4 Criteria for Successful Math Interventions

This engaging resource shares important response to intervention (RTI) context and offers educators a helpful crosswalk to guide math intervention using adaptive, personalized software across all tiers.

Background

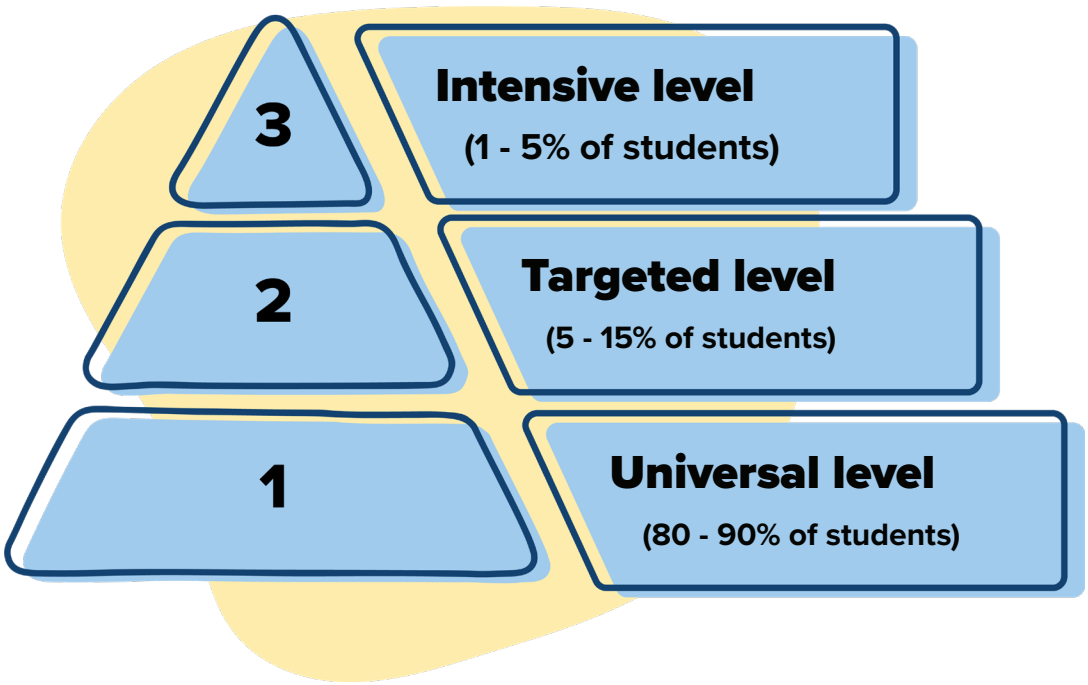
What's the Difference Between RTI and MTSS?

MTSS

Multi-tiered systems of support (MTSS) are a coherent continuum of evidence-based, systemwide practices and procedures to support a rapid response to academic and behavioral needs.

RTI

Response to intervention (RTI) nestles within MTSS. RTI is a multitiered approach to helping struggling learners. It focuses on academics and individual students. Students' progress is closely monitored at each intervention stage to determine the need for further research-based instruction or intervention in general education, special education or both.



The Three RTI Tiers

Tier III: Intensive level (1 - 5% of students)

Learners are more than one grade level behind and require individualized, intensive skill-specific intervention with one to-one or small-group instruction outside the classroom.

Tier II: Targeted level (5 - 15% of students)

Learners are behind by one grade level and should receive individualized support. Educators often deliver instruction in small groups and target supplemental instruction and remediation of specific skills or concepts.

Tier I: Universal level (80 - 90% of students)

Learners may need basic support, but they can get necessary intervention with high-quality, research-based instruction within the traditional classroom.

Math RTI Criteria Considerations

Adaptive learning offers a promising approach for RTI. The following crosswalk ensures your district's adaptive learning platform fulfills all necessary tenets to provide high-quality intervention to students across all tiers.

1 Evidence-Based

To ensure districts adopt the most effective learning solutions, ESSA (Every Student Succeeds Act) directs educators to implement research-based interventions that demonstrate improved learning outcomes for students. Within ESSA, there are four levels of evidence for interventions:

- **Level 1: Strong evidence**
  - Proven efficacy from at least one well-designed and well-implemented randomized control experimental study.
- **Level 2: Moderate evidence**
  - Proven efficacy from at least one well-designed and well-implemented quasi-experimental study.
- **Level 3: Promising evidence**
  - Proven efficacy from at least one well-designed and well-implemented correlational study (with statistical controls for selection bias).
- **Level 4: Demonstrates rationale**
  - Practices with a well-defined logic model or theory of action are supported by research and have some effort underway by a third-party research organization to determine effectiveness.

An evidence-based solution may provide:

- Curriculum aligned to Common Core and state standards
- Research-based pedagogy
- Industry recognition of efficacy (ESSA, Digital Promise)
- Longitudinal data across user success

Fast Fact: Evidence-based education solutions have demonstrated efficacy of impact. Data and research have been validated by third-party organizations.

Did you know?

DreamBox Math is rated Level 4 STRONG by Evidence for ESSA and the solution has proven to positively impact student learning. Third-party researchers from the Center for Economic Policy and Research at Harvard University found that for every 20 minutes students spent on DreamBox, their Measures of Academic Progress® (MAP) score increased by 2.5 points. The study also suggests that students who use DreamBox for 60 minutes per week stand to experience an increase of 7.5 points on the MAP.

A second study, conducted by the Stanford Research Institute and validated by What Works Clearinghouse, showed that students using DreamBox scored 2.3 points higher on the NWEA assessments with gains equivalent to 5.5 percentile points in 16 weeks.

2 Student Engagement

Student engagement is strongest within environments that foster positivity and offer productive learning strategies. Engagement takes a variety of forms, including game-like learning experiences that activate curiosity and create a sense of novelty in learning. Systems of rewards can motivate persistence and positively reinforce goal setting. Presenting students with a set of choices empowers them to make decisions in their learning, giving them confidence and increased motivation.

An engaging learning environment may provide students:

- Active, immersive learning experiences
- Balance of rigor with scaffolded support
- Confidence-building feedback
- Self-directed choices
- Supported social-emotional learning

DreamBox Math is desirable to our instructional team because it uses diagnostic tools in an adaptive system to tailor instruction to individual students to help close gaps, build fluency and maintain skills. Our team uses DreamBox Math as a supplemental tool. Students log on to DreamBox during scheduled periods of intervention pullout or within designated time in their classroom, allowing our math support classroom and RTI teachers to gather additional data to address students' needs. The comprehensive and extensive data available from DreamBox helps identify where the students are getting stuck, or a foundational concept that they might need to revisit, and our teachers can quickly take a targeted approach to support them.

Susan Kreit | Elementary Math Department Chair,
Fox Chapel Area School District, Pennsylvania

Fast Fact: Research has indicated that engaged learners demonstrate more satisfaction with learning, higher levels of achievement, and increased on-time graduation rates.

Did you know?

As students interact with lessons in DreamBox, they become immersed in fun and gamified learning experiences that build conceptual understanding through virtual manipulatives. Learners take ownership over their learning by selecting which lessons to work on within the standards. To increase motivation, students earn badges and coins for their perseverance as they play. With the ability to track weekly progress, students feel invested in their learning as they level up through interactive games, while educators are informed with rich insights about each student's learning journey.

3 Personalized Instruction

Effective adaptive math programs adjust instruction based on the insights they collect through student engagement–not just on their right or wrong answers–to provide the right scaffolds and apply previously mastered concepts. As they build on existing skills, they develop conceptual understanding and logical reasoning in mathematics. This personalized instruction ensures students within all tiers experience a positive learning experience that meets their unique needs.

Fast Fact: Ongoing data collection can inform adaptive instruction and provide students in intervention programs with meaningful feedback in real time. Continuous adaptive technology can correct learning misconceptions or errors and ensure students practice new math skills correctly.

Personalized Instruction Programs May Include:

- Unique pace of instruction for each student
- Embedded continuous assessment
- Analysis of math strategies vs. math answers
- Lesson scaffolding
- Hints and gradual support rather than repetition

Did you know?

DreamBox Intelligent Adaptive Learning™ technology analyzes data about student engagement within the platform. It can deliver millions of individualized learning paths to tailor every math lesson to meet every student's unique needs. The software adapts the level of difficulty, scaffolding, sequencing, the number of hints, and the pacing in real time. Students at all levels can continually work in their optimal learning zone and progress at the right pace.

4 Actionable Data

The use of actionable data to inform instructional decisions leads to improved student performance. For intervention, educators can leverage data from multiple sources to:

- Identify students who need additional instruction.
- Determine present levels of performance.
- Set target goals.
- Measure student progress.
- Evaluate program efficacy.
- Predict if students are on track to meet math goals.

Actionable data may include:

- Ongoing formative assessments
- Progress monitoring
- Role-specific reports and dashboards

Fast Fact: Tracking student progress not only helps measure students' benefit from intervention efforts, but data can also provide valuable insight for where to make adjustments to drive growth.

Did you know?

DreamBox generates insights in real time to enable ongoing progress monitoring across the district, school, classroom, and individual levels. The Insights Dashboard provides detailed reports that share each student's progress in alignment with the state standards. With access to actionable data, educators stay informed about student progress and are empowered to personalize instruction at scale.

Learn More about DreamBox Math

DiscoveryEducation.com/Math-Intervention