



# Data-Based Decision Making and Early Warning Systems in High Schools

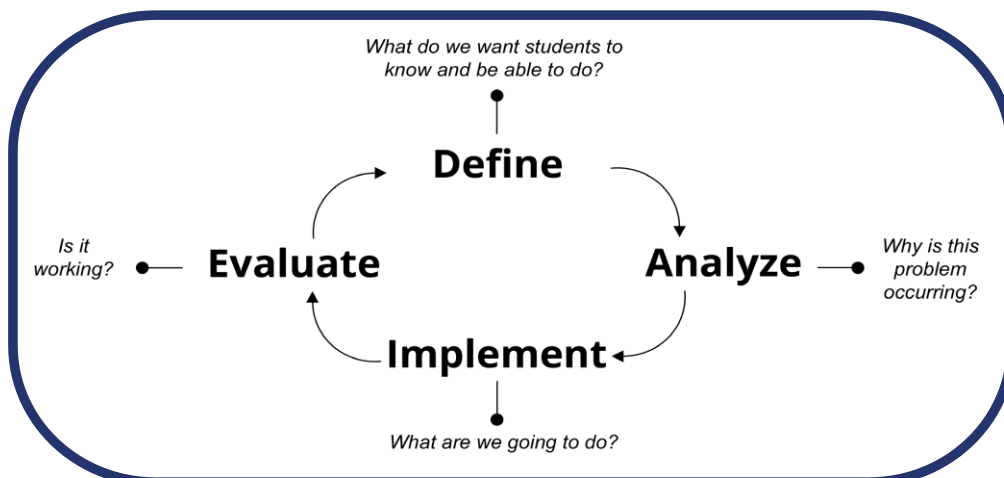
Implementation of Response to Instruction and Intervention for Academics and Behavior (RTI<sup>2</sup>-A + RTI<sup>2</sup>-B) requires data-based decision making (DBDM) teams to engage in a proactive problem-solving process for **all** students at **every** grade level. Early warning system (EWS) data should be used with other data sources to proactively identify risk factors and address student needs throughout their time in high school. This resource outlines some of the key points in this process.

## DBDM Team Structure

School personnel who have in-depth knowledge of a student and/or the factors that can impact their performance are important members of DBDM teams. Team members “can include the principal or his/her designee, classroom teachers, interventionists, literacy/numeracy coaches, school psychologists, school counselors, English as a Second Language (ESL) teachers, special education teachers, and other staff as necessary” (Tennessee Department of Education, 2023). Team members should seek out and incorporate others’ perspectives, as well. Caretakers, family members, students, and professionals who play a role in supporting the student (e.g., outside counselors, social workers, mentors, tutors, etc.) offer unique insights into student performance that can dramatically improve a team’s understanding of the student’s needs. When a diverse range of individuals actively participate on DBDM teams, a variety of ideas can be explored which ultimately increases accuracy at all stages of the problem-solving process (see Figure 1). Because of this, DBDM meetings should be scheduled at times that allow most team members to participate. Additional strategies, such as pre-meetings, virtual meetings, communication logs etc., should be used to ensure that the perspectives of all individuals are included in the problem-solving process. More information about Collaborative Teaming can be found on Tennessee Tiered Supports Center’s (TN TSC) [website](http://tennesseetsc.org).

**Figure 1**

*The 4-Step Problem Solving Process Used by DBDM Teams*



## Problem-Solving at Every Grade Level

Effective support provision requires DBDM teams to use EWS and other data to address student needs in ways that maximize their opportunities throughout high school and beyond. The four-step problem-solving process provides structure to team discussions (see [Example 1a](#)) and can help teams avoid the tendency to jump straight to intervention after a limited review of readily available data (see [Non-Example 1b](#)). Teams that engage in a thorough definition and analysis of student needs will be able to determine if supports should help a student acquire pre-requisite skills and knowledge, or whether they should be focused on helping a student apply those skills to grade-level content. High school teams must develop strategies for both scenarios, and the first step in this process is to consider a variety of data sources to specifically define the problem.

### *Example 1a: Proactive Problem Definition leading to Thoughtful Data Analysis*

#### **Proactive use of EWS Data**

During the first semester data review for 11th grade students, the DBDM team sees that one student's grade point average (GPA) is nearing the point where they would become off-track for graduation.

#### **Considering Additional Data Sources**

A deeper look at the student's data reveals that although the student received Tier II reading interventions from 4th to 8th grade, an intervention course was not *automatically* added to their high school schedule. The student hasn't failed any core subjects in high school, but they have had steadily decreasing performance in ELA since their 9th grade year. A brief check-in with the student's ELA and social studies teachers finds that although the student completes assignments, they're often the last one to turn them in.

#### **Team Discussion of Standards-Based vs. Skill-Based Difficulties**

Team members suspect that this student is likely to have acquired the foundational academic knowledge and skills to participate in grade-level instruction but may need additional support to increase fluency with these skills and/or apply them to grade-level content. Before making decisions about interventions, the team schedules diagnostic and survey-level assessments, in-class observations and follow-up interviews with the student and teachers to confirm their ideas.

### *Non-Example 1b: Reactive Problem Definition and Jump to Intervention*

#### **Reactive use of EWS Data**

During the first semester data review, the DBDM team sees that one student's GPA indicates they are off-track for graduation.

#### **Limited Data Drill-Down**

A closer look at the student's data reveals that the student has a history of Tier II reading intervention every year since 4th grade and nearly failed their last ELA course.

#### **Jump to Intervention**

Team members place the student in a skills-based intervention course that focuses on foundational reading skills.



## Step 1: Define

When defining a problem, DBDM teams work to develop a statement that specifically describes, in measurable terms, the difference between what is expected and what is observed. High-quality problem definition statements focus the team's energy on the most relevant areas of need for a student, making the rest of the problem-solving process more efficient and better tailored to the student's unique circumstances. Teams will develop one specific problem definition statement to focus on throughout the problem-solving process. The statement should include a description of the conditions taking place when the problem is observed, a description of the academic or non-academic behavior of concern, and the typical or expected level of performance for that behavior (see [Example 2a](#) and [Non-Example 2b](#)).

## Step 1 Guiding Questions

- What is the student expected to know and do?
- How is the student performing relative to those expectations?
- How does this student's performance align with school-level outcomes? Other students in their classroom? Similar peers?
- What relationships exist across this student's comprehensive data profile?
- What else does the team need to know to accurately define the problem experienced by this student?

### Example 2a:

#### *Specific Problem Definition Statement*

Ricky had an unexcused absence on six of the seven days a math test was scheduled, and had to take his make-up test in class while other students worked on group projects. Ricky received a "D" on each of the tests, which put him at risk of failing the course. All other students in the class had no more than two unexcused absences on test days and earned a C or higher on their make-up tests.

### Non-Example 2b:

#### *General Problem Definition Statement*

Ricky had six absences and almost failed his core math class last semester.

## Multiple Data Sources

High schools' EWS provide a good starting point for problem definition. However, common EWS indicators such as frequent absences, suspensions, and core course failures serve as flags for risk but may not provide enough information for teams to obtain a clear understanding of a student's needs, and they may not be timely enough to allow DBDM teams to support students proactively.

For example, course failures flag concern, but do little to help a team understand what factors may have contributed to a student's failing grade, making problem analysis and intervention planning more challenging. Teams that evaluate course performance with a simple "Pass/Fail" also lose the opportunity to intervene with a student before they fail a course, essentially contributing to a risk factor that could have been avoided. Similarly, suspension data, when used as the only assessment of a student's behavioral risk, is another indicator that provides little information about the student's needs and misses opportunities to intervene in ways that could prevent the suspension from taking place. Considering **multiple data sources** that include **shorter-term indicators of progress** (e.g., quarterly and semester grades, office discipline referrals, [student work analyses](#), missing assignments, etc.) and **other qualitative and quantitative data sources** (e.g., diagnostic and survey-level assessments, observations, end-of-unit tests, historical evaluations, teacher and student interviews, etc.) can help teams develop a deeper understanding of the potential causes of a student's problem (see [Example 3](#)).

*Example 3: Use of Multiple Data Sources*

Ricky had an unexcused absence on six of the seven days a math test was scheduled, and had to take his make-up test in class while other students worked on group projects. Ricky received a “D” on each of the tests, which put him at risk of failing the course. All other students in the class had no more than two unexcused absences on test days and earned a C or higher on their make-up tests.

The DBDM team determined that all of Ricky’s unexcused absences were confined to exam days. His math teacher shared that he actively participates in class and his performance on daily assignments suggested that he had at least an average level of proficiency on the different concepts addressed in each unit. The teacher also mentioned that Ricky seemed worried on days leading up to scheduled tests.

Ricky’s mother shared that Ricky seemed to enjoy statistics but complained about having so many tests. She watched Ricky complete his homework without any trouble, but when a test was coming up Ricky clearly became stressed and expressed concern that he wouldn’t get a good grade. The team’s communications lead asked Ricky’s mom if she thought Ricky might suffer from test anxiety, and the mom said she was sure of it but didn’t know what to do to help her child.

## Regular Data Review

Proactively identifying student needs requires DBDM teams to engage in regular reviews of student data for each grade level **throughout** the school year. Beginning with a comprehensive review during pre-planning, teams should review student information whenever new data are available (e.g., after each quarter, following the administration of universal screening tools, as a follow-up to schoolwide behavior interventions, etc.). Developing a procedure for students whose data weren’t included during these windows is another important consideration, as it provides a way to proactively support students who transfer into the school and/or encounter new challenges mid-school year. Request for Assistance (RFA) forms completed by teachers, students and/or family members can be an important data source at this stage of the problem-solving process.

**The problem-solving process helps schools provide proactive support that considers the complex relationships impacting student performance.**

## Flexible Risk Thresholds

DBDM teams **should not use** rigid guidelines or decision rules when identifying unmet needs for students. Every student’s data profile is unique, and there is no single data source that captures the complex relationships impacting student performance. In addition, there may be little or no functional difference between a student whose score falls within proficiency levels and a student who scores just below those levels (e.g., a student who scores at the 37th percentile on a behavioral screener and a student who scores at the 34th percentile on the same screener). DBDM teams should consider scores along with other data sources to accurately define a student’s needs.

## System-Level Patterns

While reviewing student data, DBDM teams may notice patterns of needs that are shared by multiple students. When many students share a common need, DBDM teams should consider whether Tier I supports could play a role in addressing those patterns. For example, if the number of students with unexcused absences showed

significant quarter-over-quarter increases, Tier I supports could be adapted to address the root cause(s) of the problem (i.e., adding instruction and motivational strategies for attendance, increasing active engagement in high-absence classes, etc.). The fidelity of Tier I should also be considered and addressed in these situations.



## Step 2: Analyze

The major goal of problem analysis is to thoroughly consider educationally relevant variables that may contribute to a student's defined problem. Problem analysis answers the question, "Why is this problem occurring?"

During problem analysis, DBDM teams use diagnostic, survey-level, student work, and other types of data to develop a comprehensive understanding of the student's unmet needs and confirm relevant root causes for the student's performance.

Figure 1 (next page) illustrates how a comprehensive data review can provide insight into the different needs of students whose initial data appear to be quite similar. In this example, subtle variations in the students' drill-down data led the DBDM team to investigate different underlying needs for each student.

One possible need for Student A included targeted instruction on a possible foundational skill deficit that may have gone unaddressed due to a lack of data. For Student B, possible needs included instruction on coping skills to address new stressors encountered by the student.

## Step 2 Guiding Questions

- To what degree does this **learner** have the pre-requisite knowledge and skills necessary to participate in Tier I instruction with their peers?
- To what extent do factors related to the **curriculum** play a role in this student's performance?

*Consider anchor texts' relevance for the student, number of access points, etc.*

- To what extent do factors related to **instructional** practices play a role in this student's performance?

*Consider fidelity to the core curriculum, utilization of access points and scaffolding strategies, use of effective questioning, etc.*

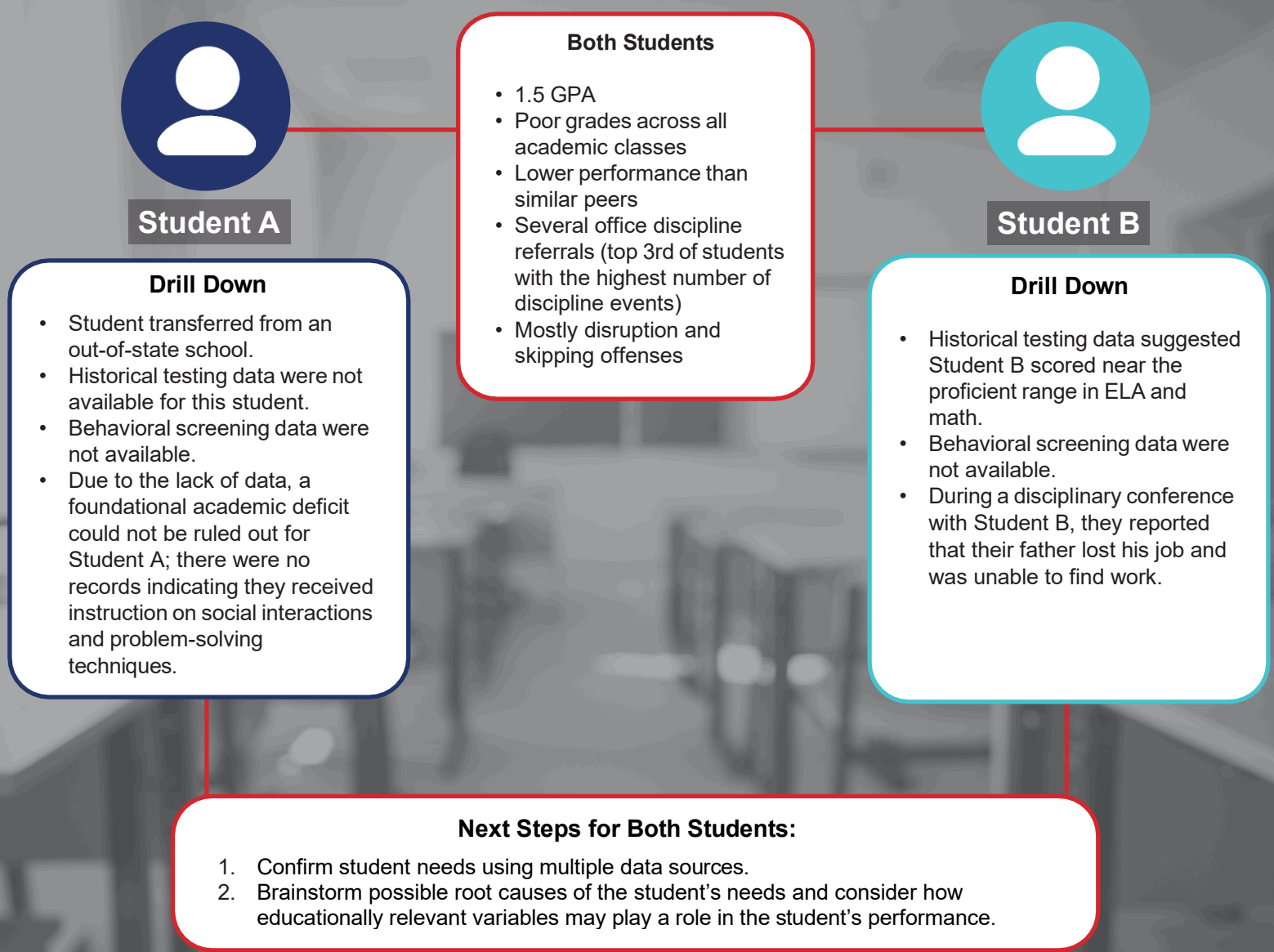
- To what extent do factors related to the **environment** play a role in this student's performance?

*Consider opportunities for relationship-building, behavior specific praise, school or classroom climate, etc.*

- To what degree do **policies, practices and resources** account for learner characteristics?
- What **other factors** could be preventing this student from demonstrating expectations?
- How do the factor(s) impacting this student relate to **system-level outcomes** and action plans?
- What **relationships** exist between the different factors identified by the team? Are there factors that suggest a common root cause?
- What **other information** does the team need to identify, understand and validate the causes of this student's defined problem?
- **Whose perspectives** are missing from the team's analysis?
- What **evidence** does the team have to support their conclusions?

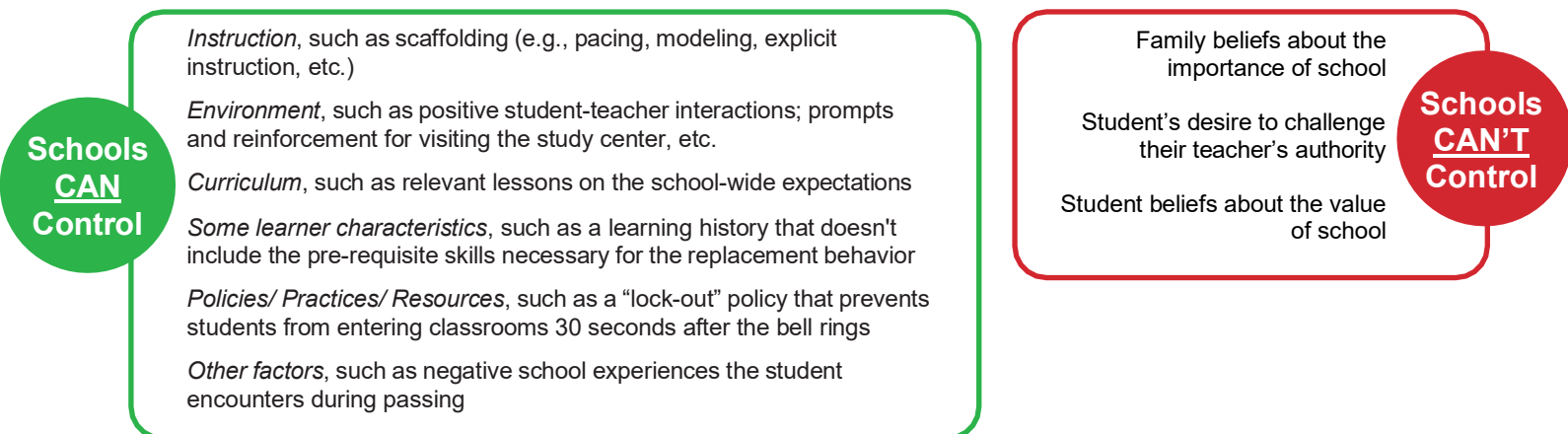


Figure 1: Data's Impact on Problem Analysis



Once a student's needs have been confirmed, teams will brainstorm educationally relevant variables (e.g., "root causes") that may have contributed to the development of each student's area of need. Educationally relevant variables include those that are a) under the school's control, and b) have a logical, research-based connection to the student's problem (see Figure 2 for examples).

Figure 2: A Sample of Research-Based Variables Schools can/cannot Control



Throughout problem analysis, teams must avoid the tendency to focus on perceived student deficits as the cause of a defined problem. Educationally relevant areas that can be examined for root causes are provided in the Guiding Questions for problem analysis (above). Example 4 (below) provides a limited demonstration of how the Guiding Questions may contribute to the identification of root causes for Student A.

At this stage of problem analysis, teacher team members can provide valuable insight by sharing the results of student work analyses, teacher-based assessments and anecdotal observations, while student team members can provide direct reports of their strengths, challenges and triggers. Content-area experts such as academic specialists, counselors, behavior specialists and others can be particularly helpful during this step of problem-solving, as well. These individuals' in-depth knowledge of the variables that impact the problem area can help teams think more deeply about potential causes, leading to more specific and accurate theories about the factors impacting student performance.

*Example 4: Exploration of Root Causes for Confirmed Student Needs*

Student A		
Confirmed Need	Sample of Guiding Questions	Possible Root Causes
A reading fluency deficit	<ul style="list-style-type: none"> <li>To what extent do factors related to the <b>curriculum</b> play a role in this student's performance?</li> <li>To what extent do factors related to our <b>instructional practices</b> play a role in this student's performance?</li> </ul>	<ul style="list-style-type: none"> <li>High Quality Instructional Materials (HQIM) were not used for Tier I instruction.</li> <li>Teachers may not provide enough scaffolding for this student (e.g., previewing assigned texts, which limits the student's opportunities to work towards greater fluency with grade-level content).</li> </ul>
School-appropriate social interactions	<ul style="list-style-type: none"> <li>To what extent do factors related to our <b>environment</b> play a role in this student's performance?</li> </ul>	<ul style="list-style-type: none"> <li>Our school doesn't provide consistent Tier I instruction on school-appropriate social skills</li> </ul>

After a team brainstorms a number of root causes, they must obtain evidence that supports their ideas. This helps to prevent individual misconceptions from influencing decisions about student needs and potential supports. In some cases, DBDM teams will need to collect additional evidence to confirm their ideas (e.g., additional survey-level assessment, direct observations, data that describes the motivation for the student's behavior, etc.). Only those ideas that have evidence – the “validated root causes” – are eligible to move forward in the problem-solving process (Step 3: Implement).



### Step 3 Guiding Questions

- Based on the data, which validated root cause will our team address first?
- What resources already exist that could help to address this root cause?
- What new actions could our team take to address this root cause, if needed?
- What do other key collaborators, including the student and their caretaker(s), suggest as potential actions to address the root cause? Which actions do key collaborators wish to prioritize?
- What does the Student Intervention Plan (SIP) need to include?
- What is the expected (short-term) outcome of our team's action, and how quickly would the action impact the root cause? When can the team expect to see change in the student's defined problem?
- How will our team monitor the short-term impact on the root cause? How will our team monitor the longer-term impact on the defined problem?
- How will our team monitor fidelity to this student's plan? How often will fidelity be measured?
- What resources are available to implement this plan? What resources are needed?
- Who will lead the implementation of this student's plan? Who will serve as a support or backup?

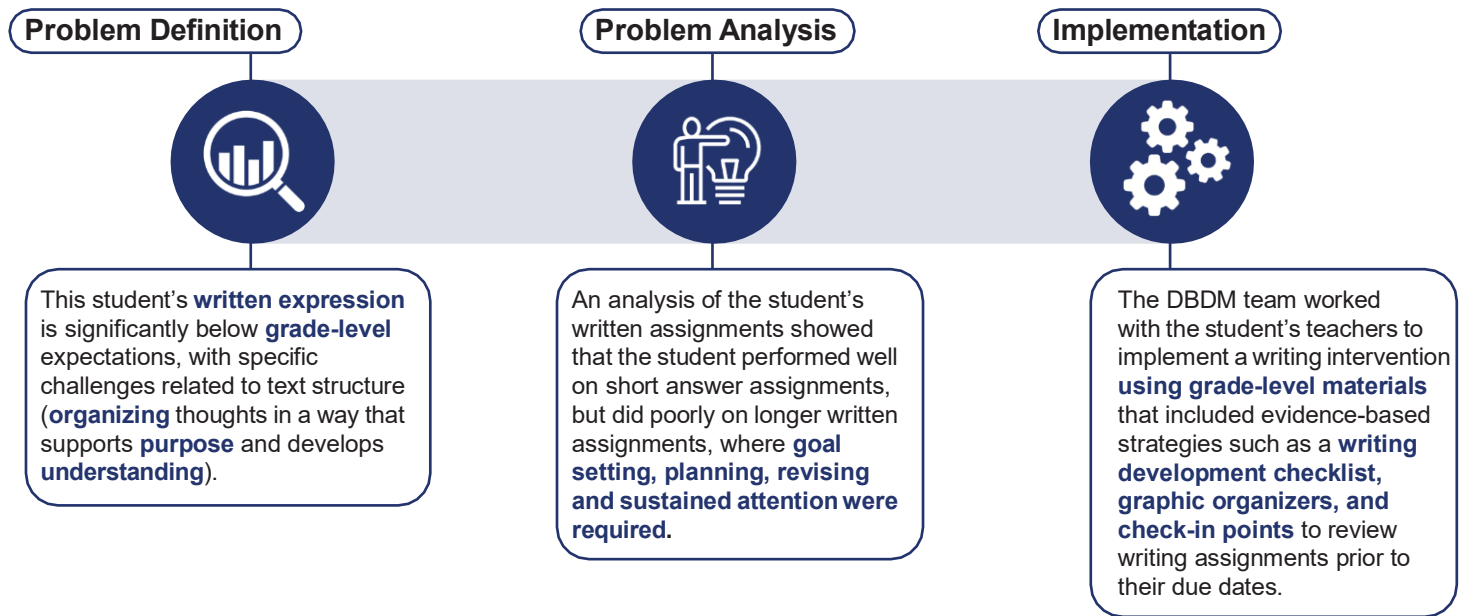
### Step 3: Implement

The major goals of the implement step are to select a validated root cause for intervention/action planning, decide how support will be provided, and determine how the team will evaluate the impact of the intervention to ensure student success. The Implement step of the problem-solving process answers the question, "How will our team address the problem?"

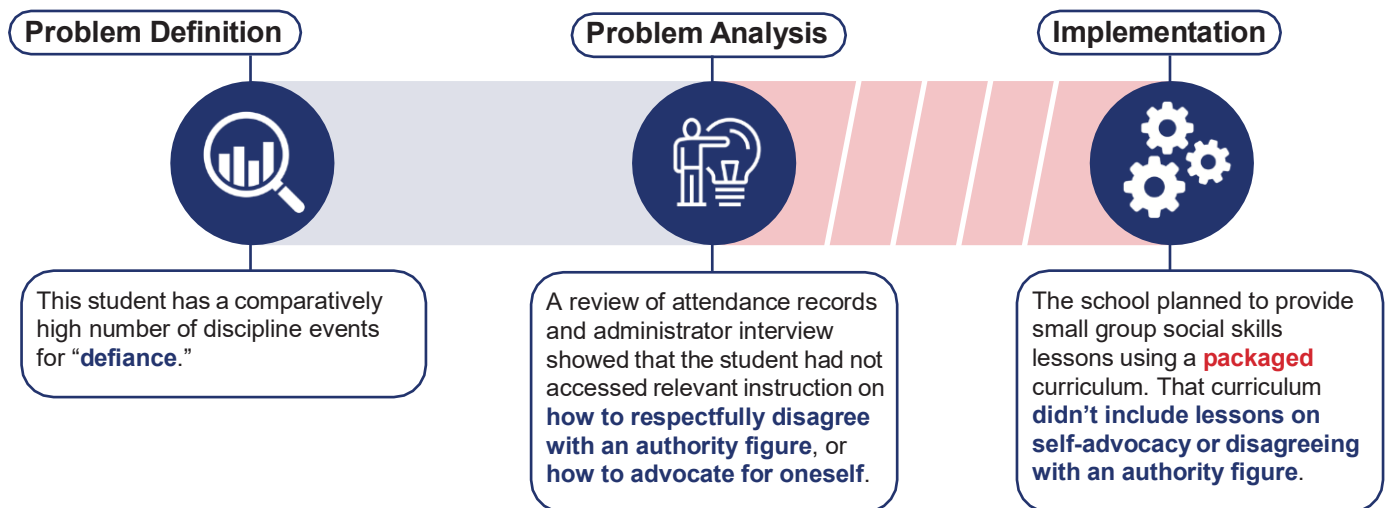
Teams may consider if Tier I strategies could be an appropriate way to address the root cause and defined problem for a student, particularly when the student shares a root cause with several other students. For example, a root cause for a student who has conflict resolution needs may be a lack of instruction on recognizing one's emotions – the student escalates to an aggressive interaction before they realize they are getting angry. If other students were found to have the same root cause, Tier I instruction and support on recognizing anger signals, responding to emotional triggers, etc., could benefit those students – as well as all other students, who would gain practice with an important life skill. In another example, there may be a student who is disruptive during class, and a root cause for that behavior might include an overstimulating classroom environment (many visuals, challenging seating arrangement, etc.). In this situation, addressing Tier I variables may be an important component of the student's support plan.

During this step of the problem-solving process, it's important to ensure a direct link between the defined problem, the validated analysis, and the resulting intervention. An example is provided below, with common elements highlighted in blue.





The following is a **non-example** of linking problem definition, analysis and implementation planning:



In this non-example, the link between problem analysis and implementation was broken because the **packaged** social skills instructional materials used by the school did not include explicit instruction on the key skills needed by the student. Had the school planned to supplement their existing program to add lessons on the necessary skills or sought out a different program that included those skills, the link between the first three steps of problem-solving would be preserved.

It is important to note that as part of linking the first three steps of the problem-solving process, **students whose performance is below grade-level standards should receive intervention that includes grade-level content**. This point is particularly relevant for students who receive supplemental or intensive instruction in a pull-out or separate setting.



During the implement step, DBDM teams consider how existing resources may be used to better support students who have standards-based needs. Numerous developmentally appropriate options exist for high schools, including the provision of academic and/or behavioral success centers, which students can access on an as-needed basis. Peer support in the form of tutoring, discussion groups or peer juries may be another viable option for some high-school students. [Modified and hybrid block schedules](#) offer numerous options schools can make available to help students access the specific supports they need.

Different block schedules can provide additional time in class, days in between classes so that students may prepare for the next day's content (i.e., "flipped instruction"), intensive blocks that permit students to

take more classes throughout the year, and common flex time that students may use to access different supports as needed. High schools also have the option of using course codes to provide interventions as an elective, but care should be taken with this option as it can limit students' access to a well-rounded high school experience.

An important point to note when planning student intervention is that targeted and intensive intervention is provided *in addition to* high-quality Tier I instruction. Access points and scaffolding provided as part of a teacher's high-quality instruction do not qualify as a Tier II or III intervention.



## Step 4: Evaluate

During the problem-solving process, the major goal of evaluation is to compare current progress monitoring data to short- and long-term benchmarks/goals to ensure the student is making adequate progress towards addressing their need. The evaluation step of the problem-solving process answers the question, “How successful were we in addressing the student’s needs?”

DBDM teams monitor intervention plans and meet to discuss progress on a regular basis (e.g., **at least monthly**). EWS data can be considered during evaluation, but as noted in Step 1 it may not be comprehensive or timely enough to provide useful information about student progress.

To be proactive, teams must ensure that every student is making adequate progress before valuable intervention time is lost. Taking time to set up progress and fidelity monitoring in Step 3 makes it possible for teams to have the correct data to make accurate decisions at every check-in point and help to ensure students reach their goals within the specified time frame. When student progress data demonstrate a slow, questionable or no response to the intervention, the DBDM team considers and responds to issues related to fidelity, measurement and intervention appropriateness.

Fidelity is most commonly thought of in terms of adherence and/or delivery quality, but the student’s exposure to the intervention and engagement with the intervention strategies are other important fidelity markers, as well.

Measurement issues that can impact a team’s decisions about student progress include:

- the accuracy of data collection,
- the degree to which the data reflect the student’s current performance,
- the degree to which the monitoring tools align with content taught during the intervention,

## Step 4 Guiding Questions

- What patterns do the data reveal?
- What do other data sources tell us? How are the results across data sources similar or different?
- Will short- and/or longer-term benchmarks and goals be met within the expected timeline?
- What feedback have key collaborators provided about the current intervention?
- When will we reconvene to discuss progress?
- whether the monitoring tools accurately measure the skills identified in the student’s area of need,
- whether the monitoring tool was sensitive to small changes in student performance, and
- whether the tool is capable of showing change for very low or very high performance.

Intervention appropriateness is yet another area to consider, including whether the intervention provided adequate opportunities to respond, whether the intervention was provided often enough and for an appropriate duration, whether the intervention was accurately focused on the student’s need and instructional level, and the degree to which the intervention provided explicit instruction on key features of the skill or knowledge targeted for development. Teams may also consider the degree to which behavioral and non-academic cognitive skills play a role in the student’s performance, if they haven’t already done so.

The four-step problem-solving process is designed to help teams avoid many of the issues that contribute to a less-than-ideal response to intervention. As problems increase in complexity or demonstrate resistance to change, higher levels of fidelity to the four-step problem solving process will help teams to uncover variables that lead to success.

**School teams may need to re-examine problem definition, analysis and implementation in order to provide adequate support to a student. The problem-solving cycle continues until the student experiences success.**



## Additional Resources for Data-Based Decision Making

[Response to Instruction and Intervention Manual](#)

[Data-Based Decision Making in RTI<sup>2</sup>: Screening, Identification, and Service of Students Training Part 1](#)

[Building Capacity for Collaborative Teaming Brief](#)

