trainings and funds for data collection software. At the classroom level, it is

equally important to communicate with educators responsible for implementing WBL activities and reporting on them.

**Resources.** Implementing a new student-level WBL data collection system will be most successful if there are resources to support it. For example, schools may need:

- Funds to purchase software and hardware (such as ID scanners or software licenses)
- Time for a district-level point person to coordinate data collection across the district, as well as a point person in each school or CTE program
- Time for personnel at each school to participate in training, data entry, and data review
- Funds for developing training and documentation materials

## ESTABLISH A STAKEHOLDER PLANNING GROUP

Involving stakeholders in the planning process will help create a system that responds to the district’s needs and works for the people using it.

### EXAMPLE

In the district profiled in this toolkit, the stakeholder group consisted of one representative from each participating high school. In one school, the representatives were two WBL coordinators. Other schools were represented by CTE teachers and career academy directors. The group also included the district director of college and career options as well as members of the external research team. An analyst from the district’s research and evaluation unit occasionally participated to answer specific questions.

It is especially important to include representatives of staff in the roles that will be responsible for collecting and using the data. These staff members are in a position to identify potential challenges and suggest ways to make systems more user friendly. A planning group could include:

- Classroom teachers responsible for delivering WBL
- School-level program administrators such as WBL coordinators or CTE program directors
- District-level program administrators who will use the resulting data for planning WBL programs, and who are familiar with any state accountability requirements related to WBL data reporting
- District staff members responsible for data and reporting who are familiar with the student information system
- Students who participate in WBL—especially if students will be responsible for self-reporting on their own WBL participation

Planning group members can have different roles—a small core group may meet regularly, while a larger group of advisors may participate less frequently for specific purposes.



“Making time in staff meetings or common prep periods to meet, share best practices, and plan activities makes a difference. Having a district coordinator to support the schools and trouble-shoot the technology helps take some of the work off their plates.”

—Work-based learning coordinator





# DECIDE WHAT TO COLLECT AND HOW TO DEFINE IT

## DETERMINE WHICH ASPECTS OF WBL TO MEASURE

Review your goals for WBL data collection and decide what information you will need in order to reach those goals. Some important aspects of WBL include:

- **Access:** Where and how is WBL offered?
- **Participation:** Who participates in WBL? For how many hours? In what types of experiences?
- **Quality:** Do WBL experiences meet your district's expectations for quality?
- **Outcomes:** What do students gain from WBL participation?

This toolkit focuses on Participation, because it is based on a study that examined student

participation by hours and type of WBL. For resources on collecting information about other aspects of WBL, see resources such as those from [Advance CTE](#) and the [U.S. Office of Career and Technical Education](#).

## REVIEW EXISTING WBL DATA

Review any data on WBL that your district already collects. Many states require schools to report on student WBL participation as part of their accountability measures for state and federal CTE and general education funds. Some districts gather WBL data within their CTE programs that could form the basis for collecting data from a broader student population. If you can make minor changes to existing measures, or use existing software and processes to gather information, you can



reduce the data collection burden for staff. Some questions to investigate about existing data:

- Are current measures collected for individual students, or are they only collected in aggregate at the program or school level?
- How complete are the data? Are some students, grade levels, programs, or schools missing?
- How accurate are the data?
- Can data be linked to other sources in the district? For example, if WBL participation is collected in a separate database, can it be linked on a unique student ID to the district's primary student information system?
- Are there consistent, routine processes for collecting the data and checking their quality?
- Is there adequate documentation, training, and support for staff to collect the data?
- What reports are available on the data? Do those reports meet users' needs?
- What additional data elements do you need in order to meet your goals?

## TYPES OF WBL ACTIVITIES: AGREE ON WHAT COUNTS

This section focuses on WBL participation data. You can follow a similar process to define other types of measures such as WBL quality or outcomes.

Many districts offer a range of activities whose characteristics and definitions vary across schools and programs. Your state may require reporting organized by a few broad activity types. For example, some states require reporting on categories such as industry projects and internships. For planning purposes in your school or district, you may want to track a more detailed set of activity types across the WBL continuum.

When developing a set of definitions for WBL activities, involve the school staff responsible for implementing and reporting on WBL. Reviewing the names of activities as shown in course titles or program description may not provide sufficient detail to appropriately categorize an activity. Involved staff can provide insight into what the WBL activities actually entail so that they can be categorized accurately.

The steps below can help you agree on definitions for WBL activity types:

- ✓ Review widely used definitions and, especially, your state's or district's definitions of WBL types and categories (if available), so the work done in the district reflects the wider context of work on WBL.
- ✓ Consider the following characteristics of WBL activities when assigning them to a WBL type:
  - Degree of employer/community partner involvement
  - Whether the student receives payment
  - Student autonomy and responsibility
  - Learning component(s)
  - Location (on site at an employer workplace or a community setting, on the school campus, or virtual)
  - Student time required
- ✓ Once a draft has been created, allow for several iterations of revisions with multiple reviews from your stakeholder group; this will ensure that any issues are resolved and the document is ready for use.

It is important that WBL activities are consistently labeled in order to ensure the data collected are consistent. For example, if one educator labels a student's volunteer hours at a local community-based organization as an internship, but another educator labels a similar experience as service learning, it will be hard to accurately depict and understand the types of experiences students are having across the district or school.



## IS IT WBL?

Your state and district may also set basic criteria for whether an activity counts as WBL at all. For example, Perkins V requires that WBL have a component of student learning. This requirement can be operationalized in different ways. The following common WBL activities might or might not qualify as WBL depending on how they are implemented in your setting. Activities like these may require discussion with staff to come to consensus on how to report them.

- **Student leadership organizations** (*Example: Career and technical student organization for a career pathway*) In a student leadership organization, the types of student responsibilities and degree of student autonomy, as well as the skills students have the opportunity to develop, may vary by role. Some student leadership organizations operate in ways similar to a student-run enterprise and have a large budget and financial management component, while others are more focused on planning activities.
- **Individual student projects that apply technical skills** (*Example: Raising a cow for the state fair competition*) Some career-related projects do not involve contact with employers but require students to meet industry criteria.
- **Community service projects** (*Example: Volunteering at a local food bank*) Many volunteer or community service activities have overlap with WBL because they help students develop work-relevant skills.
- **Work experiences off-campus** (*Example: Cashier at a local retail store*) Off-campus jobs that are not structured as an internship and are not managed through a school program may be hard to capture accurately. These work experiences will vary in the degree to which they include a learning and training component. Decide on the criteria for counting a job or work experience as WBL if skills training at the job is very limited.

## TIME: DECIDE HOW TO DOCUMENT HOURS

If your district wants to document how many hours a student has spent on WBL, or track the average time students spend on different types of activities, you will need to agree on standardized ways of measuring WBL time. Some questions to answer include:

- **Will you capture actual hours spent by each student individually, or count a standard time that an activity is expected to take? Will this procedure vary with different types of activities?** For example, it might be impractical and uninformative to precisely count individual student hours spent at a job fair or guest speaker event, and a standard number of hours could be entered for all attendees. However, participation in mentoring or a student-run enterprise might vary quite a bit across students, and capturing differences might be important for your goals. Some activities, such as internships and service learning, may also require more precise reporting to satisfy graduation requirements or program requirements.
- **How frequently will WBL hours be recorded?** Asking students or staff to recall hours spent on an activity at the end of the semester may result in less accurate answers than having them report hours on the day or week they occur. However, the level of accuracy has to be weighed against the added difficulty of frequent data collection. A less frequent schedule, such as entering hours quarterly, may be adequate for your purposes.

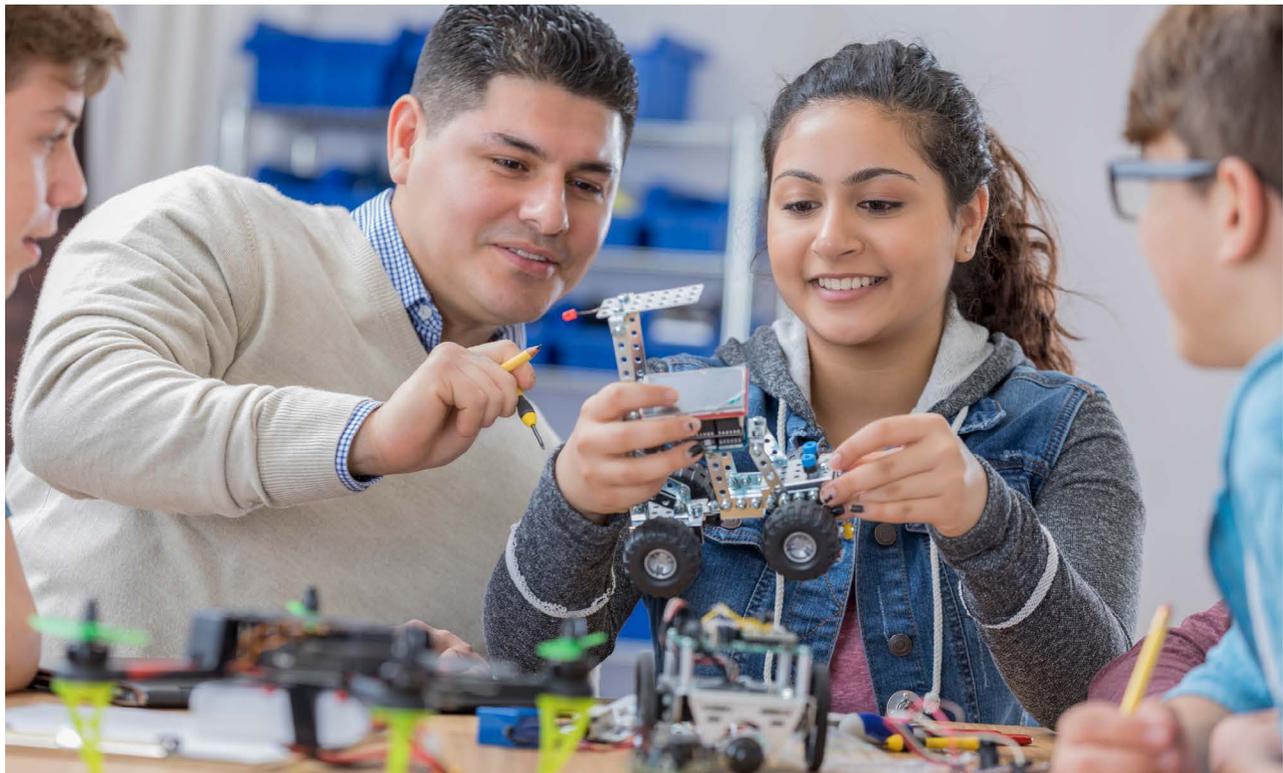


## DOCUMENT WBL DEFINITIONS AND EXAMPLES

Create a set of documents that educators and other staff can use as they report WBL activities for their students. These documents provide a common reference point to ensure consistency across staff members and schools. For ease of use, it may be helpful to create a table or other document that describes the following:

- Category of the activity in reference to any WBL framework your district uses (e.g., awareness, exploration, preparation, training).
- Examples of actual activities in your district that fall into the activity type. Include examples that have proven difficult to categorize in the past and guidance on how to report them.
- Defining characteristics of the activity (e.g., career fair, internship), which may include:
  - Key components of the activity
  - Degree of employer/community partner involvement required
  - Whether the student receives payment
  - Degree of student autonomy and responsibility required
  - Learning component required
  - Location
  - Hours required
  - How to distinguish from similar activity types

The next page provides examples of the documentation of data definitions that the partner district uses to guide data entry.





## Example: Definitions of WBL Activity Types

### WBL Continuum: Awareness

Type of Activity	Definition
Career Day/Career Fair	<p><b>What:</b> An event where information is provided to students regarding participants' companies and industries.</p> <p><b>Who:</b> Outside employers from different industries.</p> <p><b>Where:</b> On or off campus.</p> <p><b>Why:</b> To introduce students to multiple industries and/or potential employers at a single event.</p> <p><b>Notes:</b> This activity type refers to participation in a career fair. If a student makes a presentation or represents their program/school at a career fair, please use the activity type "Representation of Program."</p>

### WBL Continuum: Exploration

Type of Activity	Definition
Career Mentoring	<p><b>What:</b> A formal mentor-mentee relationship between an adult from an industry partner and a student.</p> <p><b>Who:</b> Industry partner and student.</p> <p><b>Where:</b> In person and/or virtual mentoring sessions.</p> <p><b>Why:</b> To provide a safe space for a student where they can find out more about the industry, receive advice specific to the industry, and hear about a professional's experience within the industry.</p> <p><b>Notes:</b> In alignment with the state definition of career mentoring, this relationship should be based on the student's career interests.</p>



### WBL Continuum: Preparation

Type of Activity	Definition
Integrated Project	<p><b>What:</b> A project that combines academic and career-technical content.</p> <p><b>Who:</b> The planning and/or delivery of the project must involve a teacher from both areas (academic and career-technical) and an industry partner.</p> <p><b>Where:</b> As part of a student’s courses.</p> <p><b>Why:</b> Encourage the use of industry partners in the creation of CTE projects to ensure industry alignment.</p> <p><b>Notes:</b> Projects may count for a grade in both classes.</p>

### WBL Continuum: Training

Type of Activity	Definition
Internship (25–120 hours)	<p><b>What:</b> Short-term, structured work-experience activities, which can include both paid and unpaid activities and can take place during the school year or summer.</p> <p><b>Who:</b> Industry partner can be from the public or private sector.</p> <p><b>Where:</b> Activities take place in the field at a job site.</p> <p><b>Why:</b> Internships provide real-world job experience for students within their CTE industry sector with a focus on training.</p> <p><b>Notes:</b> Internships differ from job shadowing in that (a) they involve a student interaction with the employer over an extended period of time, and (b) the student has a training plan indicating what they will learn. This activity type is for internships lasting 25–120 hours total and involving more than one visit to the site.</p>



# ESTABLISH PROCESSES FOR DATA COLLECTION

## CHOOSE A SOFTWARE PLATFORM

Most districts use an online platform to collect and store student-level WBL data efficiently. Below are some considerations and recommendations related to choosing a platform.

### RESOURCES AVAILABLE TO IMPLEMENT WBL DATA COLLECTION

A key limiting factor is the level of financial and human resources available for implementation of a new data collection system.

- Consider what *technology and student information systems* are already in use in your district. Do you need a new platform, or can you

adapt an existing platform? If you select a new platform, what will need to happen to integrate it with other student information systems? Are resources available for ongoing maintenance of and support for a new platform?

- Identify *personnel available to support coordination*. Can the district support a point person in each school (and/or at the district level) who coordinates the process? Such a role helps staff members troubleshoot problems with implementation.
- Coordinate with the district's *information technology (IT) department*. They will likely need to be involved in vetting and supporting the implementation of a new online platform.



## EXISTING PLATFORMS USED IN THE DISTRICT

Review existing data collection platforms used across the district to see whether a tool can be adapted for collecting WBL data.

- In some districts, the main student information system used for tracking course enrollment has functions that will work well for this purpose.
- Other districts may already use a platform to track participation in other types of activities—extracurricular activities such as clubs, dances, and sporting events, or social support services for housing, health services, and mentoring—that can be repurposed for WBL. Platforms used to track positive behavioral interventions and supports (PBIS) or a multi-tiered system of support (MTSS) can be used.

## FUNCTIONALITY NEEDED IN THE PLATFORM

Make sure the platform can provide the functions you need for your purposes, or identify work-arounds. Some considerations:

- Who needs to be able to enter data and access reports from the system—teachers, students, other staff? Does the system have a user management system for log-ins that will meet your needs?
- Does the system adequately protect the privacy of student data in compliance with your district's policies?
- Can the system capture the kinds of data you are interested in (e.g., type of WBL, number of hours, how many WBL activities attended)?

- To what degree can you customize the data entry fields in the system to address your goals and align with agreed-on categories?
- How easy is it to import and export data in batches?
- Can the platform integrate with your student information system?
- What kinds of reports can the platform produce? To what degree can they be customized for users in your district?

## SUPPORTING THE SHIFT TO USE A NEW TECHNOLOGY

For many educators, whatever platform is chosen may be new to them. Some platforms allow for the use of educator and/or student applications, which may be uncomfortable for some educators. In addition, some tools allow for online entry and entry via scanners. While these tools can make data entry easier in the long run and reduce data entry error, it may take time and substantial training to get all users up to speed.

- You may find it more effective to introduce the technology to users in stages rather than all at once. For example, you can present one function of the technology at a time and allow ample time for users to practice and ask questions before introducing the next function.
- Providing how-to documents can also ease the transition.
- Designating site-level support or a primary contact person will mean that educators know who can help them if problems arise.



### Ease the transition to new technology by:



- ✓ Slowly introducing the platform, piece by piece
- ✓ Providing how-to documents
- ✓ Assigning a site-level point person who can provide support
- ✓ Integrating the WBL data with the existing student information system

## CREATE SYSTEMS TO CHECK AND MAINTAIN DATA QUALITY

For WBL data to provide meaningful input for decision-making and program improvement, they must be of good quality. Data should be consistently collected and represent what we intend them to represent.

*Reliable* data are consistently measured across students and activities, regardless of who has entered the data. For example, educators who create WBL activities should have a common understanding of how to **categorize** the activities that is well-documented (see [Document WBL Definitions and Examples](#)). Educators should also follow a common set of rules or business practices for data collection, such as how to record the number of hours a student spends engaged in a particular activity.

Establishing consistent processes for **entering** student data will also improve reliability. For example, the district may agree on several *methods* of data entry that should be consistently used across various types of WBL activities. Methods could include students signing themselves in with an online application, teachers scanning student IDs, and teachers manually marking students present on an attendance sheet. Using a mix of methods may be appropriate; however, it is important that they are implemented with fidelity and consistency. Business rules should also state how frequently WBL activity data should be collected and recorded. For example, will students be expected to enter their internship hours weekly? Will teachers be expected to enter all activity data once a quarter?

- Consider creating a business rules tip sheet explaining how participation in each type of activity should be captured.



**Example excerpt from a business rules tip sheet:**

<p><b>Is the WBL activity directly supervised by an adult?</b></p>	<p><b>Yes</b> →</p>	<p>Adult staff member is responsible for recording the activity.</p>
	<p><b>No</b> →</p>	<p>Student records hours on the mobile app.</p>
<p><b>How many students does the WBL activity involve at one time in a single location?</b></p>	<p><b>10-30 students</b> →</p>	<p>Adult staff members use ID scanner to check in students.</p>
	<p><b>More than 30 students</b> →</p>	<p>Adult staff members set up beacon to notify students to check themselves in on their mobile apps.</p>

Data have *validity* if they accurately represent what you intend them to measure.

*Face validity* refers to whether the data look to provide information regarding what you are trying to measure. For example, if an activity is counted as “preparation,” does it actually include direct interaction with employer/community partners?

*External validity* refers to the degree to which you can generalize to other places or populations. It is important that the data you collect are not so specific to one program’s context that it is hard to see how it connects to what other programs are doing. Importantly, the data collected should be generalizable enough so that the information collected can be used to meet any federal or state reporting requirements.

Because collecting data can be tricky, we have outlined several potential threats to reliability and validity that you should consider as you embark on WBL data collection. These considerations are also relevant to researchers hoping to use WBL data in their work.

**STRATEGIES TO INCREASE RELIABILITY AND VALIDITY OF WBL DATA**

WBL activities can be difficult to collect consistently and accurately. Common challenges include the following:

- Varied locations and hours for activities
- Lightly supervised activities
- Different data collectors (students, teachers, employers)
- Wide range of activity types that are hard to categorize
- Large amount of detailed information to capture



Below are suggested strategies to address these challenges.

## CHALLENGES



- Varied locations and hours for WBL activities
- Lightly supervised activities

## STRATEGIES



- Provide flexible data collection tools for different settings

While some WBL activities, such as guest speakers and industry projects, may take place in a classroom or afterschool club in a predictable time and place, others occur in different locations on the school campus. A job fair might take place at a central location like the gym, while agricultural program students might work with animals in a stable or with plants in a garden. Students typically travel off-site for internships and service learning projects at a local business or community organization.

Many activities have different schedules and locations for individual students, with little supervision from adult staff. Some internships and mentorships may have this profile, as do some student-led activities, such as caring for animals or running a student enterprise. For these kinds of activities, the school may need to rely on students to report their own hours to some extent.

Flexible data collection tools can be tailored to a range of different settings. The district described in this toolkit used tools that included:

- **Mobile app:** Students and teachers entered information about WBL activities from their phones. >> **Well-suited for individualized, lightly supervised activities occurring at multiple sites**

- **Hand-held ID scanners:** Teachers and administrators scanned student IDs as students entered a location. >> **Well-suited for large group events**
- **Beacons:** A bluetooth-enabled sensor that can be placed in a location, such as a lab, which allows students to record their own arrival on a mobile app. >> **Well-suited for individualized, lightly supervised activities and for large events with multiple entrances**
- **Manual logs:** Teachers entered some activity data retroactively in a spreadsheet, and the district provided administrative support to transfer the spreadsheets into a common database. >> **Well-suited for classroom-based activities with predictable recurring schedules**



## CHALLENGE



- Multiple roles responsible for data collection (students, teachers, administrators, employers)

## STRATEGIES



- Develop written protocols for each role
- Provide orientation and training for data collection
- Monitor data quality on a regular basis

Multiple staff members may be responsible for implementing different WBL activities, including CTE teachers, academic course teachers, WBL coordinators, counselors, and school or district administrators. Employers and community partners may need to be involved in recording student participation in job shadowing, internships, and apprenticeships. As noted earlier, students themselves may be in the best position to self-report some data.

Clear documentation of definitions and data collection protocols can help increase consistency

across data collectors. Training that is tailored to each role also reinforces the expectations for how and when data are to be collected.

Regularly checking data quality will also help maintain consistent, accurate data across different collectors. Designating a point person to review all WBL for a given program or school can improve consistency across teachers entering data. A teacher or program administrator should also check student data frequently.



## CHALLENGE



- Wide range of activity types that are hard to categorize

## STRATEGIES



- Create and document definitions
- Create shared ownership
- Train data collectors
- Review data periodically

Without clear documentation and training on how to identify and classify WBL activities, staff entering data or preparing data for reporting may not do so consistently and accurately.

Training and supervised data entry for educators and others who will be entering data are optimal. Involving data collectors in the design process also builds ownership and understanding of the data collection system. Each school has its own culture around training, but we have found that group training on the basics with individual follow-up and accompanying how-to documentation lead to increases in facility with WBL data collection.

- Establish checkpoints for data review: Set up a schedule for periodic reviews of data. For example:
  - Have a teacher or program staff member review any student-entered data for accuracy and completeness.

- Have a staff member review data across multiple programs or schools to check for inconsistencies.
- Create and provide mid-year reports to schools (see [Use the Data](#) for an example). By reviewing the previous semester's data entered for their own programs, educators and staff who know the WBL offerings in their own schools can catch persistent errors and check for completeness.
  - To uncover data issues for particular WBL activities, provide a breakdown of the data by activity type.
  - To have visibility into data issues for different groups of students, provide a breakdown of the data by student demographic information.

Providing periodic reports also builds ownership in the data collection process when data collectors can see and use the results. A sense of ownership can increase the consistency with which they enter data.



## CHALLENGE



- Large amount of detailed information to capture

## STRATEGIES



- Offer batch entry functions for group activities
- Use a platform educators already know
- Designate a point person in each school
- Cultivate buy-in by reporting data back

In sum, it is important to consider the quality of the WBL data collected. While it is unreasonable to expect that data entry will be perfect, especially in situations where multiple educators and students will need to enter data, it is important to provide training and supports that can help increase the quality of the data collected.

## TRAIN AND SUPPORT STAFF TO COLLECT WBL DATA

For staff entering data, it is important to include training on the appropriate assignment of WBL types and categories for activities. This is an important piece in order to understand what kinds of WBL activities students are participating in and their highest level of attainment. Especially at the outset, it will be important to have a staff member who is responsible for double-checking data to be sure that activities are being categorized appropriately and consistently.

It is also important to adequately train staff on the data collection system being implemented. This

will take time and may be an iterative process. For example, the first step may be a general introduction to the new WBL data collection system and an overview of why it is important to collect student-level WBL data. The next step could include hands-on training with the tool, followed up by individual support as needed. Finally, to ensure consistent data entry, provide ongoing one-on-one support and periodic trainings on the platform to onboard new staff and to ensure that educators maintain reliable data entry over time.



“Scaffolding the learning process for teachers and staff to learn the new technology helps a lot. We did an orientation to the basics and followed up with one-on-one bite-sized coaching to introduce other parts of the technology like barcode scanners.”

—Work-based learning coordinator





Optimally, this may take the form of supervised entry of real data for all staff until the system is fully implemented.

Because this may require a significant culture shift, it is advisable to train staff members at each school to support the other educators in the building on the successful implementation of the WBL data collection effort. Optimally, these master trainers will have dedicated time where they can develop training materials and meet with staff members who need additional support. Providing individualized support in addition to larger group trainings will most likely be necessary. Taking time to slowly introduce materials, rather than introducing everything in one training session, may help educators retain and successfully implement WBL data collection.

## PROMOTE A CULTURE OF DATA USE

### SUPPORTING A SHIFT IN BEHAVIOR

In many districts and schools, asking educators to systematically collect data on WBL participation may require a significant behavior change; that is, they will be required to track participation in something that they did not need to track previously. Unlike classroom attendance data, collecting information

on when students participate in WBL activities is most likely a completely new idea for many educators. Therefore, it may take time for it to become habit. Also, because educators have a lot on their plates, the idea of adding new and/or more data collection may seem overwhelming at first; there may be substantial pushback if the purpose and utility of the collection are not made clear. Likewise, it is important to choose a platform that is easy to use. If an entry system is too difficult to use, educators may not be inclined to move past their initial difficulty with the software system and engage in its use.

Gaining district- and school-level administrator buy-in may help educators make the shift to prioritizing WBL data collection. Similarly, state and federal mandates for data collection can increase the value that educators put on collecting data. To help increase buy-in, it can be helpful to develop user-friendly reports and provide summaries of WBL data back to educators so that they can use these in their work and are more likely to see value in the data collection.

### DATA USE

The more staff members see the value of data, the more likely they are to make sure they have entered the data completely and correctly. Creating systems to routinely report WBL data back to the staff who enter those data will make it more actionable for them. See [Use the Data](#) for more on this topic.

#### Encourage educators to get on board by:



- ✓ Getting administrator buy-in
- ✓ Providing reports with their WBL data and helping them interpret the data
- ✓ Linking the initiative to state or federal mandates



# USE THE DATA

## CREATE REPORTS THAT SUPPORT YOUR GOALS

As discussed in [Identify Your Goals](#), WBL data enable you to address goals by answering key questions about your programs. Referring back to your goals, you can develop specifications for reports that will inform decisions related to those goals. Clear, user-friendly reports on the data will greatly increase their utility for your district. Using a data collection platform that produces user-friendly reports can also make it easier to share this information. You may need to work with your data reporting staff to produce reports. Some specifications for reporting include the following:

- Which data points will inform each goal?
- How do you want to disaggregate those data—by school? by CTE program? by student demographic characteristics? by student grade level?
- Who should receive reports? Who can act on the data?
- How often and at what points during the year do these staff members need reports for decision-making?

Below are examples of WBL information that a school or district could gather to address specific program goals. Reporting these types of information once or twice a year to teachers, CTE program administrators, and principals can inform program improvement and make progress toward goals. (These are illustrative examples and do not include real data.)

## SAMPLE REPORTS

### Example A:

**Goal:** To identify gaps in WBL participation between groups of students and thereby target efforts to close those gaps.

### Highest level of WBL activity attained by student, by sex.

WBL Level	Female	Male
Awareness	25%	40%
Exploration	3%	5%
Preparation	68%	51%
Training	4%	4%
<b>All students</b>	<b>100%</b>	<b>100%</b>

### Average number of WBL activities attended, by student race/ethnicity.

Race/Ethnicity	Mean
African American	4.00
Asian	6.10
Hispanic	3.80
Multiple	5.20
White	5.50
<b>All students</b>	<b>5.50</b>

## Example B:

**Goal:** To provide all students with a balanced range of WBL experiences across the continuum, so that they have opportunities to explore different careers and develop technical skills in an area that matches their future career plans.

### Percentage of students participating in WBL activities overall and by level.

School Name	Any Type	Awareness	Exploration	Preparation	Training
Yucca High School	30%	25%	10%	5%	1%
Saguaro High School	55%	48%	22%	15%	5%
Sage High School	74%	70%	53%	8%	3%
Agave High School	44%	20%	35%	7%	4%
<b>All schools</b>	<b>53%</b>	<b>45%</b>	<b>27%</b>	<b>11%</b>	<b>4%</b>

Basic reports on the number of students participating in specific activities by school or program can also serve as a periodic check on data quality. Sharing such a report with the teachers or staff responsible for data collection can help identify gaps or errors in reporting. School- or program-specific reports can also help flag locations that may need additional support to address barriers to WBL implementation, such as transportation or personnel limitations.

- **Tip:** Letting schools or programs know where they stand relative to one another can generate some healthy competition!

Although building or upgrading a system to collect consistent, accurate student-level data takes a lot of work, it pays dividends when you can draw on that information to improve programs for students. Identifying the information needed to inform program goals, developing user-friendly reporting systems, and regularly feeding data back to educators involved in implementation and data collection—all these activities contribute to maintaining and getting value from a WBL data collection system.



# ADDITIONAL CONSIDERATIONS FOR RESEARCHERS AND EVALUATORS

This section of the toolkit is for researchers who plan to collect WBL data in schools, or who plan to analyze such data already collected by schools. Because this toolkit originally grew out of a research study, the authors were mindful of issues that concern researchers as well as administrators.

Researchers may come to data collection with overlapping but different goals from those of administrators.

- District administrators may be most interested in completeness and detail for monitoring, planning, and accountability purposes, and may want to tailor data collection to specific business practices and needs in their setting.
- Researchers, on the other hand, often prioritize data that can be generalized beyond a single district and compared with findings from other studies in other places.

- Researchers conducting an evaluation of a particular WBL program may focus on such topics as student outcomes, program features that contribute to desired program outcomes, how well the program works for different groups of stakeholders, and areas for improvement.

This section highlights questions researchers and evaluators may want to ask about existing data and data collection processes, ways to increase the reliability and validity of data collected, and potential pitfalls and strategies to avoid them. Although a full discussion of planning a research study or evaluation is outside the scope of this toolkit, this section features some issues that are especially important for studies of WBL.



## IDENTIFYING RESEARCH QUESTIONS

As you decide on your research questions, it is helpful to look for areas of alignment with the needs and goals of district partners. Including questions that align with the district's information needs will not only help engender cooperation from administrators and educators, but more importantly, it will help ensure that the results are usable and relevant to practice. Exploring the questions below with your district partners can help make the study more useful for them:

- What questions about WBL are important to educators and administrators at your research sites?
- What decisions about WBL do administrators need to make in the near future? Does the research study timeline provide information at the right time for those decisions?
- Do educators and administrators want information about subgroups of students or programs? Can the research team report on findings for these subsets?

## SAMPLING

One of the first considerations for researchers is whether you need WBL data for all students or only for a smaller sample. This decision is particularly important if the district does not already collect student-level WBL data systemically across all schools. If the data you need will not be available through routine districtwide data collection, the research team may need to make decisions about identifying a sample from which you can collect new data, within the constraints of your resources and timeline.

If you are drawing a sample of students for your research, some strata to consider include:

- **Students**
  - Demographic groups
  - Grade level
  - CTE status (non-CTE student, any student taking CTE courses, CTE concentrators)
- **WBL activities**
  - Category (i.e., awareness, exploration, preparation, training)
- **CTE programs**
  - Industry sector
  - Length and depth of established employer relationships
  - Fidelity of program to quality standards

WBL programs often vary in systematic ways across the strata listed above. For example, many states and districts have documented gender imbalances by industry sector, with disproportionately fewer girls enrolled in historically male-dominated sector programs. It is important to make sure your sample represents the populations and programs relevant to your research questions.

## REVIEWING EXISTING DATA AND IDENTIFYING GAPS

As noted in [Review Existing WBL Data](#), begin by reviewing any existing WBL data or data collection systems.

- Can you answer your research questions—and the district's questions—with existing data?
- If not, what information is missing? Can the research team collect that information as part of the study?
- How reliable are the existing data? Do any data need to be collected in a different way to be usable for the study?



## INCREASING THE RELIABILITY OF DATA

Because research studies may require a higher level of reliability than routine monitoring, a research team collecting new data for a study may want to implement additional procedures to monitor and improve reliability.

Procedures could include the following:

- Train a group of teachers or administrators to code WBL activities in the same way. Include exercises in which the same activities are coded by all participants. After identifying any types of activities that the participants coded differently, discuss the protocols and definitions for coding and reach consensus on how such cases will be coded in the future.
- Document the definitions and protocols for data collection, including examples to help data collectors make decisions about gray areas.
- Calculate inter-rater reliability statistics, such as Kappa, to assess the degree to which data collectors are coding data the same way. These statistics can be used to identify schools or programs that may need additional training or monitoring to improve consistency across data collectors.
- Compare coding of WBL activities from one semester or year to the next to check that data collectors are not changing the way they code a particular activity over time (known as “rater drift”). Although such changes may occur for practical reasons that are beneficial for a district’s monitoring purposes, these changes can undermine the reliability of data used in research.

See [Create Systems to Check and Maintain Data Quality](#) for examples of common threats to the reliability and validity of WBL data. Ask district partners about these issues so that you are aware of limitations in available data. The section also suggests strategies that researchers and district partners can implement to increase reliability.

## IDENTIFYING SOURCES OF MISSING DATA

WBL data are prone to be missing in systematic ways that can undermine your ability to draw valid inferences about all students and programs. For example:

- Does the data system capture WBL activities managed outside the school itself, such as a state or local internship program?
- Does some WBL take place outside school hours? During the summer? Are data on such activities being captured consistently?
- Are all CTE programs, grade levels, and schools in your sample reporting data consistently?

Talk with program administrators so that you understand sources of any systematic missing data, the implications of missing data for inferences you can draw, and options for gathering more complete data.

## ANALYZING DATA

As detailed in [Use the Data](#), work with district partners to determine how best to report out findings so that the results are meaningful and useful to stakeholders. Here are some questions to explore with partners that may help align your reporting of findings with their needs:

- Research studies are often published on a longer timeline than practitioners need for making decisions and improving programs. Can you share some preliminary findings with some of your stakeholders earlier in the process? What are the critical time points when the information would be valuable—for example, when are they making budget decisions, or deciding whether to continue a particular program?
- WBL participation data are complicated and varied. What are meaningful ways to summarize



these data for stakeholders? For example: Are they interested in how many students reach a particular minimum number of hours of WBL? Or would they rather understand how many students access any WBL activities at all? Are high-level categories of WBL like exploration and preparation useful for them, or are the more fine-grained activity types of greater interest?

Additional research is needed to increase the body of evidence about WBL, how it affects student outcomes, approaches that work better than others, what kinds of WBL programs work best in which contexts and for which students, and many other important questions. Working with educators and administrators to gather and analyze high-quality data on WBL is well worth the effort.





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