

Book Study

Prepared by the

Kansas Multi-Tier System of Supports (MTSS) Project

Response to Intervention in Math

Dr. Paul J. Riccomini & Bradley S. Witzel

(Corwin, 2010)

Target Audience:

- Structuring teams
- Math
- Building Leadership Teams
- Curriculum and Assessment
- Tier 2 teachers
- Tier 3 teachers
- Elementary Team
- Instruction
- Explicit
- Scaffolded
- Systematic

Note: Throughout this book, you will see the term Response to Intervention or RtI. Since the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 the term Response-to-Intervention (RtI) has become a buzz word within education. RtI is built upon a broad research base resulting in multiple models with the common features of (1) multiple tiers of intervention service delivery, (2) problem solving method and (3) data collection/assessment to inform decisions at each tier of service delivery (National Association of State Directors of Special Education, 2006).

It is not uncommon to hear the term RtI and Multi-Tier System of Supports (MTSS) used interchangeably. However, in many instances the meaning applied to RtI does not align with the principles and practices of a MTSS. The principles and practices of a MTSS are based upon what research has shown to be effective in **both** creating successful and sustainable **system change** as well as what is necessary in providing **the most effective instruction to all students**. The MTSS framework is designed to address the academic and behavioral needs of every student, regardless of whether the students are struggling or have advanced learning needs.

In laymen's terms, RtI is what happens in the triangle at the center of the MTSS trademark. MTSS is the triangle PLUS everything else that builds and supports the system. That being said, there are enough "crossing over" points to make a book study based on an RtI model a worthwhile pursuit. For our purposes, we will be using the term MTSS in the questions to give the book a broader perspective.

Chapter One: What is RtI and Why Is It Important?

Brief Overview: This chapter is a “sneak peek” at several topics the author will go more in depth with in subsequent chapters. Keep in mind that RtI is a national initiative; Kansas h

Discussion Questions:

1. List and briefly discuss the eight core principles identified by NASDSE on p. 2.
2. Thinking about the six guiding principles for RtI models, what is our staff’s belief system about ALL students being able to learn math with appropriate and effective instruction?
3. Compare our building’s current assessment plan with the one listed on pg. 4. How are they alike? How are they different?
4. The author’s devote several paragraphs to explicit models of instruction, use of concrete, representational and abstract (CRA), strategies for problem solving, and focus on basic facts. Evaluate current math instruction in light of these. What areas of strengths? What areas would your teams need to explore as they look at Tier 2 and 3 instruction?

Chapter Two: The RtI Process for Math: Getting Started

Brief Overview: In this chapter, the authors provide a general guide to getting an MTSS model in mathematics started, outlining essential components.

Discussion Questions:

1. Who on our team would be considered a person with expertise in mathematics? Is there a middle or high school teacher we could ask to play that role for an elementary team?
2. How might our team use the table on pg. 23 to get a pulse on how our building views the core beliefs of mathematics? (We might consider adding the 5th critical concept from Math Structuring Module 2 as part of this)
3. Compare student-centered to teacher directed learning. What questions would we need to ask regarding our current curriculum to determine whether it is student-centered, teacher-directed or a combination of both.
4. Your team has no doubt already discussed the use of universal screeners, progress monitors and diagnostics. What further questions might we have around assessments?
5. “The results of a poor core mathematics curriculum *either by design and/or by implementation* can lead to more and more students requiring Tier 2 and Tier 3 support, resulting in an over-loading of the system’s’ resources.” (pg. 37) As we evaluate our current core, knowing we should be seeing 80% of our students at benchmark on universal screeners at the end of the year, how would we begin to decipher what the issue is with our core—the design or the implementation?

Chapter Three: A Tiered Approach to More Effective Mathematics Instruction

Brief Overview: In this chapter, the authors take a more specific approach to what Tiers 1, 2 and 3 should look like in a strong mathematics program. **Prior to meeting as a team, members should divide up the resources of interest on pgs. 48 & 49 and come prepared to discuss what they learned during some initial exploration into this resource.**

Discussion Questions:

1. As we look at our current Tier 1 instruction, what would our data say about the effectiveness of what we are currently doing, if we would build a graph similar to Figure 3.3 on pg. 43?
2. Read the second paragraph on pg. 44 together (beginning with “along with curriculum....”). Discuss how this compares with current Tier 1 practice in our building.
3. Examine the scenario on pg. 44 and 45 for Tier 1 and compare to Tier 1 instruction as it currently exists in our building.
4. Please note the importance of mastery instruction, especially at Tier 2. Why would this be emphasized over using this time as a “homework session” or a re-teach of what was done early in Tier 1?
5. Allow time for each team member to share what they learned from the instructional resource they explored from pg. 48 and 49. What is worthy of further exploration/sharing with the rest of the staff at this time?

Chapter Four: Mathematics Interventions Overview

Brief Overview: This chapter gives your team a general description of what Tier 2 and 3 time should look like when you move into implementation. It is organized around the “who, what, when, where, why and how” questioning model.

Discussion Questions:

1. Early in this chapter, the authors state that if “Tier 2 or 3 intervention time is used for homework or extra independent practice only, then RtI is a waste of time.” Reflect as a team on this statement. How much has our past remedial support looked like this?
2. “What”: Examine the list of possible math topics our students may struggle with in the first paragraph on pg. 53. Discuss which of the early tasks the team sees older students still struggling to master.
3. “Who”: Keeping in mind that in a strong MTSS model, our “heaviest hitters” work with our neediest students during intervention, who should intervene with these students in our building? Investigate possible training that may be needed to help prepare interventionists to work with Tier 2 and 3 curriculum.
4. “Where” might intervention take place in our current building that is not necessarily a “convenient” location, but the “most effective place for students to learn”?
5. “How”: As we look at Riccomini’s OPTIMIZE strategy on pg. 58, would our staff be able to process their curriculum in this same manner? If not, what barriers might keep this from happening? (Consider background math knowledge, curricular “non-negotiables” around the adopted curriculum, etc.)
6. Spend a few moments at the end of your time exploring the National Library of Virtual Manipulatives website noted on pg. 61. How might this aid our staff in moving toward more of a C-R-A method of instruction?

Chapter 5: Number Sense and Initial math Skills

Brief Overview: In this chapter, the authors tackle what is sometimes referred to as the “phonological awareness” skill of math. In other words, it is often the underlying issue that is impeding all other math development.

Discussion Questions:

1. Read the opening two paragraphs together. Then, with a partner, discuss in your own words what “number sense” means and what you believe are its implications for all of mathematical understanding.
2. From the example on pg. 66, discuss how Caroline’s understanding of place value puts her ahead of the game mathematically compared to Jason.
3. Compare the list of 11 components essential in a core curriculum (pg. 68 & 69) with our current core. Where are we strong? Where are we found lacking?
4. Jigsaw the curriculum elements outlined on pp. 70-76. Ask each team member to choose one and be prepared to explain the section and a suggestion on how to teach this to students.

Chapter Six: Building Students' Proficiency with Whole Numbers

Brief Overview: This chapter outlines not only the importance of proficiency with whole numbers, but also some strategies to begin to address deficits.

Discussion Questions:

1. “The debate over whether or not to teach basic facts and computation to proficiency is very similar to the argument in reading of whether or not to teach phonological and phonemic awareness.” Talk about our building’s stance on basic fact proficiency.
2. How might embracing the authors’ suggestion of devoting 10 minutes a day to developing computational fluency affect our current student performance?
3. Compare the suggestion of using concrete objects to build more accurate recall to how we currently teach computational operations.
4. Pages 83-88 outline some sample interventions. Jigsaw this section as a team and explain these strategies to your teammates and expand on how they might be used in our building.

Chapter 7: Fractions and Decimals

Brief Overview: It's the topic that invokes fear all too often in student (and sometimes teacher) hearts. But, fractions and decimals are central to much of mathematical understanding. This chapter outlines their importance as well as suggestions for teaching and assessing understanding.

Discussion Questions:

1. "The usefulness of fractions and decimals in life is not a mystery." Spend a couple of minutes brainstorming where they are used in daily life as an adult.
2. Discuss the questions on Table 7.2. How might a teacher use a tool like this?
3. As a study group, physically do the activities for teaching the "what" of fractions and decimals. You may need to track down some manipulatives. Compare this progression of instruction with what is currently used.
4. As a team, talk through the "how to compute" with fractions and decimals beginning on p. 101. Ensure the team all understands what is being demonstrated.
5. Based on your experience working through these activities, what possible staff development might be needed to help teachers and interventionists use a progression such as this?

Chapter 8: Teaching Problem Solving Strategically

Brief Overview: Like the last chapter, the authors lay out the why behind teaching students how to solve problems and highlight three SRB mathematical programs that teach problem solving strategically. This chapter has some work to do prior to meeting. Please see the discussion instructions below.

Discussion Questions:

1. As a team, split up the three programs before meeting together. Come prepared to discuss the following with your team:
 - a. Give a quick overview of the program.
 - b. What might a typical lesson look like?
 - c. Special terminology used in this program is:
 - d. What tiers is this strategy appropriate to be used?
 - e. What training is required for this program? Could it be taught by paras?
 - f. On a scale of 1-5, with 1 being best, how do we rate this program and why?

Chapter 9: The Importance of Teaching Mathematical Vocabulary

Brief Overview: As a team, you understand the interrelated working of reading and math. Vocabulary seems to be a big “hinge pin” in this connectedness. This chapter shares why vocabulary in math is so important and gives general and specific guidelines for teaching mathematical vocabulary.

Discussion Questions:

1. The authors state that “mathematics is a language.” (pg. 116) As a team, share out mathematical vocabulary used this week in your classroom.
2. Compare the use of mathematical vocabulary to other vocabulary taught in your classroom. What makes opportunities for repetition so difficult for math language?
3. Consider Table 9.1 on pg. 119. What might be the implications (both good and bad) of beginning to generate a list like this?
4. Six specific instructional activities are listed and discussed on pg. 119-128. Which of these have we used? Which could we implement?

Chapter 10: Next Steps in the RtI Process

Brief Overview: This is the summary chapter of what has been outlined in this book. It includes some basic steps to move toward an RtI model.

Discussion Questions:

1. As you look at the 6 steps listed, compare and contrast how they are alike and different from the steps you are moving through during MTSS structuring.
2. The authors offer strong encouragement to examine Tier 1 curriculum very carefully. "...the most effective RtI model will have a very effective core mathematics program used in Tier 1." (p. 138) What do we know about our current core? Has it been independently evaluated? Is it reaching 80% of our students?
3. What are our next steps as a result of this book study?
4. What issues has this book study brought up that need to be addressed with our recognized facilitator? With our building leadership team? With our staff?