

Kansas Multi-Tier System of Supports & Alignment



Math: Implementation

Implementation Guide for Math

2018-2019 Academic Year

Kansas Multi-Tier System of Supports

Building Leadership Team Mathematics Supplement

October 2017

Introduction to Document

The Kansas Multi-Tier System of Supports: Mathematics Supplement has been created to assist schools in utilizing the appropriate structures necessary to begin implementation of Kansas Multi-Tier System of Supports (Kansas MTSS). This document provides an explanation of each component and their importance to the Kansas MTSS process. The guide also provides steps to support districts in successfully completing the tasks and decision making necessary for a sustainable system. Content area specific documents for reading, behavior, and the Integrated Implementation Guide are companion documents to this one, providing information specific to each respective content. All Kansas MTSS documents are aligned with the Kansas Multi-Tier System of Supports: Innovation Configuration Matrix (ICM), which describes the critical components of a Kansas MTSS and what each looks like when fully implemented, and the Kansas Multi-Tier System of Supports: Research Base, which provides a basic overview of the research support for Kansas MTSS.

Acknowledgements

A significant commitment of time and energy from numerous Kansas educators, their districts, organizations and partners made this document possible. Their efforts to learn and help others understand what it takes to make a MTSS a reality within schools is reflected in this document. This grassroots effort on the part of Kansas educators indicates a commitment to meeting the needs of every student and sharing wisdom from the field and the research. As the list of individuals and districts that have contributed to this effort over the past many years has become too long to detail, a collective expression of gratitude is offered here to everyone who has contributed to the concepts, ideas, and knowledge that are reflected in all Kansas MTSS documents.

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Step 1: Review and Validate Universal Screening Data
See the Kansas MTSS System Implementation Guide

Step 2: **Analyze Data**
See the Kansas MTSS System Implementation Guide

Step 3: **Use Data to Group Students**

While reading through this section, be aware that there is additional information specific to our grouping process available within the Kansas MTSS Math Structuring Guide under the Math Grouping Process section on p. 26.

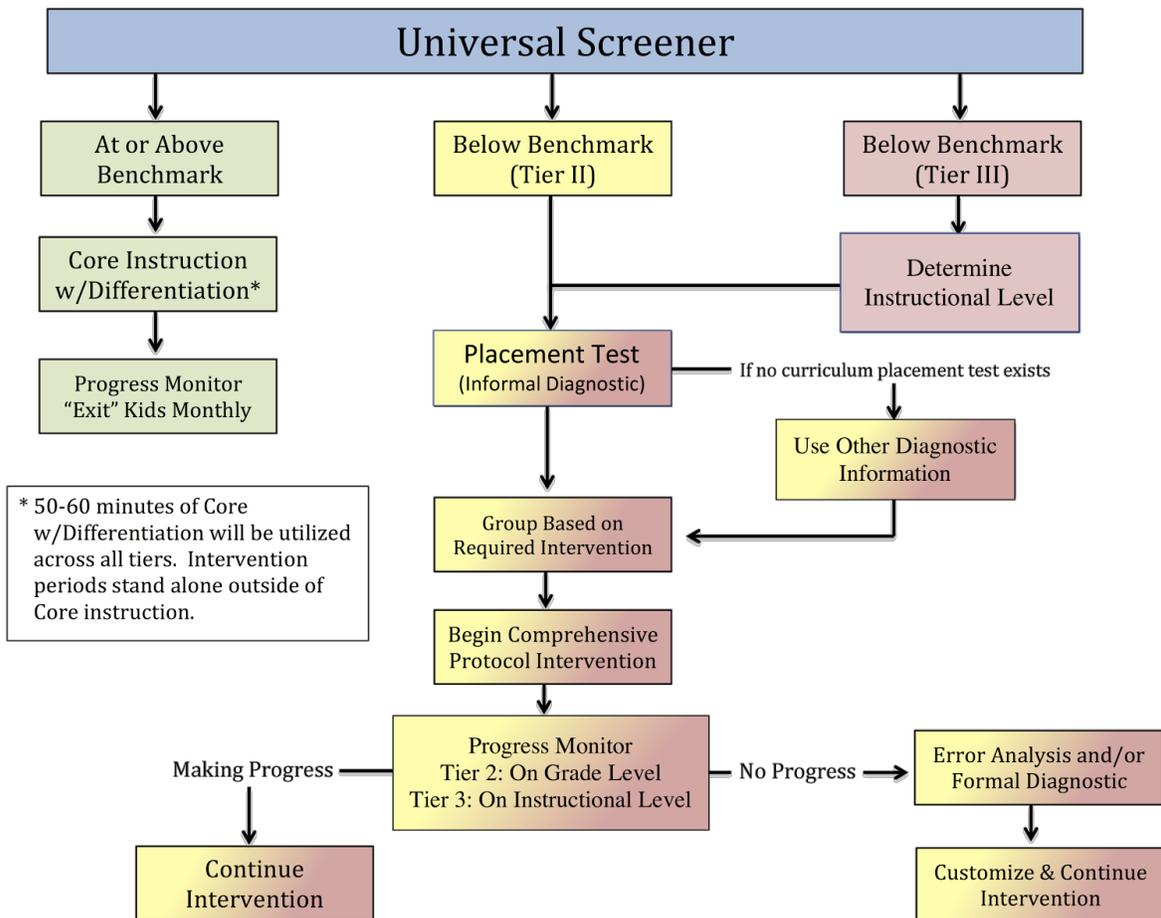


Image 3.1

Once the universal screening data has been analyzed and validated, collaborative teams should work together to gather additional needed information, as outlined in this section, and group

students for intervention appropriately. The first step in this grouping process is to determine the instructional level of the students requiring intervention support. The instructional level is important for two reasons: 1) This level gives you a place to utilize the placement process into the intervention curriculum. 2) This is the level at which you will monitor the student's progress to analyze how the normative achievement gap with his/her peers is closing.

While students at the Tier 2 level of support may very well need remedial work beyond their grade level, the gap is narrow enough that it should be appropriate to monitor them at that grade level. Students at the level of tier 3 support could be many years behind instructionally. These students might find their grade level to merely be a level of frustration, and the growth will look minimal with such a large gap. Monitoring them at their appropriate instructional level places a proverbial microscope on their current level of growth and should be measuring more appropriate material for the particular student.

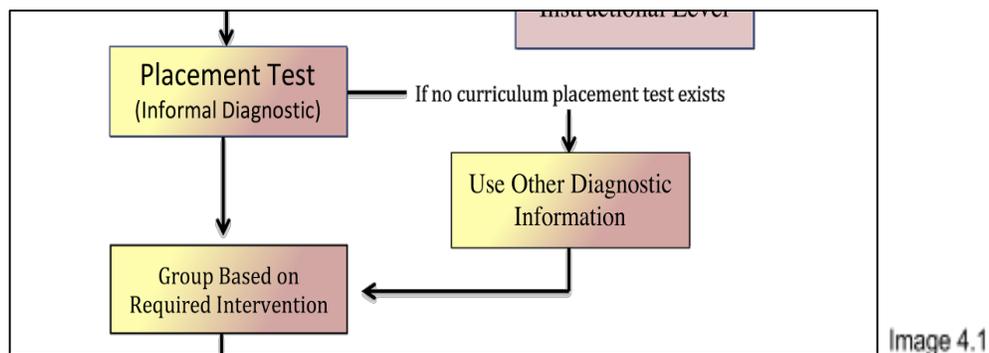
In order to determine the appropriate instructional level for students at the Tier 3 level of support, he/she must first be backwards tested or placed on a given scale of scaled score reports. Utilizing scaled scores includes adaptive assessment systems similar to FastBridge and NWEA MAP. In lieu of grade-level probe scores, the student receives a scaled score that could be compared to students at other grade levels to make a determination of appropriate progress monitoring levels and initial placement exams needed within an intervention curriculum. Because the construction of these scores varies, this process will be dependent on the assessment system and will look different. For screeners that do not identify the instructional level, but rather rely on single-grade probes (Aimswest, Dibels, EasyCBM etc.), the steps for determining instructional grade level are as follows:

- For students in Grades 2 and above who scored within the Tier 3 range, test down (using progress monitoring probes) one grade level at a time.
- Find the level at which the student passes (scores On Track) for end-of-year testing, using the benchmarks for the grade level of the test.
- The student's instructional level is one grade level higher than the passing level; use the instructional level for intervention materials and progress monitoring.

To summarize the process of determining the instructional level of students, students with a need for Tier 2 support can be assumed to have an instructional level identical to their grade level, and students showing a need for Tier 3 support may need to have an off-grade level instructional level based on a series of backwards testing or scaled scores of the assessment (Figure 3.2). This is the first step in grouping, but grouping will not be finalized until the teams complete Step 4, determining the instructional focus.

Step 4: Determine Focus of Intervention

While backwards testing or scaled scores are utilized to determine the instructional level of a student, the curriculum placement exam will determine the instructional focus of the intervention. If the curriculum lacks a placement exam, it may be necessary to use domains, focal points, or instructional planning reports of the assessment and/or other diagnostic information to best place students within homogenous focused groups (Figure 4.1). Students are then grouped as homogeneously as possible, based on instructional level and placement test results or lowest domain/focal point.



Developing a process for grouping students and determining instructional focus for math are somewhat more complex tasks than for reading. While reading clearly involves a single skill that is the best predictor for future reading development for each grade level, the same is not true for mathematics. Although curriculum-based measurement (CBM) math computation fluency probes have been used for many years to screen for students with math difficulties, they are not as reliable as oral reading fluency probes. Math accuracy data from CBM probes are even less reliable than math fluency results (Burns, VanDerHeyden, & Jiban, 2006). Consequently, fluency/accuracy grouping cannot be used for math in the same way that it is for reading. In addition, because the math proficiencies are completely intertwined, a comprehensive approach to intervention is often more advantageous than addressing a single skill/concept.

Finalize Intervention Groups for Early Numeracy Grades PreK- 1

Research regarding early numeracy skills has consistently identified several basic skills measuring the development of early number sense and predicting future math development. Teachers should see these skills embedded in the universal screener: oral counting, strategic counting (i.e., missing number), magnitude comparison (i.e., quantity discrimination), and number naming (i.e., number identification) (Clarke & Shinn, 2004; Gersten, Clarke, & Mazzocco, 2007). However, the most critical kindergarten and first-grade skills for future math development are strategic counting and magnitude comparison (Gersten, Clarke, & Jordan, 2007).

As teams begin to document the placement of students, it is imperative that students be noted in

such a way to ensure that those with similar mathematical deficits are grouped together.

Finalize Intervention Groups for Math Grades 2 and Above

At this point in the current mathematical research, no definitive basic single skill has emerged as the predictive indicator of future math development. However, computational fluency appears to be an underlying issue for many students, and it is recommended that “about 10 minutes be devoted to building this proficiency during each intervention session” (Gersten et al., 2009). Kansas MTSS, for good reason, has expanded this 10-minute devotion to all students. More information on what this practice should look like is described later in this guide. Kansas MTSS also has a brief specific guide to the underlying reasons for this recommendation and more details regarding it in the brief 10 Minutes of Computational Fluency.

For students at the intermediate and secondary levels, additional skill assessment with fractions should be considered for those who score low on any of the screening measures (Riccomini & Witzel, 2010). Alternatively, a CBM probe of fraction computation could be used. At Grades 2 and above, students are grouped as homogeneously as possible based on instructional level and placement test results or lowest domain/focal point.

In terms of providing instruction for interventions, it is critical to have a good match between the instructors and the interventions they will be teaching. Therefore, it is important to know the strengths and professional development needs of intervention providers (e.g., teachers and paraeducators). For example, some teachers are confident in teaching math, whereas others are uncertain about good instructional practices for mathematics. Building Leadership Teams should consider how professional and paraprofessional staff can best be used to teach intervention groups. The Building Leadership Team should plan to provide any needed professional development to ensure that instructional staff has the necessary skills for providing math instruction. Instructional effectiveness depends on the use of strong materials and the training of the staff to provide the intervention.

While it may not be necessary to restart the grouping process at each benchmark period, whenever a universal screening is conducted, it is essential to revisit and refine the alignment of intervention groups. Analyzing current data and progress monitoring groups in light of the newly established benchmark data is critical to ensure that the current groups contain homogeneous instructional levels and foci.

Although it is primarily the responsibility of the Building Leadership Team to determine the materials available on the Tier 2 and Tier 3 protocols, collaborative teams will be asked to choose appropriate interventions available on these protocols (created during Structuring training). Once the protocol interventions have been selected, the Collaborative Team should finalize

documentation of groups and provide the summaries to the Building Leadership Team. Then the Building Leadership Team should consider the following questions:

- Are students being matched to comprehensive protocol interventions correctly?
- Does the building have appropriate protocol interventions available to meet the needs of all of the students?
- Do interventionists have the training and materials needed to provide the comprehensive protocol instruction with fidelity?
- Are the comprehensive protocols being taught with fidelity?

A variety of evidence-based interventions and instructional materials can be found to match learners' needs within each of the intervention groups. However, it is important to remember that programs alone do not teach. Prior to selecting, purchasing, or using any instructional materials, it is critical to carefully review the materials and their research base.

Intervention Materials for Early Numeracy (K-1)

It is important to realize that students who score below the On Track range in oral counting and number identification will need to work on those skills in addition to the instructional focus of the group.

Most curricular and instructional materials for early numeracy include a wide variety of skills. When planning instruction for each group, teachers should ensure that the skill targeted for instructional focus receives the most time for instruction and practice.

Intervention Materials for Math (Grade 2 and Above)

Support for students struggling with mathematics is not reserved only for intervention time. Supports can also be provided during core instruction, particularly if your building level status indicates the need for a class or grade-level intervention. The focus in the core classroom should be on differentiation of instruction, content knowledge remediation, and support for students exiting intervention.

Once the appropriate intervention materials are selected, the students should begin the protocol intervention. Again, fidelity to the selected curriculum is very important.

All students should also receive 10 minutes of instruction devoted to basic fact fluency daily through the 8th grade. This should be differentiated for each student, based on where he/she is currently performing with basic facts. A short brief has been created and is available (10 Minutes of Computational Fluency) to guide teachers through what specifically needs to be considered when planning and implementing this time for practice. Differentiation cannot be stressed enough within this practice time. Content and instruction need to be individually tailored to best ensure promising practice. For all areas of mathematics, teachers must be careful not to present too much information at one time or in a very short period of time. Too much information can overload students' processing capacity (working memory). Especially when working with students to build proficiency or automaticity, teachers should consider how information might be chunked or grouped into smaller pieces for instruction (Riccomini & Witzel, 2010). For more information, please refer to the previously mentioned brief.

Step 5: Progress Monitoring

Universal screening is always done at the student's current grade level. Progress monitoring always takes place at the student's instructional level (Figure 5.1). Progress monitoring students at their instructional level is critical in helping students close the achievement gap between themselves and their peers. The instructional level was determined during the grouping process. That same level should be used for progress monitoring.

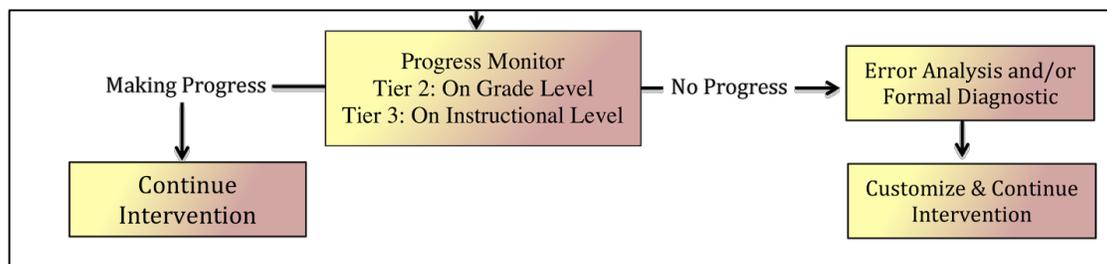


Image 5.1

The frequency of progress monitoring is influenced by how quickly instructional adjustments can be made. The recommended frequency of progress monitoring for math within the MTSS framework is every three weeks for students receiving Tier 2 or Tier 3 interventions. Schools may choose to monitor more often but should never fail to monitor once a month.

Begin by setting a goal for the student to achieve end-of-year On Track status regarding his/her instructional level. However, for students who are receiving high-quality intervention, it is appropriate to expect more than a year's growth in a year's time, even if the student has not achieved that rate of growth in the past. As soon as a student consistently improves above the aim line, he/she should be raised to the next instructional level goal. Students who score in the Tier 3 range need to have an ambitious goal. Research indicates that ambitious goals produce better

results than lower goals (McCook, 2006). Without an ambitious goal, students in intervention can make progress, but continue to lag behind grade level without closing the achievement gap between themselves and their peers.

Consider these two questions when looking for growth:

- Is the student growing?
- Is the growth enough to close the achievement gap?

The Building Leadership Team's responsibilities for this step include:

- Conducting fidelity checks to ensure that the Collaborative Teams are following the guidelines for determining the appropriate goal for each student.
- Considering whether staff members know how to chart progress monitoring results accurately.

Customizing a Math Intervention

When a student receiving Tier 3 intervention fails to show progress despite data-based adjustments to the intervention being provided, the Collaborative Team, in collaboration with the Building Leadership Team, should consider the need for individual student problem solving to customize the intervention (Figure 5.1). This would be a time when the team must decide to either utilize a formal diagnostic assessment or first intensify the instruction.

In order to intensify the instruction, the team should look at all available data and determine to their best ability the variables at play in the lack of growth of the student. Figure 5.2 may be beneficial in this conversation. While some items seem out of the teacher's control, this chart is meant to identify how to intensify the intervention, not to claim helplessness. For example, if the team believes the student faces a lack of commitment to school, it then becomes the team members' job to come up with a solution to intensify the student's intervention in a way that addresses that issue to the best of their ability. Data should then guide whether their decision is appropriate and if the solution was effective or if another solution must be found.

Instruction	Curriculum
<ul style="list-style-type: none"> • Fidelity of Instruction <ul style="list-style-type: none"> • Modeling and guided practice prior to independent practice (I Do, We Do, You Do) • Explicit Teaching • Opportunities to respond • Sufficient questioning, check for understandings • Sufficient practice 	<ul style="list-style-type: none"> • Appropriate match between learner and intervention <ul style="list-style-type: none"> • Appropriate rate of progress to reach goal • Instructional focus based on diagnostic process • Variety of Interests • Teaches skills to mastery • Appropriate independent work activities
Setting	Individual
<ul style="list-style-type: none"> • Classroom routines/behavior management support learning <ul style="list-style-type: none"> • Appropriate person teaching the intervention group • Transitions are short and brief • Academic learning time is high 	<ul style="list-style-type: none"> • Motivation <ul style="list-style-type: none"> • Task persistence • Attendance • Pattern of performance errors reflect skill deficits • Commitment to school

Image 5.2

If intensifying the intervention does not seem adequate, a team may determine the need to utilize a formal diagnostic such as KeyMath3 or Tools for Early Assessment in Math (TEAM), might be used. In addition, it would be appropriate to administer an error analysis. One source for error analysis is Marilyn Burns’ Math Reasoning Inventory, which can be found at <https://www.mathreasoninginventory.com/>.

To customize the intervention, teachers should use current research to determine the necessary components of the individualized plan. Teams will need to analyze all of the data available regarding a student (including the information from the formal diagnostic assessment and error analysis, if completed). Then a hypothesis must be developed about the underlying causes of the student’s lack of progress so that a more individually customized intervention plan can be developed and implemented.

- The correct skills/concepts were progress monitored at the correct level.
- Sufficient data have been collected to make decisions according to the established decision rules.
- The data were accurately graphed.

Step 6: Document Interventions

See the Kansas MTSS System Implementation Guide

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