Using Student Achievement Data to Support Instructional Decision Making

Recommendation 1
Make data part of an ongoing cycle of instructional improvement.

Recommendation 2
Teach students to examine their own data and set learning goals.

Recommendation 3
Establish a clear vision for schoolwide data use.

Recommendation 4
Provide supports that foster a data-driven culture within the school.

Recommendation 5
Develop and maintain a districtwide data system.

This document provides a summary of recommendations from the WWC Using Student Achievement Data to Support Instructional Decision Making Practice Guide (Hamilton et al., 2009). *Make data part of an ongoing cycle of instructional improvement* is a classroom level recommendation that works in conjunction with the other recommendations in this series.

Recommendation 1

Make data part of an ongoing cycle of instructional improvement.

Teachers should adopt a systematic process for using data to inform instructional decisions and improve their ability to meet students' learning needs. The process of using data to improve instruction is cyclical, and data use cycles typically include the following three steps (see Figure 1). Although the steps are sequential, teachers can start cycles at any step. Step one of a data use cycle involves collecting and preparing data from a variety of relevant sources, including annual, interim, and classroom assessments. After preparing data for examination, teachers should analyze and interpret the data and develop hypotheses about factors contributing to students' performance and the specific actions they can take to meet students' needs. Teachers then should test these hypotheses by implementing changes to their instructional practice and collect data to determine if the instructional changes have the desired impact on student outcomes.

Figure 1. Data use cycle (Hamilton et al., 2009)
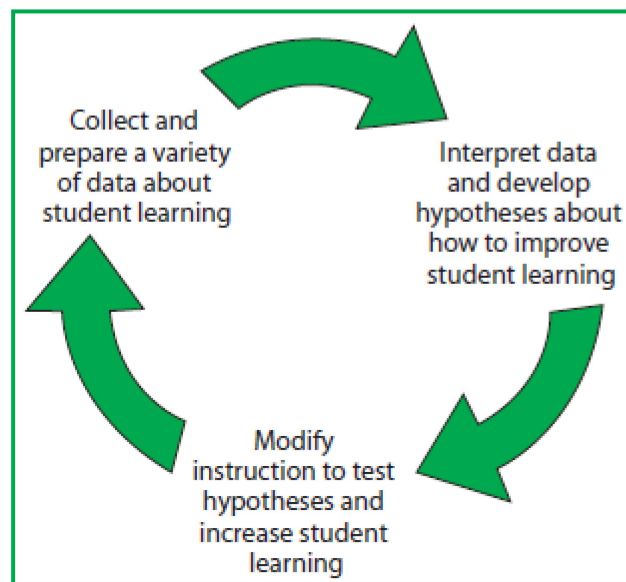
Strategy 1

Collect and prepare a variety of data about student learning.

SC Teaching Standards: INST.AF.4; PLAN.A.2; PLAN.A.3

To develop a comprehensive understanding of student learning needs, teachers should collect data from diverse sources, including state, district, school assessments, and curriculum-based assessments, as well as classroom-based assessment data from tests and projects. By using multiple data types, teachers can obtain a balanced view of student achievement and avoid relying solely on high-stakes tests, which may not provide timely and actionable data. While statewide assessments can reveal broad strengths and weaknesses, they are often administered months before the new school year begins, making it necessary for teachers to supplement these with more current data. This variety enables teachers to set relevant goals and identify specific areas where students need additional support.

In addition to annual assessments, interim assessments conducted periodically throughout the year offer teachers timely data to evaluate the effectiveness of instruction and track student progress. For example, a districtwide interim assessment can help teachers determine if students struggling with specific skills, such as converting fractions to decimals, show improvement following targeted interventions. By collecting and preparing interim data, teachers can adjust their strategies and monitor student growth within the current school year.

Classroom-level data, such as unit tests, projects, and homework, provide immediate feedback on student learning and offer rich insights that complement standardized assessments. These data sources allow teachers to analyze students' specific skills in-depth, such as writing responses in literature, and to identify areas needing additional guidance. While classroom data can vary widely between classes, collaborative analysis of student work can highlight differences in expectations and content coverage, enabling teachers to align their instructional practices. By organizing these diverse data sources in aggregate forms, teachers can recognize patterns in student performance, helping them make informed instructional decisions that address students' specific learning needs.

Example

A seventh-grade English teacher uses multiple data sources to gain a well-rounded understanding of her students' learning needs. As the school year begins, she reviews state assessment data from the previous year to identify broad trends, noting that several students struggled with reading comprehension.

Recognizing that this data may not fully reflect her students' current skills, she supplements it with results from the district's interim assessments, which are conducted quarterly. After the first interim assessment, Ms. Rivera observes that comprehension issues persist in certain students, particularly in identifying main ideas and supporting details.

To dig deeper, the teacher collects additional data from classroom-level sources, such as students' reading journals, quizzes, and a recent project where students analyzed short stories. She notices specific patterns, like difficulties in connecting textual evidence to their interpretations. During a team meeting, she shares her findings and collaborates with other teachers to identify strategies that target these specific comprehension skills. By using a range of data sources, Ms. Rivera not only gains a comprehensive view of her students' needs but also ensures her instructional adjustments are timely and focused, helping her support each student's progress effectively throughout the school year.

Strategy 2

Interpret data and develop hypotheses about how to improve student learning.

SC Teaching Standards: INST.AF.4

Teachers should interpret the data they've gathered, either independently or in teams, to identify schoolwide, classwide, and/or individual student strengths and weaknesses. By identifying trends, teachers can adjust instructional time, strategies, and resources to focus on the most critical content and learning needs. For individual students, teachers can tailor assignments and feedback to leverage strengths and address areas needing growth. Using data in this way ensures that instruction is responsive to each student's unique needs.

A critical part of data interpretation is "triangulation," or using multiple data sources to verify and deepen insights. By examining evidence from various assessments—such as annual state tests, district interim tests, and classroom assessments—teachers can gain a clearer picture of student learning needs. Consistent findings across data sources build confidence in instructional decisions, while conflicting results encourage teachers to investigate further. For example, if state and interim assessments both indicate that students struggle with main idea identification, teachers can be confident in focusing on this skill. If, however, one source shows proficiency and another shows difficulty, they may examine the assessments to clarify the discrepancy, perhaps revealing differences in question format or content focus.

Finally, teachers should collaborate with grade-level or subject-area teams to interpret data. Collaborative analysis allows teachers to share effective practices and develop consistent expectations for student performance. By working together, they can generate hypotheses on how instructional adjustments might improve specific skill areas, test these ideas with future assessments, and refine strategies based on the results. This team-based approach not only fosters a shared understanding of student needs across the school but also builds a support system for addressing those needs in a coordinated, consistent manner.

Example

A middle school science teacher begins the year by analyzing data from state and district assessments to identify his students' general science comprehension strengths and weaknesses. He notices that many students struggle with interpreting scientific data tables and graphs. To verify this trend, he reviews scores from recent classroom quizzes and a lab project focused on data interpretation, confirming that students have difficulty with this skill across multiple data sources.

Using this information, the teacher formulates a hypothesis: providing targeted practice in interpreting scientific data will improve his students' performance. He decides to incorporate more data analysis activities into his lessons and invites other science teachers to discuss effective strategies during their weekly department meeting. Together, they develop a shared approach for teaching data interpretation and plan to compare results after a month. Through this process, the teacher not only tailors his instruction to address his students' specific needs but also contributes to a collaborative effort to strengthen data interpretation skills schoolwide.

Strategy 3

Modify instruction to test hypotheses and increase student learning.

SC Teaching Standards: INST.AF.4; PLAN.IP.1; PROF.RT

Once teachers have formed hypotheses about their students' learning needs, they should test these by implementing instructional changes aimed at improving student achievement. These changes may include allocating additional time to challenging topics, restructuring the curriculum to prioritize essential skills, grouping students for targeted support, or experimenting with new teaching strategies for complex concepts. In cases where substantial changes are made, such as reorganizing the curriculum's scope and sequence, teachers might benefit from discussing their approach with colleagues or seeking input from school or district leaders. This collaboration helps ensure that instructional changes are aligned with broader curricular expectations and benefit from collective expertise.

The scale of an instructional change impacts the time required for implementation. Smaller adjustments, like a specific lesson modification, may be completed relatively quickly, whereas larger interventions, such as introducing collaborative learning techniques, may take longer as teachers guide students through new classroom routines. As they test their hypotheses and modify instruction, teachers should take notes on how students respond and the effectiveness of their instructional approach, which can inform future practice and provide insights to share with colleagues.

To evaluate the impact of their interventions, teachers should gather new data on student learning, using classroom-level work or interim assessments to assess progress. By triangulating data from multiple sources, they can judge whether the instructional change led to improvement. Depending on the results, teachers may choose to continue with the new approach in its current form, modify or extend the approach, or try a different approach altogether. Recognizing that some interventions require time to show results, teachers are encouraged to give their efforts and students adequate time to adapt before determining if an intervention is effective.

Example

As an eighth-grade math teacher reviewed recent assessment data, she determined that her students struggled with solving multi-step equations. Based on this finding, she hypothesized that dedicating additional class time to guided practice on this topic would improve her students' understanding. To test this, the teacher restructured her lesson plans to allocate more time to multi-step equations, incorporating small-group activities and peer teaching strategies to reinforce the concept.

As she implemented these changes, the teacher took notes on how students responded to the modified instruction and observed their engagement levels during the activities. After two weeks, she collected new data through a short quiz and reviewed students' homework to assess their progress. She noticed some improvement but also identified that certain students needed further support. She decided to continue the approach while also consulting with a colleague who suggested additional scaffolding techniques. Through this iterative process, the teacher was able to test her hypothesis and collect data that allowed her to refine her approach.

Potential Roadblock 1

Teachers have so much data that they are not sure where they should focus their attention in order to raise student achievement.

Suggested Approach. Teachers can refine the data they need to address a specific issue by asking focused questions and clearly identifying which data will provide the answers. Administrators can support this process by establishing schoolwide goals that clarify the types of data teachers should prioritize and by asking how classroom practices align with these goals. For example, if administrators emphasize improving reading achievement, teachers might focus on data from state, interim, and classroom assessments related to students' reading skills. By triangulating data from multiple sources, teachers can then form hypotheses about instructional adjustments that are likely to enhance student achievement.

Potential Roadblock 2

Some teachers work in a grade level or subject area (such as early elementary and advanced high school grades) or teach certain subjects (such as social studies, music, science, or physical education) for which student achievement data are not readily available.

Suggested Approach. A key aspect of collaborative data use is establishing shared learning goals and expectations across classrooms. District or school administrators can support this by implementing a schoolwide interim assessment aligned with state standards, enabling teachers to compare results across classrooms. Alternatively, teachers can collaborate to create their own interim assessments.

For example, some schools develop writing prompts or other assessments administered schoolwide and scored with a common rubric. While these in-house assessments may not have the same validity as commercially developed tests, they still provide a common measure for teachers to assess students and share results. Likewise, teachers in supplemental subjects like art, music, and physical education can design performance assessments that align with schoolwide goals for student achievement.

Potential Roadblock 3

Some schools or districts encourage staff to use data to identify students scoring just below proficiency on state tests and to focus disproportionate effort on helping them reach proficiency.

Suggested Approach. In some schools, teachers and principals report allocating extra resources to "bubble kids"—students who score just below the proficiency threshold on high-stakes assessments. Take caution with this approach, as results from a single test are inherently imprecise and should always be interpreted alongside other data sources. Focusing too narrowly on students near the proficiency cut-off may result in an uneven distribution of instructional resources, potentially overlooking students who score further from the cut-off but who may have equally significant or greater instructional needs. Rather than prioritizing only those just below proficiency, educators should use data from multiple sources to address the needs of all students, ensuring that resources are allocated to support those with the greatest needs wherever possible.

Potential Roadblock 4

Some district leaders suggest that schools assign students to courses based solely on proficiency levels on the state accountability test.

Suggested Approach. Tests should only be used for the purposes they have been validated for, and most existing assessments were not designed to inform course placement decisions. Furthermore, professional standards for test score use in educational settings emphasize that a single score should not determine high-stakes outcomes for individuals. Instead, educators and administrators should incorporate multiple data sources when assigning students to courses or programs. While proficiency on a state accountability test can signal a student's readiness or need for a particular instructional program, other factors, such as previous performance in related courses, should also be considered. Additionally, placement decisions should be re-evaluated when new data becomes available.

Additional Resources

[Using Student Achievement Data to Support Instructional Decision Making](#) (Hamilton et al., 2009)
- **Recommendation 1**: Make data part of an ongoing cycle of instructional improvement.
    - Use formative feedback loops to refine instruction.
- **Recommendation 2**: Teach students to examine their own data and set learning goals.
    - Provide structured goal-setting templates.
    - Incorporate student reflection on progress.
    - Align goals with broader state standards and long-term outcomes.

[Instructional Improvement Cycle: A Teacher's Toolkit for Collecting and Analyzing Data on Instructional Strategies](#) (Cherasaro et al., 2015)

This toolkit, developed by Regional Educational Laboratory (REL) Central in collaboration with York Public Schools in Nebraska, provides a process and tools to help teachers use data from their classroom assessments to evaluate promising practices. The toolkit provides teachers with guidance on how to deliberately apply and study one classroom strategy over the course of one unit and systematically document and compare results to consider the effects of a given instructional strategy on student learning.

[The Practitioner Data Use Workshop Toolkit](#) (Bocala et al., 2014)

The Practitioner Data Use Workshop Toolkit from REL Northeast & Islands is designed to help practitioners systematically and accurately use data to inform their teaching practice. The toolkit includes an agenda, slide deck, participant workbook, and facilitator's guide and covers the following topics: developing data literacy, engaging in a cycle of inquiry, accessing and analyzing available data, identifying and creating student goals, and using data to make action plans about instructional decisions.

References

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