Using the Problem-solving Process to Improve Tiered Support

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Introduction to Tiered Supports and Essential Components

The Response to Instruction and Intervention (RTI^2) tiered system of supports framework addresses the needs of all students through effective core instruction, targeted learning supports, and skills-based intervention. The goal is for all students to meet grade-level expectations grounded in high-quality instruction. The Response to Instruction and Intervention (RTI^2) tiered system of support framework ensures students have access to grade-level content and the greatest opportunity for academic success (Tennessee Department of Education, 2023).

There are four essential components of a tiered supports system.

Leadership

Assessment

Data-based Decision-making

Instruction and Intervention

Leadership – individuals who ensure that organizational structures, logistical supports, and resources are available to support the delivery of instruction and interventions.

Assessment – the collection of data from multiple sources for data-based decision making.

Data-based Decision-making – an ongoing process of analyzing data gathered through assessment to drive instructional decisions.

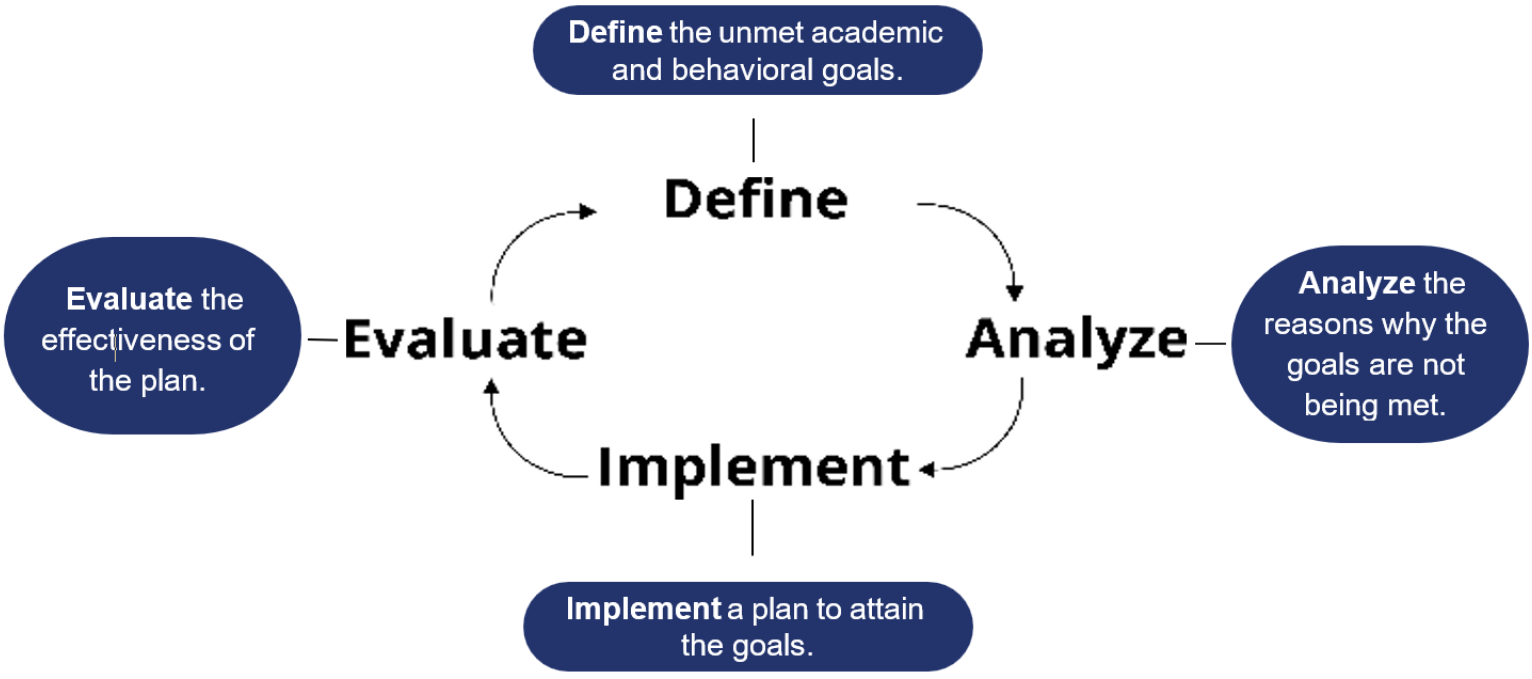
Instruction and Intervention – the continuum of support that ensures all learners can access and benefit from high-quality educational programming.

School leaders are obligated to implement tiered supports and ensure implementation is effective. Effective programs yield positive results such as the ones described below.

- Learning is accelerated.
- Core instruction and supports are effective, and fewer students are at risk over time.
- Decisions about who needs intervention are reliable and can be made quickly.
- There is cohesion between intervention practices and core instruction.
- Intervention success rates are high.
- System goals are defined.
- Decision-makers look at the effect of implementation and troubleshoot regularly (Vanderheyden, 2024).

Problem-solving Process

Effective school teams use the problem-solving process to make instructional decisions and adjust tiered supports programming to best meet their students' needs. The problem-solving process is a four-step process schools can use to guide data-based decision making (Tennessee Department of Education, 2023). School data teams use this process to determine why a student is struggling and help ensure interventions planned align with the student's needs. The steps of the problem-solving process are:



In addition to using problem-solving to guide intervention planning and evaluation for individual students, this process can also be used to improve tiered supports implementation broadly, for example across grade levels, content areas, or tiers. Using a systematic process, such as the problem-solving process, focused on broader implementation of tiered supports allows for a focus on continual improvement of systems, which benefits all students.

An Example of Using the Problem-solving Process at a Broader Level

Rolling Hills Elementary has been implementing tiered supports for over a decade to ensure the academic instruction and intervention provided there improves student outcomes. The Rolling Hills staff is committed to constantly improving their implementation to benefit students and families. As a result of their focus on constant improvement, the Rolling Hills staff undergoes regular professional development to refine their implementation of a tiered support framework. Recently, the leadership at Rolling Hills has focused on improving core instruction and intervention in math, as recent state assessment results revealed that the percentage of students performing at grade level has decreased in recent years.

When the school leadership team took a closer look at the state assessment data, they noticed diverging student performance. Students scoring at or above proficient grew year to year, while students scoring below proficient rarely caught back up. When examining the progress monitoring data of students in Tier II and III math interventions they noticed while students made progress, they still fell short of meeting their goals, especially in the 4th and 5th grades. These difficulties were also seen across multiple data sources. In fact, only 25% of 4th and 5th grade students in Tier II and III interventions were currently on track to meet their goals by the end of the school year. During an in-depth data analysis, the school leadership team examined last year's academic data and identified very few students transitioned out of math interventions into less intensive tiers of support, even after many weeks of interventions. Dr. Isaiah Lewis, the principal at Rolling Hills Elementary, spoke to the 4th and 5th grade-level teams during their weekly grade-level meetings regarding this challenge. The teachers shared they also see this as a

problem when they analyze student work and other assessment data and noted that the students in Tier II and III interventions are learning and making progress but never seem to catch up since the math content continues to advance. Isaiah also met with Mrs. Sydney Jackson, the lead math interventionist and instructional coach, to discuss this challenge. She shared that it can be hard to make progress, especially for students in interventions, since there can be many different prerequisite skills they haven't mastered and need to develop before they can advance in their learning enough to meet grade- level expectations. After examining multiple sources of data and speaking to teachers and interventionists, the school leadership team at Rolling Hills decided they needed a plan to improve the success of 4th and 5th grade students in Tier II and III math interventions. They decide to use the same problem-solving process they use to address student-specific needs to solve this broader problem.

First, the school leadership team knows they must define the problem. They complete this step using the progress monitoring data the school is already gathering. This data includes teacher observations during math discussions and independent work time, student work samples, curriculum-based measures such as math calculation and problem-solving probes, and data collected from the math interventionists. They define the problem as only 25% of 4th and 5th grade students in Tier II and III math interventions making adequate progress toward meeting their individual goals.

After the problem is defined, the school leadership team analyzes why the problem is occurring. They revisit data from both intervention and core instruction to fully investigate the root cause or reason behind the problem.

First, the team gathers information on the Tier II and III math intervention used, its implementation, and its match to students' needs. They find that the interventions are supported by research and implemented with fidelity. Team members review the instructional focus documents for fourth and fifth grades in mathematics to ensure the instruction supports targeted skills for fourth and fifth grades.

They find that interventions emphasize conceptual understanding, focusing on mathematical thinking and reasoning instead of only the steps needed to calculate answers.

Approaching instruction in this way teaches students how and why math works using mathematical models and manipulatives to achieve a deeper understanding and helps students connect learning to new ideas and concepts (Tennessee Department of Education, 2024). The interventions also include instruction on procedural skills and fluency, which involve learning or developing algorithms and strategies, executing

procedures accurately and efficiently, and understanding how to use models and tools. Students who achieve fluency can connect learned or developed algorithms and strategies to conceptual understanding to explain the "why" behind the procedures (Tennessee Department of Education, 2024). Not only do these focus areas for instruction support critical mathematical skills for fourth and fifth grades, but they also meet the needs of the students in the intervention groups, as determined by data analysis and supplemental assessments.

They also consider the dosage at which the interventions are delivered and consider the intervention provider. They find that the duration and group size follow recommendations. Tier II interventions are implemented for 30 minutes daily in groups of up to five students, and Tier III interventions are implemented for 45 minutes daily in groups of up to three students. In addition, all math interventions were provided by certified teachers who had received additional training in the intervention programs they provided.

Based on the information provided, the root cause of the problem seems unlikely to be related to the quality, fidelity, or structure of the math interventions themselves. The interventions are research-based, implemented as intended, and adjusted to meet the student's needs, with appropriate dosage, group size, and certified, well-trained interventionists. Next the team considers the interventionists use of data to make instructional decisions. The team knows interventionists at the school are striving to improve in their data-based decision-making but are also aware that this is a difficult skill many struggle with.

Interventionists share that while they were trained in the intervention programs, they felt less confident in interpreting data and making data- driven decisions.

To investigate further, the school leadership team examined how interventionists were using data to inform instructional decisions. They reviewed how often progress monitoring data was collected and analyzed and found that while progress monitoring data from intervention programs, teacher observations, student work samples and curriculum-based assessments was collected regularly, interventionists did not routinely analyze data and use it to make decisions on the next steps in instruction. For example, an interventionist might collect weekly assessment data on students' ability to compare fractions. The data might show that a student consistently struggles with comparing fractions with unlike denominators. However, instead of analyzing this data to identify the need for targeted practice with this specific skill and possible prerequisite skills, such as generating equivalent fractions with common denominators, the interventionist might continue with general lessons on comparing fractions, missing the opportunity to address the particular area of difficulty

arising with students.

This suggests that the ability to effectively interpret and use student data to make timely instructional decisions may not be happening, possibly limiting progress for some students. Therefore, enhancing interventionists' skills in data-based decision-making could be a necessary first step to address the issue and support student progress more effectively.

They set a long-term goal of improving the overall performance of 4th and 5th grade students in Tier II and III interventions on math assessments gathered during the universal screening process by 25% by the end of the school year. They also plan to compare the results to other available data sources, such as classroom and intervention assessments.

The math interventionists start by focusing on improving their skills in conducting error analysis. They focus on fourth grade and use a systematic drill down process to find areas they need to adjust instruction according to student progress or lack thereof. They participate in professional development opportunities, such as workshops and online courses to enhance their understanding of analyzing student errors and identifying patterns in mistakes. They put these new skills into practice by holding weekly group error analysis sessions, where they examine student work for recurring errors, share strategies for addressing common misconceptions, and assess student progress.

During these meetings, they use the following guiding questions when students demonstrate inconsistent or limited progress based on the error analysis:

1. What type of errors are most common in the student's work? Are these errors procedural (steps taken incorrectly) or conceptual (misunderstanding the concept)?
2. How can we adjust instruction to address the specific misconceptions or error patterns identified? Would breaking down the problem-solving process into smaller steps help clarify the students understanding?
3. Are there foundational skills the student is lacking that might be contributing to these errors? Would targeting these prerequisite skills lead to fewer mistakes and greater overall progress? (IRIS, 2015)

This approach ensures that instructional adjustments are based on an understanding of the types of errors students are making, allowing interventionists to tailor their support to meet each students learning needs.

During the process they reference the standards and identify the student's level of understanding using the instructional focus documents (Tennessee Department of Education, 2024). They find the main challenge for students, which slows progress for further skills during the intervention, is Standard 4. NF.A.2 Cluster Heading: A. "Extend understanding of fraction equivalence and comparison." This skill requires students to compare two fractions with different numerators and

different denominators by creating common denominators or common numerators or by comparing them to a benchmark such as 0, 1/2, or 1. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions (Tennessee Department of Education, 2024). Reviewing prerequisite skills, they find that students understand that a fraction represents a part of a single whole. They are familiar with fractions like 0, 1/2, and 1 as benchmarks to estimate or compare other fractions. Most students successfully compared fractions with different numerators but often struggled with those having different denominators, especially without visual models. Comparing fractions with unlike denominators proved more challenging, as it required an understanding of the sizes represented by the denominators and finding a common denominator for comparison.

After the next instructional quarter the school leadership team, alongside the 4th and 5th grade-level teachers and math interventionists, re-examines the progress of their students in math intervention to evaluate the effectiveness of their plan using data from the intervention evaluation tool, progress monitoring probes, student work samples, and classroom assessments. While some students still make mistakes, many successfully solve problems involving fractions. They find that all students have accelerated their progress and the number of students meeting their goals has doubled. The math interventionists report that students show increased confidence in solving fraction-related problems. They note that students are beginning to apply problem-solving strategies independently, using visual models as a helpful reference when working on both intervention and classroom tasks. Interventionists also observe that students initially hesitant to participate are now actively engaging, asking questions, and seeking clarification when encountering challenging problems. The 4th and 5th grade-level teachers report that students often use the same visual models during independent work that they learned to use during skilled interventions to practice and explain their reasoning.

Interventionists have made significant progress in using error analysis to inform their data-based decision- making. By examining student mistakes and identifying patterns, they are now better equipped to identify specific skill gaps and tailor instruction. Interventionists are reviewing student work more often, which allows them to make timely adjustments to instruction. As a result, student progress has advanced, with many students showing significant improvements in their targeted skills. “Analyzing student errors has completely changed how I approach instruction, helping me address the root of the problem and accelerate student progress”, shared one interventionist.

Mr. Chi Nguyen, a 4th grade teacher reports one of his students receiving Tier III math intervention is now trying the difficult math challenge problems included with the curriculum. This student reported, “I know I can get help, so now I try all the problems, even the hard ones.”

The team plans to return to the Instructional Practice Guide and Instructional Focus Documents for 4th and 5th grades at the beginning of the next quarter to identify critical grade-level standards and ensure students have mastered the prerequisite skills for those standards. Using this information, along with current data on student skill mastery, the team will continue to use the process to design and adjust instruction

and supports to meet each student's specific needs.

Rolling Hills Elementary is ready for continued success. The dedication of the leadership team, teachers, and interventionists to meeting individual student need has already yielded impressive results. The school is creating a culture of growth and achievement by increasing the number of students meeting their math goals and inspiring confidence in learners like the one who now embraces challenging problems. The school's commitment to refining instructional strategies and supporting professional development ensures that every student has the opportunity to excel. Ongoing, comprehensive professional development focused on the data-based decision-making process will allow Rolling Hills to continue to improve tiered supports throughout the school at large. In this way, Rolling Hills continues to light the path toward a brighter academic future for all its students.

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