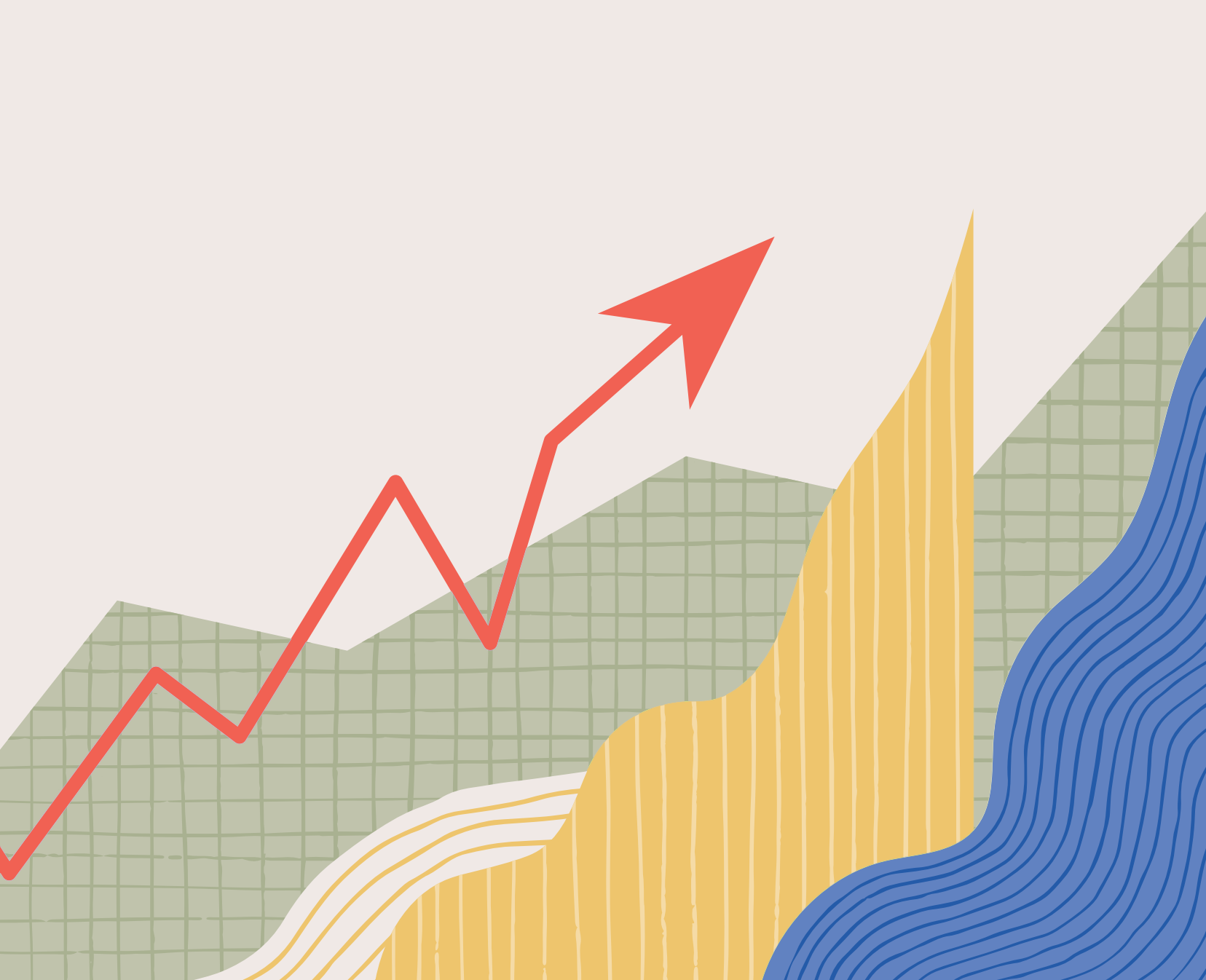# INNOVATION THROUGH DATA:

TRACKING AND MEASURING WORK-BASED LEARNING

By Katherine Hughes, Bryan C. Hutchins, Katherine A. Shields, Kelly Reese & Edward C. Fletcher Jr.

Work-based learning (WBL), a continuum of student experiences that begins with career awareness activities in the early grades and progresses to more immersive experiences in workplace settings, is a core feature of high-quality career and technical education (CTE). In fact, WBL is one of the 12 elements in the *ACTE Quality CTE Program of Study Framework* (Imperatore & Hyslop, 2018). And states, community colleges, school districts, high schools and others invest significant resources in WBL. In addition, Perkins V designated WBL as one of three new secondary-level CTE quality indicators for state accountability purposes.

Despite this enthusiasm for WBL as a valuable part of CTE, there is little evidence tying WBL to student outcomes. Recent years have seen an increasing amount of positive evidence for the impact of CTE on student outcomes (Brunner et al., 2021; Edmunds et al., 2022). But the lack of data on WBL participation prevents us from understanding its contribution. The absence of research is not due to want of interest; rather, it can be attributed to the complex and varied nature of WBL experiences and the inherent difficulties in collecting systematic, high-quality data. 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.

The Institute of Education Sciences, U.S. Department of Education, funded the CTE Research Network in 2018 to expand the evidence base for CTE, with a focus on research that can show the causal impact of CTE on student outcomes.

This article presents research on promising practices and innovations in WBL data collection and use in six school districts, conducted by participants in the CTE Research Network. The Network supports and encourages causal studies of CTE. To evaluate the contribution of WBL to student outcomes, researchers need access to reliable, valid data that capture the nature and extent, and outcomes, of individual students' WBL experiences.

Such data have great value for practitioners in managing and improving their programs. We hope district leaders can use the examples presented here to drive local WBL implementation. These 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.

The six featured districts were selected based on the strength of their WBL data collection systems and procedures, as well as their representing a diverse set of approaches and settings. The research team conducted 24 interviews across the six districts, speaking with a variety of staff: those who designed the tracking system, collect and input data (e.g., CTE instructors, WBL coordinators), and monitor and manage the data collection (e.g., district data managers), as well as data users (e.g., district CTE directors, school leaders, and local industry partners).

The interviews covered topics such as:

- Platform design
- Data elements collected
- Staff involvement, training and buy-in
- Needed resources
- Use and sharing of data

Data platforms and systems

The districts used different electronic systems to capture a range of WBL data, including off-the-shelf packages designed for WBL, custom systems, and Google Sheets. Only one district integrates their WBL data fully with their main student information systems, although they all collect student identifiers in the WBL system and can link datasets when needed.

- **Appoquinimink School District in Delaware** uses The Agricultural Experience Tracker (AET for CTE) to centralize tracking of participation, hours and skill gains. The district had used the AET database for its Agriculture, Food, and Natural Resources pathways for many years and began to implement the system for all students in fall 2022.
- **Collier County School District in Florida** implemented a WBL data collection system through its NAF career academies. The NAF WBL Participation Tracker and Reflection Form allow teachers and other staff to monitor and reflect on overall types and intensity of WBL participation, including student reflections.
- **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.
- **Lowndes County Schools in Georgia** developed a digital system of free or low-cost tools, primarily through Google tools, to manage all aspects of WBL. This includes applications, enrollment, placements, hours worked, wages and earned credentials.
- **Muskego-Norway School District in Wisconsin** developed its WBL data collection system using Qualtrics, an online survey and analysis platform that is managed by the WBL coordinator.
- **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.

Featured practices

The profiled districts track many different data elements on students' participation in WBL. They categorize the type of WBL experience in which the student engages across the continuum. Districts also document, for example, the dates and hours that students participate, the associated career cluster, the employer and their company, and other elements.

WBL experience types include:
- Career awareness (e.g., guest speakers, career fairs)
- Exploration (e.g., job shadows, informational interviews)
- Preparation (e.g., industry-skill-related projects and brief internships)
- Immersive work participation (e.g., paid, longer duration internships; apprenticeships; student enterprises; or clinical experiences)

One key practice is preserving a longitudinal record of student experiences over time. The districts capture individual student-level information about WBL participation over time to build a profile of student experiences as they evolve through high school. Districts also may register students' career interests — pulled from surveys and inventories or through direct capture — to align opportunities to those interests and track how they may change.

When talking about student outcomes from WBL, practitioners often discuss the high value of employability skills. WBL experiences are designed to develop these skills, and they are a promising place to look at short-term outcomes for research purposes. These skills, however, have been difficult to measure and document in a systematic way.

The districts also track some student outcomes related to WBL participation; these tend to entail employer or student self-reports on skills developed through internships and other experiences. For example, in Appoquinimink, students use the AET platform to indicate specific technical or career readiness skills that they gain from a given WBL experience. In the platform, students select from a set of technical skills keyed to sector standards, write an explanation of how they have demonstrated skill acquisition, and upload artifacts. In Collier and Fresno, employers complete online evaluation forms for some WBL experiences to provide feedback on skills that the students have developed. In Lowndes, WBL students follow a customized training plan developed by the employer and WBL coordinator. This includes a tailored list of technical tasks unique to the placement and the employer.

The importance of staff resources

All six districts employ at least one full-time WBL coordinator. In addition to their primary role of developing and implementing the WBL programs, these staff members allocate some of their time to data-related tasks, such as learning how to use the technology; training teachers, students or employers; generating reports from data systems; and checking data entered by students or other users. Larger districts have a WBL coordinator responsible for each high school, and some have district-level coordinators to provide additional support for students and staff. These districts emphasize the need for such roles to take the data entry burden from teachers and bring consistency to the data. Some districts also rely on a data manager and/or analyst to support data entry and run reports for educators and administrators.

Balancing data system access with quality assurance

None of the described practices will generate usable data unless district procedures ensure data consistency and accuracy. Districts vary in the ways they approach monitoring data quality. On the entry side, some districts place greater restrictions on who may enter data to better ensure consistency and minimize errors. In other districts, multiple users are allowed to enter data — including teachers, students, employers, school-level coordinators and district staff — to reduce burden on any one group and obtain data from the firsthand source. In both approaches, districts had formal or informal systems in place to monitor quality. For example, districts that allowed multiple points of entry often implemented a verification process that allows for cross-checking.

Using the data

In the profiled districts, staff actively used their WBL data and found it valuable for planning, communicating the value of WBL, recruiting industry partners, improving programs, and monitoring progress toward goals for access and equity. Interviewees described tracking WBL participation data to uncover inequities in WBL participation and strengthen inclusive recruitment and support practices. Staff also reported using participation data to advocate for resources and engagement, including requests for certain types of WBL experiences with employer partners. Districts reported using the data from their systems with CTE program advisory boards and local workforce boards to ensure the right employers are matched with students with interest in certain careers.

Conclusion

The profiled districts do important work to drive innovation in WBL data collection systems. These districts demonstrate that it is possible to collect a wide variety of student-level WBL data that capture the detail and progression of student experiences. These districts follow a variety of approaches — shaped by local needs, available resources, stakeholder engagement and data privacy concerns — that show a diversity of useful practices. Other districts can draw from these examples as they develop and pilot their own systems

and practices. A fuller data infrastructure will be a boon to researchers trying to measure the value of WBL on its own and as a component of CTE programs of study. Research can then inform improvements in WBL programming. ■

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