

Branching Minds **MTSS** Summit

Branching Forward: Setting Intentions for MTSS in the New Year

Lessons Learned in 15 Years of MTSS

Amanda VanDerHeyden



Lessons Learned in 15 Years of MTSS

Amanda VanDerHeyden
President, Education Research &
Consulting, Inc. Fairhope, AL
Founder, Spring Math
www.springmath.com



@amandavande1



How Can We Work Smarter in MTSS?

1. More Accurate Assessment or Determination of Academic Need
2. Use Universal Classwide Intervention on High-Leverage Skills and Understandings in Key Content Areas
3. Retool your Intensification Plan



Learning is a Very Predictable Outcome of High-Quality Instruction



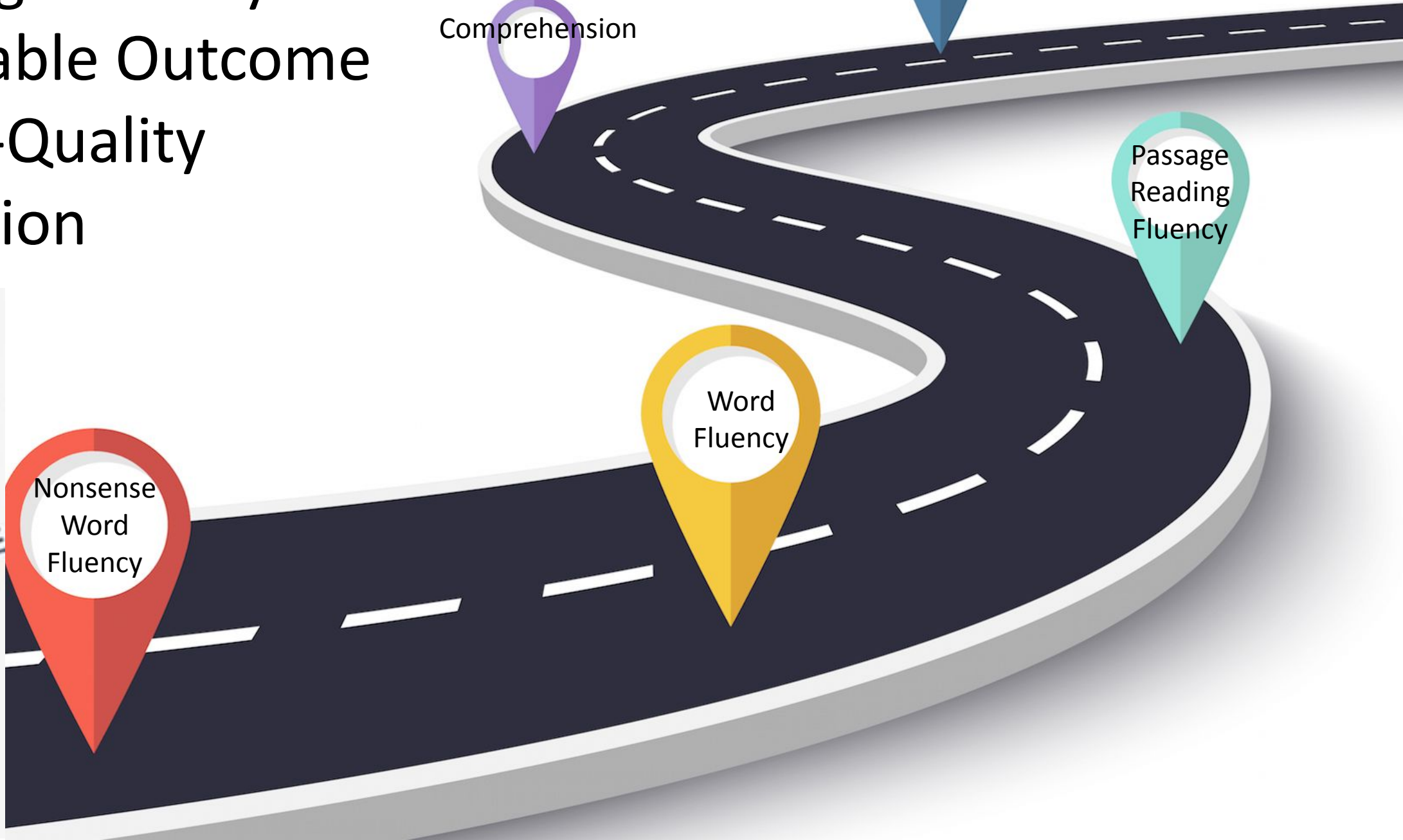
Nonsense
Word
Fluency

Comprehension

Word
Fluency

Writing

Passage
Reading
Fluency



So is risk

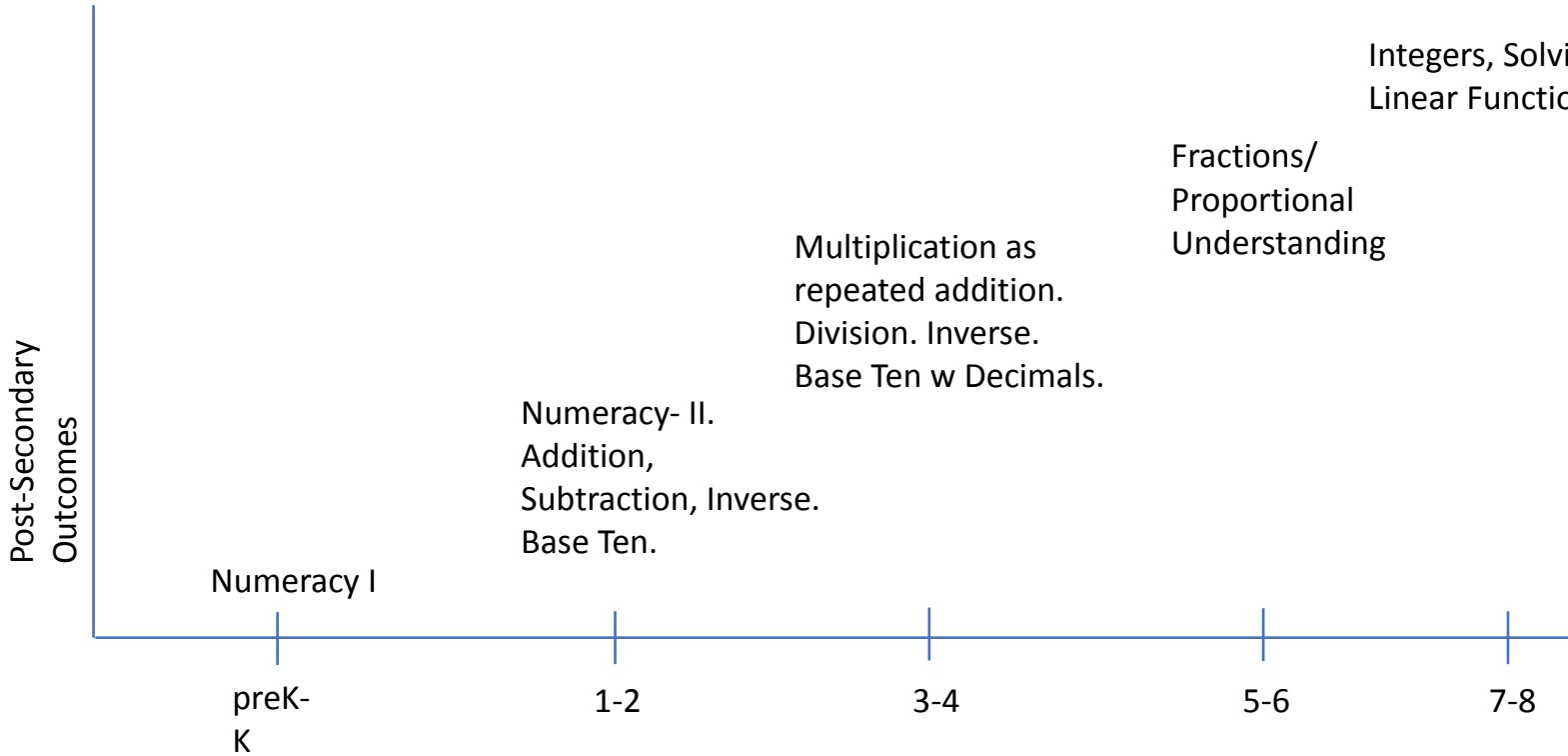
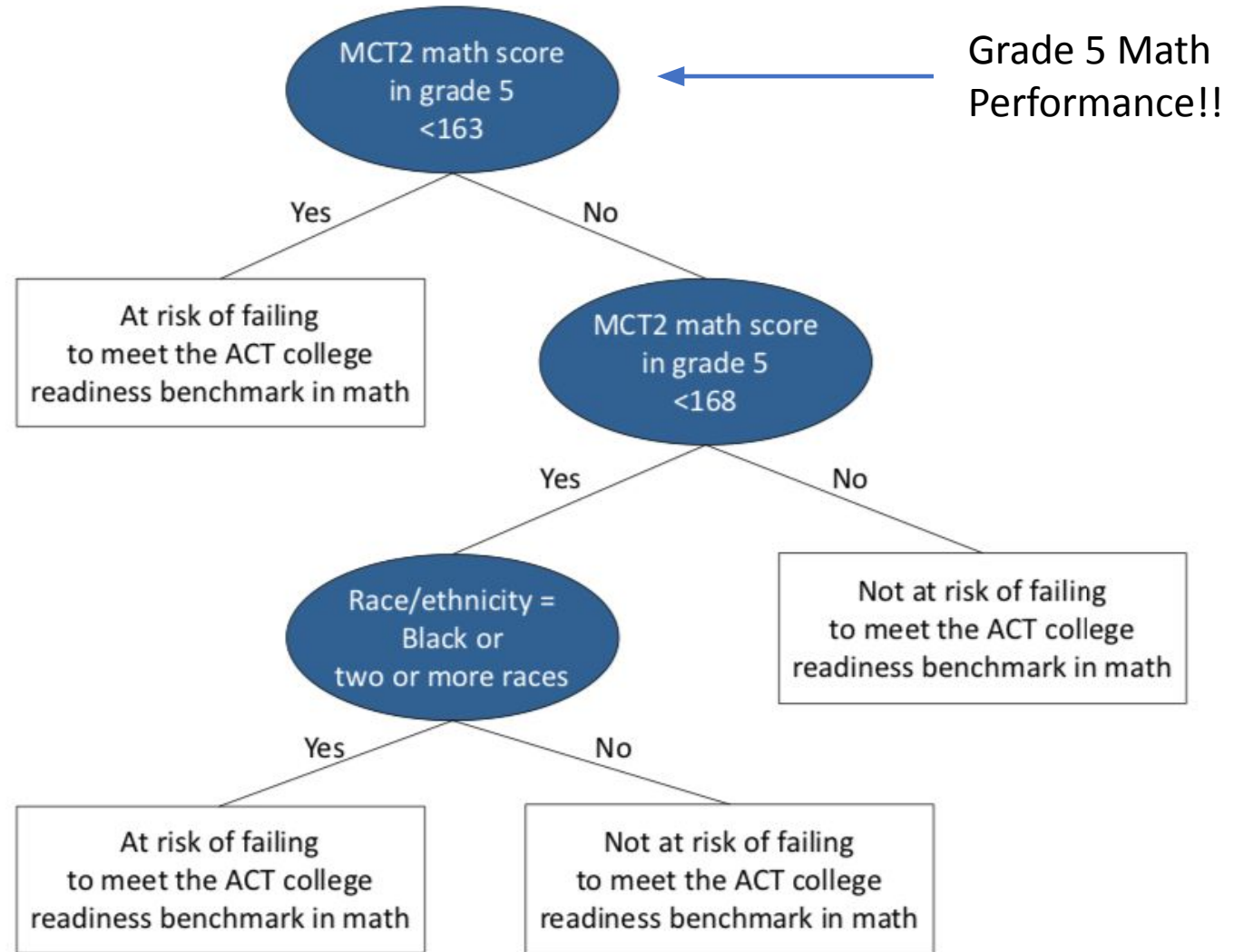
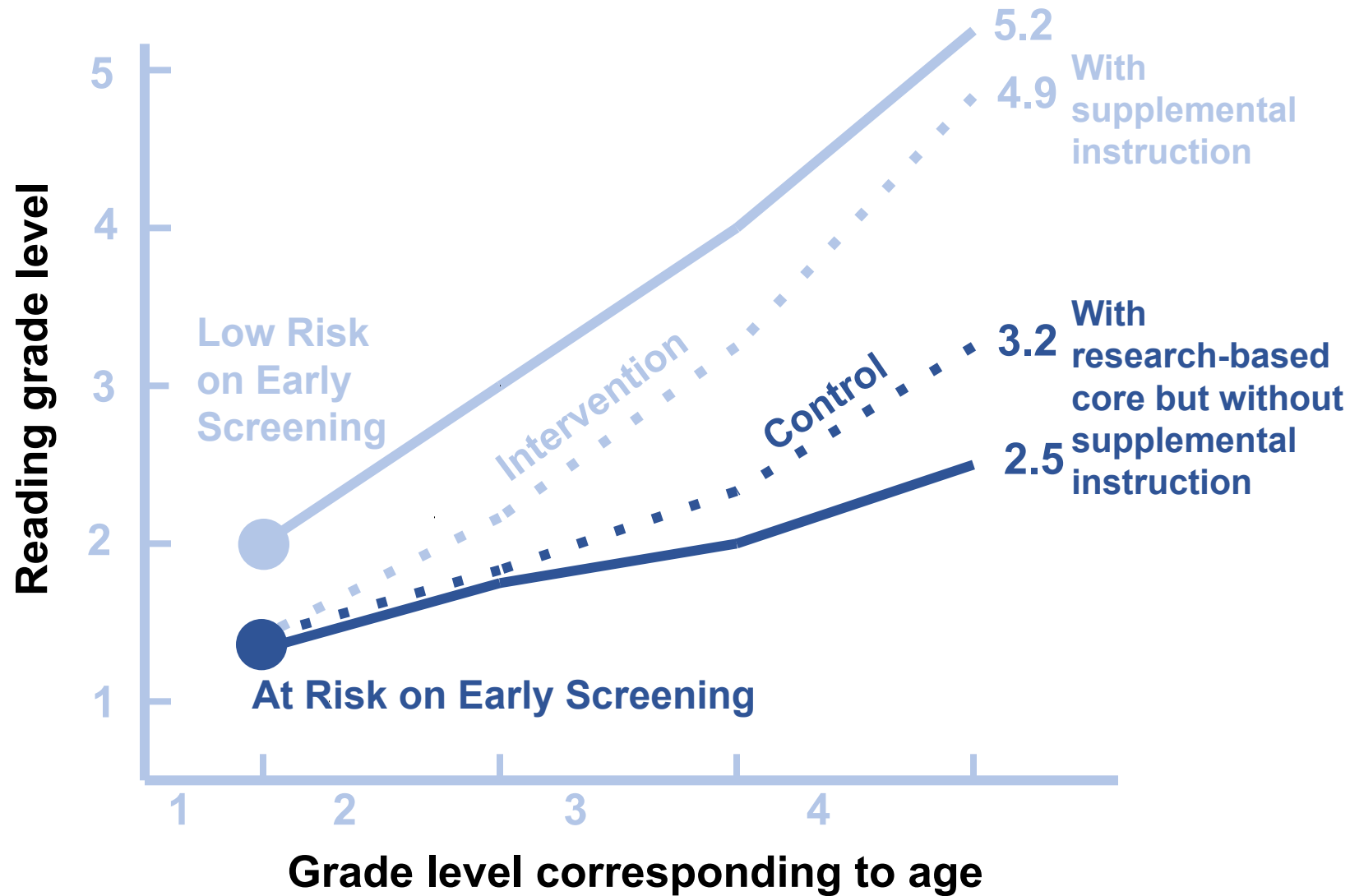


Figure 2. Classification and regression tree model decision rules for identifying Mississippi students as at risk of failing to meet the ACT college readiness benchmark in math, based on grade 5 math achievement and race/ethnicity, 2011/12–2016/17

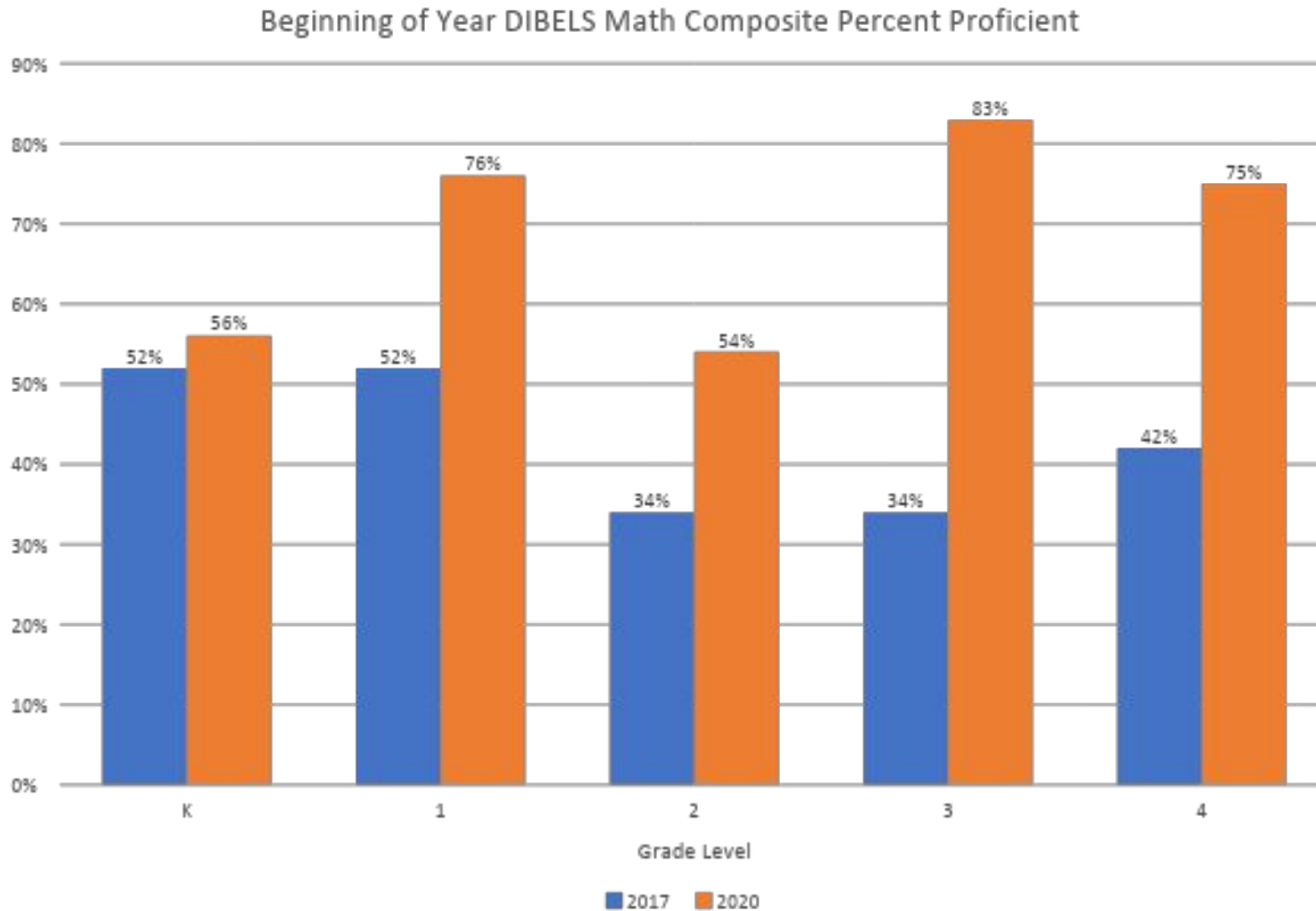
Koon, S., & Davis, M. (2019). Math course sequences in grades 6–11 and math achievement in Mississippi (REL 2019–007). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from <http://ies.ed.gov/ncee/edlabs>



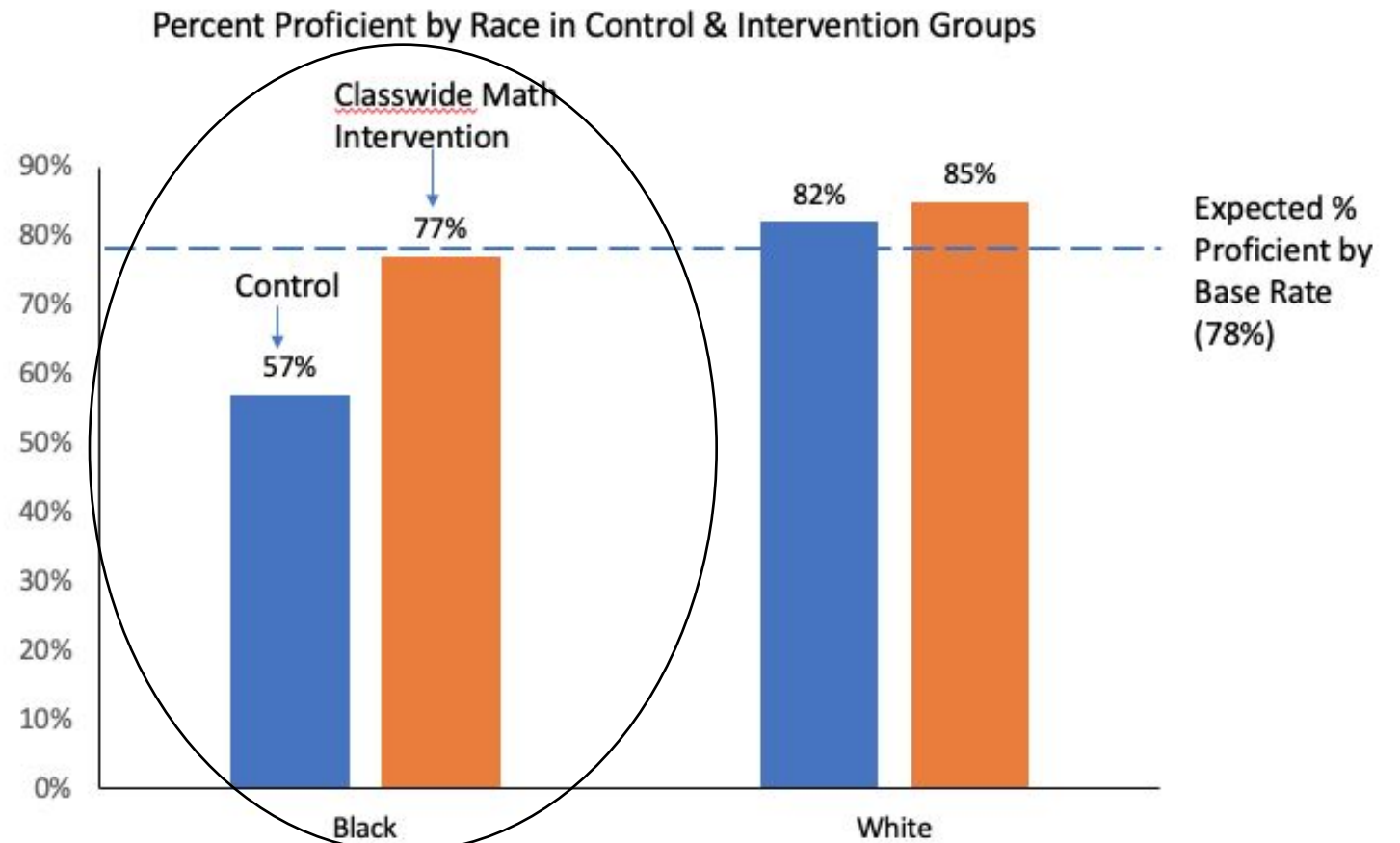
Children Who Fall Behind, Stay Behind (But Intervention Closes Gaps)



Prevention Effects from Effective Instruction Are Cumulative!



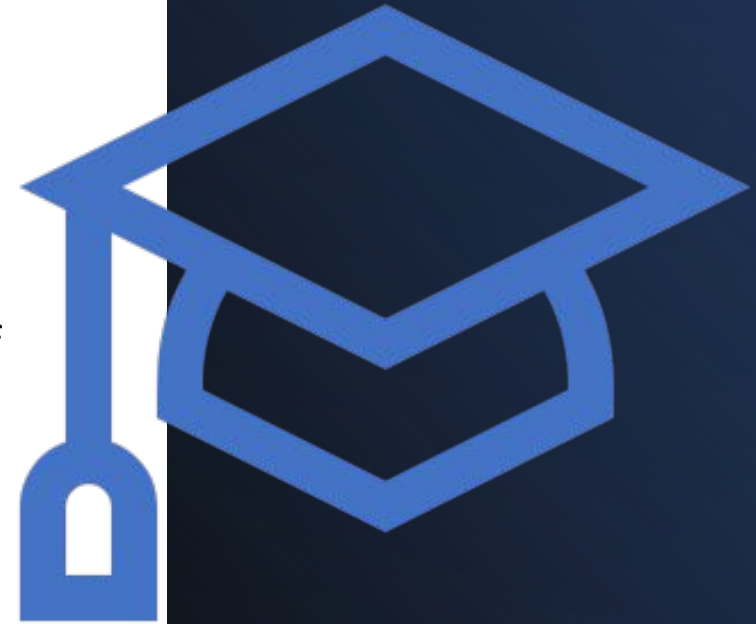
MTSS Closes Opportunity Gaps By Delivering More Effective Instruction Where It's Needed



VanDerHeyden, A. M. & Coddling, R. (2015). Practical effects of classwide mathematics intervention. *School Psychology Review*, 44, 169-190. doi: <http://dx.doi.org/10.17105/spr-13-0087.1>

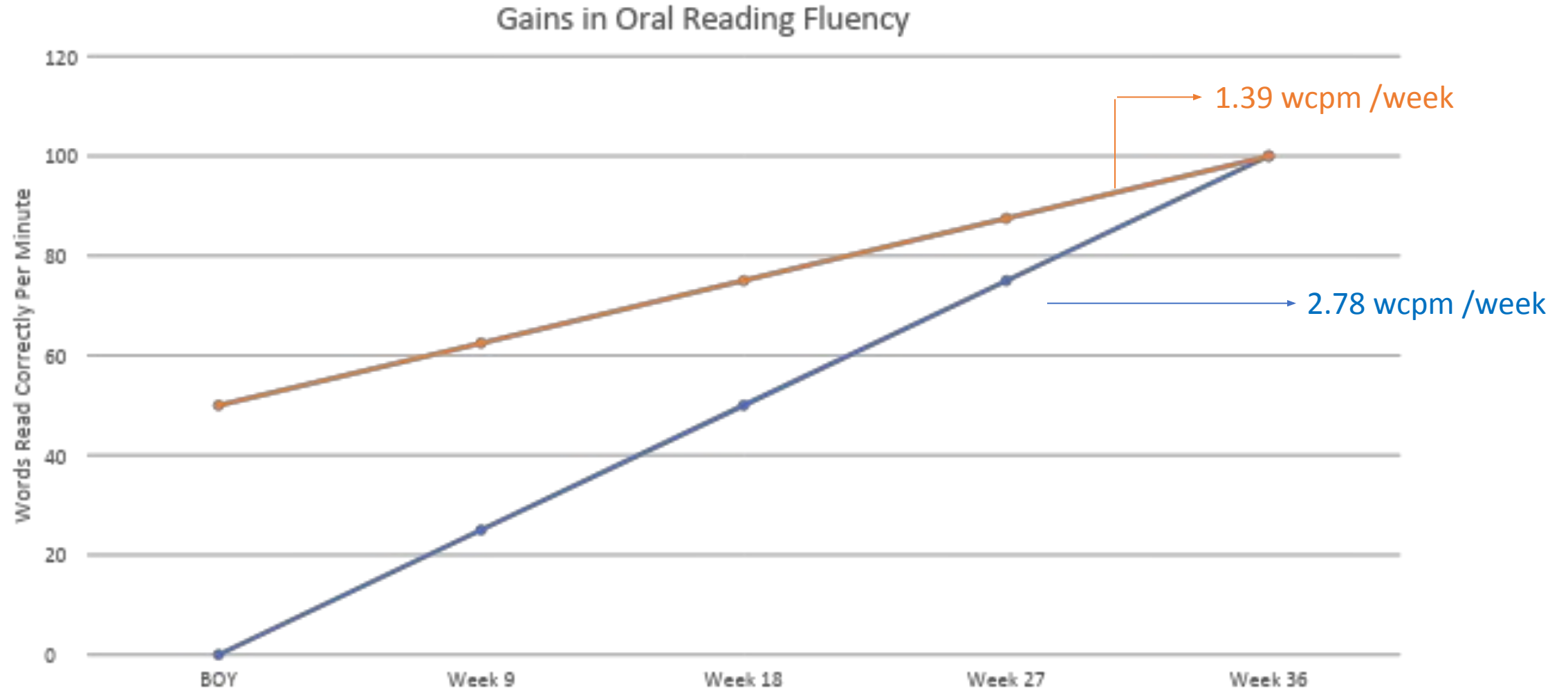
The Realities of Instruction

- The average second grade student spends about 1.5 hours per day of academic engaged time
- Classes with stronger academic outcomes
 - Allocate more academic time
 - Promote higher rates of academic engagement
- About half of the school day engaged in nonacademic or noninstructional activities
- With little variation across classrooms, children spent about 16 min of every hour waiting
- Children had unstable access during 2020-2021
- Signs that opportunity & Equity gaps are widening
- Declining Enrollments, Children not logged in, college applications are down.



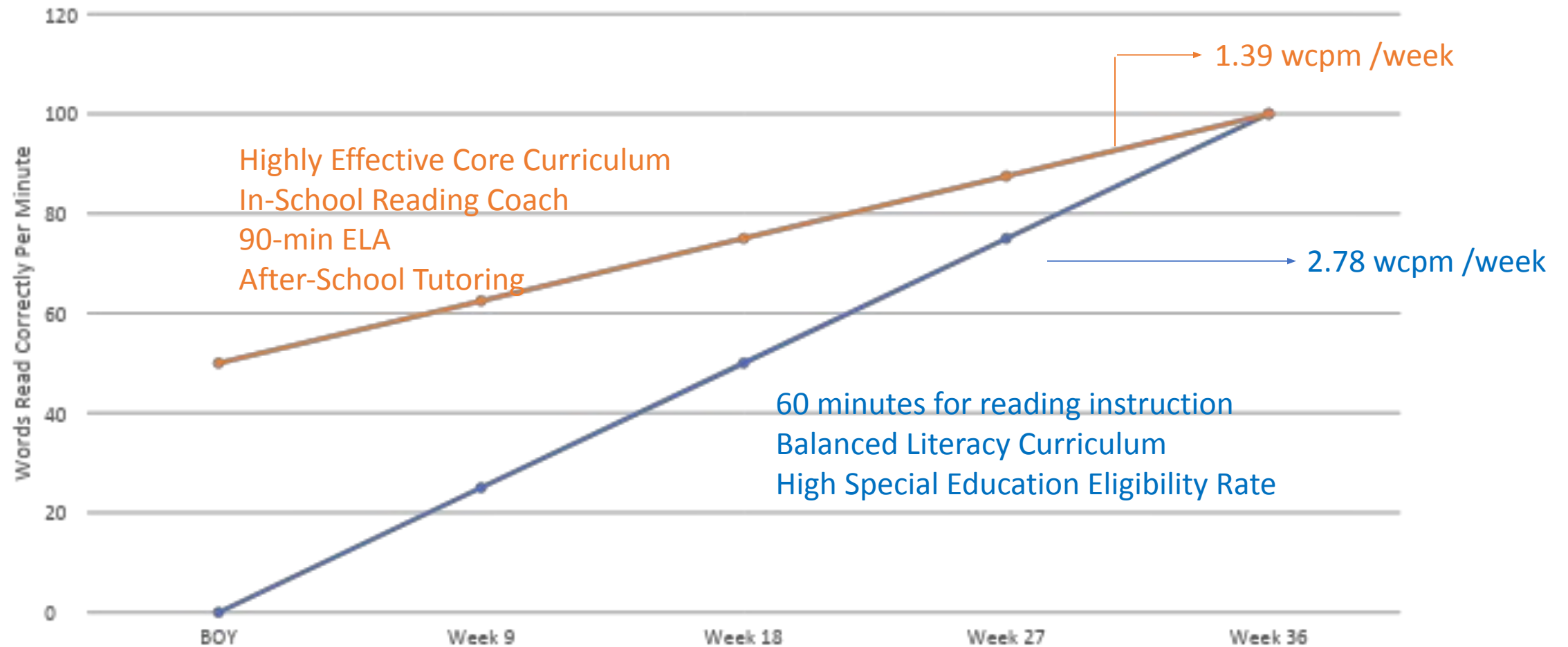
<https://files.eric.ed.gov/fulltext/EJ1100409.pdf>: Rosenshine, B. V. (1981). How Time is Spent in Elementary Classrooms. *Journal of Classroom Interaction*, 17(1), 16-25.

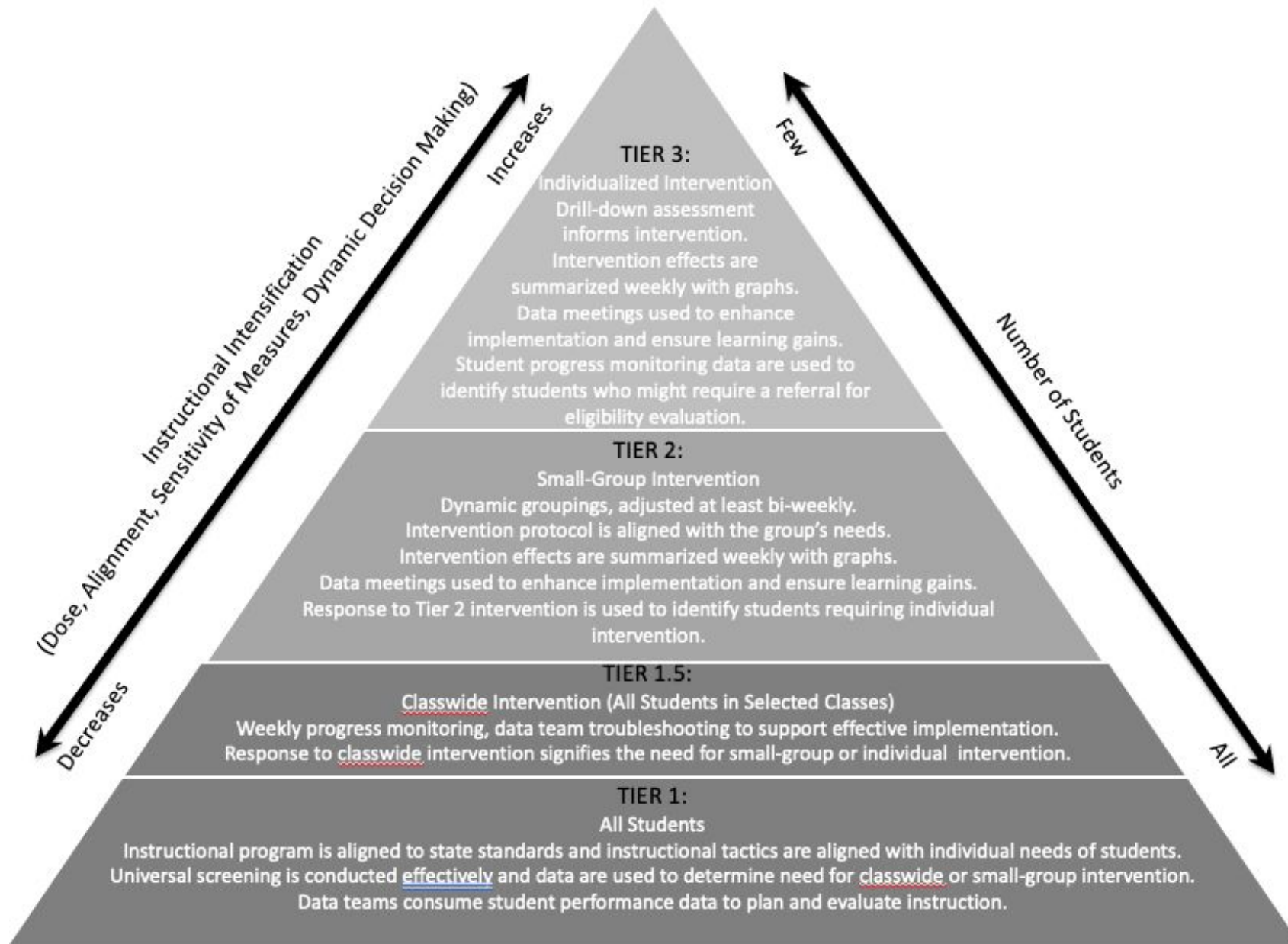
Children Arrive with Different Skill Proficiencies

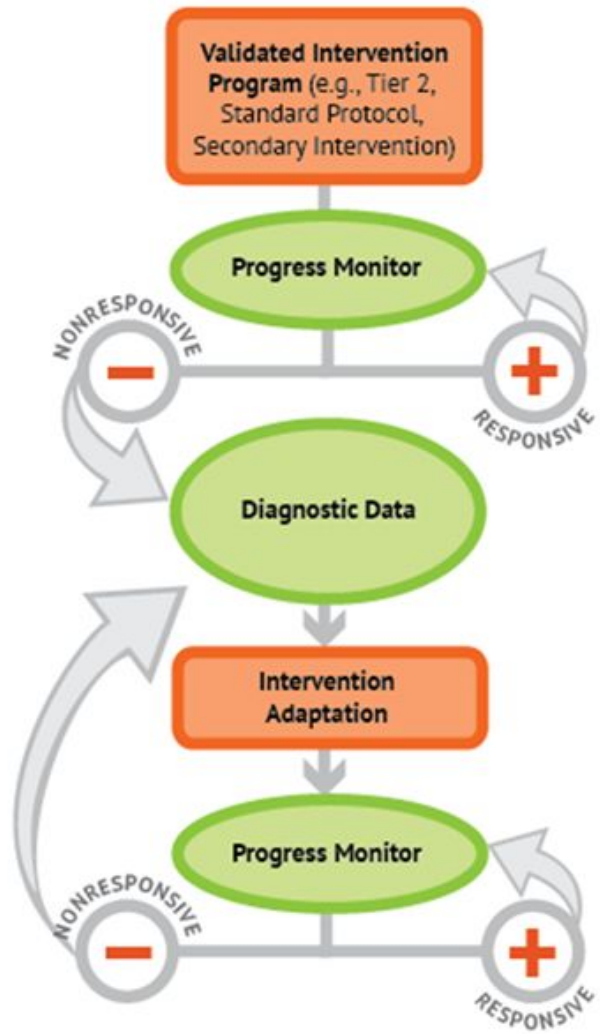


Schools Differ in the Quality of their Instructional Offerings

Gains in Oral Reading Fluency







What I wanted



What I got

How Can We Work Smarter in MTSS?

1. More Accurate Assessment or Determination of Academic Need
2. Use Universal Classwide Intervention on High-Leverage Skills and Understandings in Key Content Areas
3. Retool your Intensification Plan



Let's Talk About Smarter Screening

How Do We Go from This to...



To This?

Classwide Intervention | Individual Interventions | **Screening** | Students | Growth

Spring 2017-18 Screening Results

The results are in. Let's take a look...

Classroom Performance

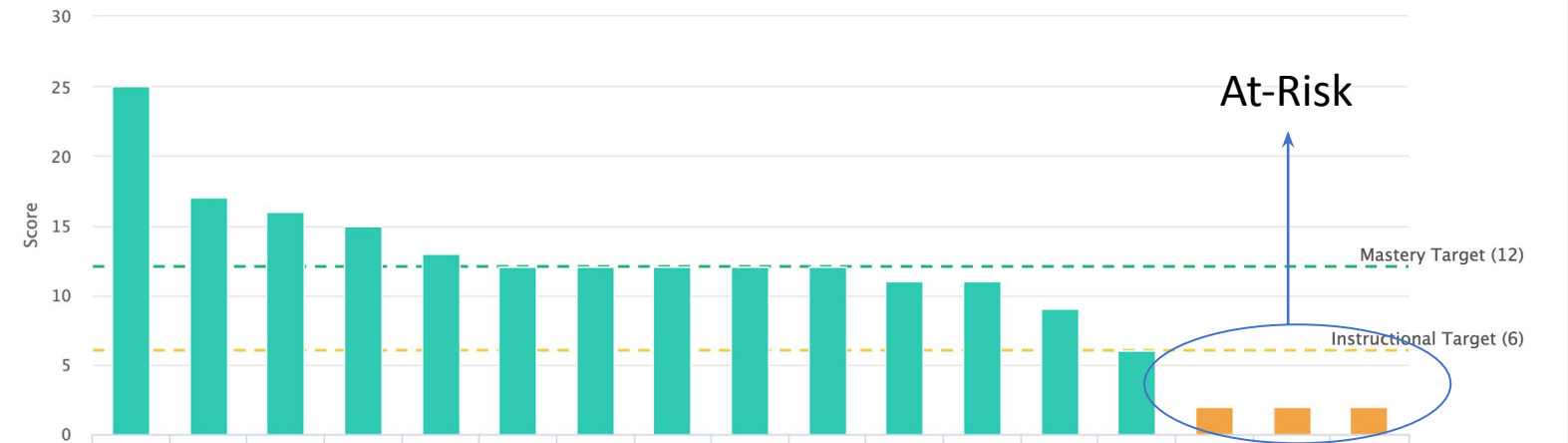
6% of your class reached the target on all of the screening assessments. Extra practice will help you reach mastery at this grade level.

The classwide intervention has already been started.



Measure 1: Multiply 1 Digit by 2-3 Digit w/ & w/o Regrouping

Your students' screening scores compared to the target score.



Especially When So Many Classes Look Like This

- Classwide Intervention
- Screening**
- Students
- Growth

Fall 2019-20 Screening Results

The results are in. Let's take a look...

Classroom Performance

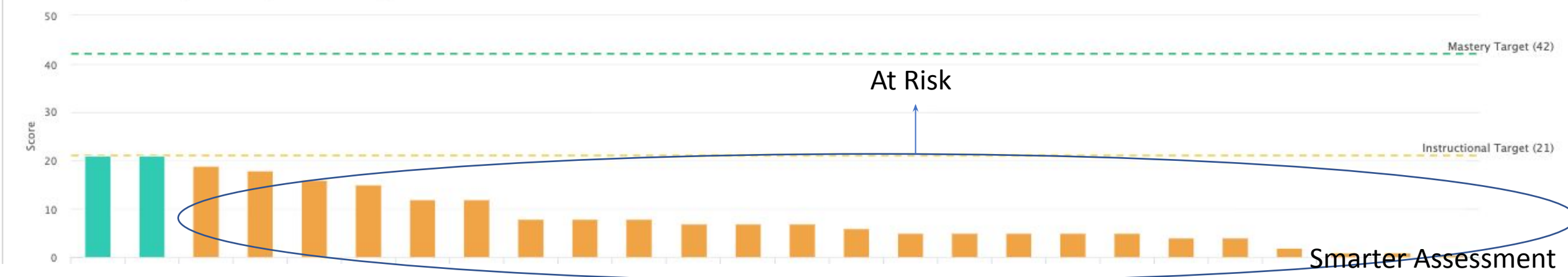
4% of your class reached the target on all of the screening assessments. Extra practice will help you reach mastery at this grade level.

The classwide intervention has already been started.



Measure 1: Fact Families: Addition/Subtraction 0-20

Your students' screening scores compared to the target score.



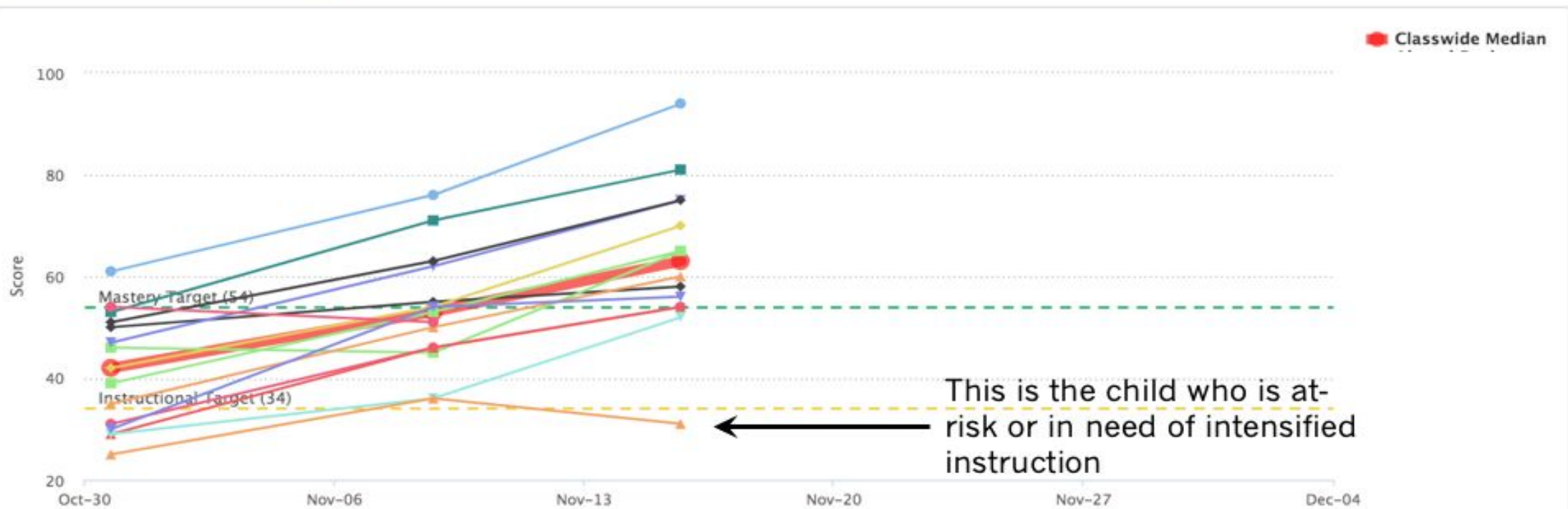
Use Classwide Intervention to Improve Learning & Determine Risk

Mixed Addition/Subtraction 0-20

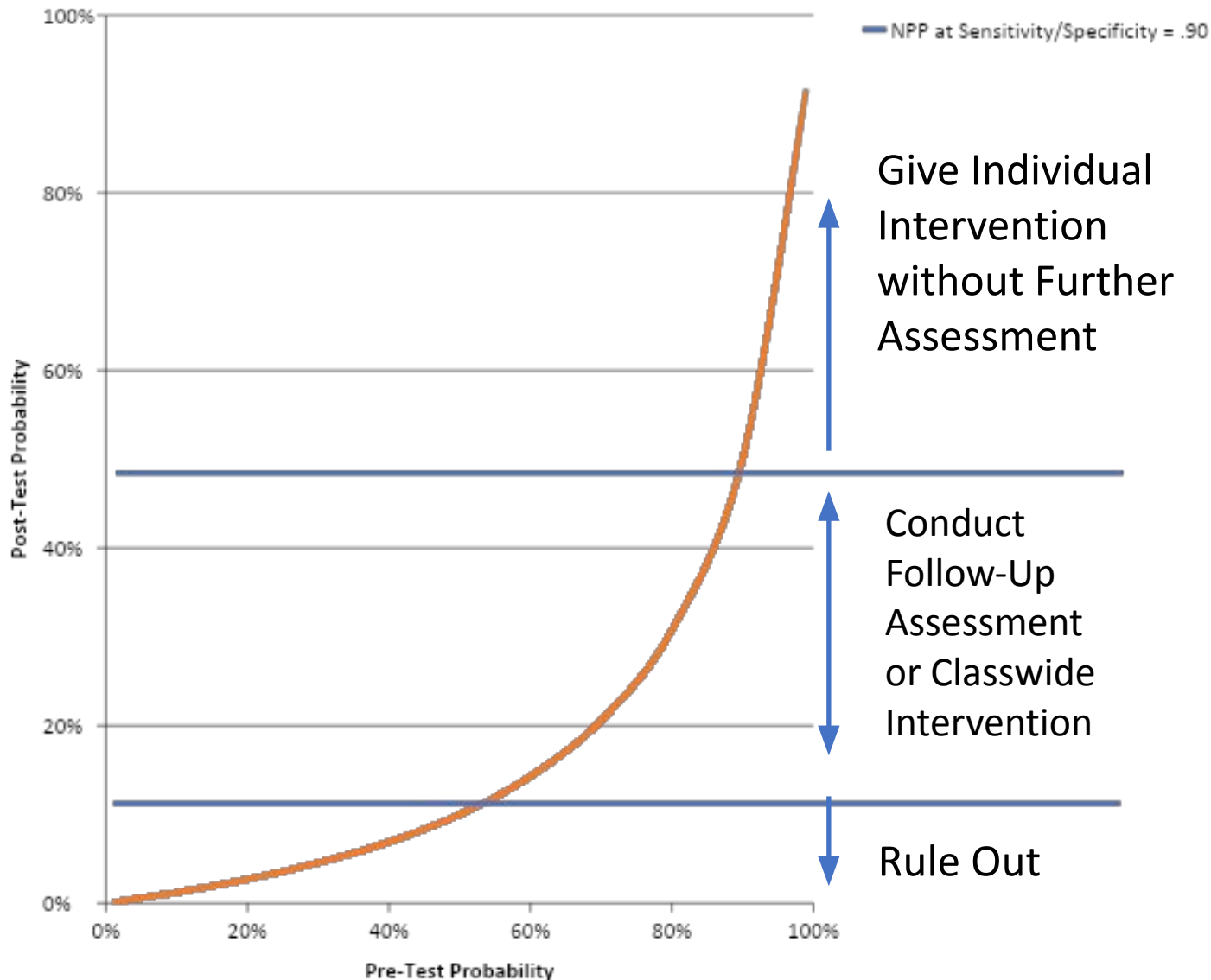
Create Intervention Materials to View or Print

Classwide Rate of Improvement: 9.2

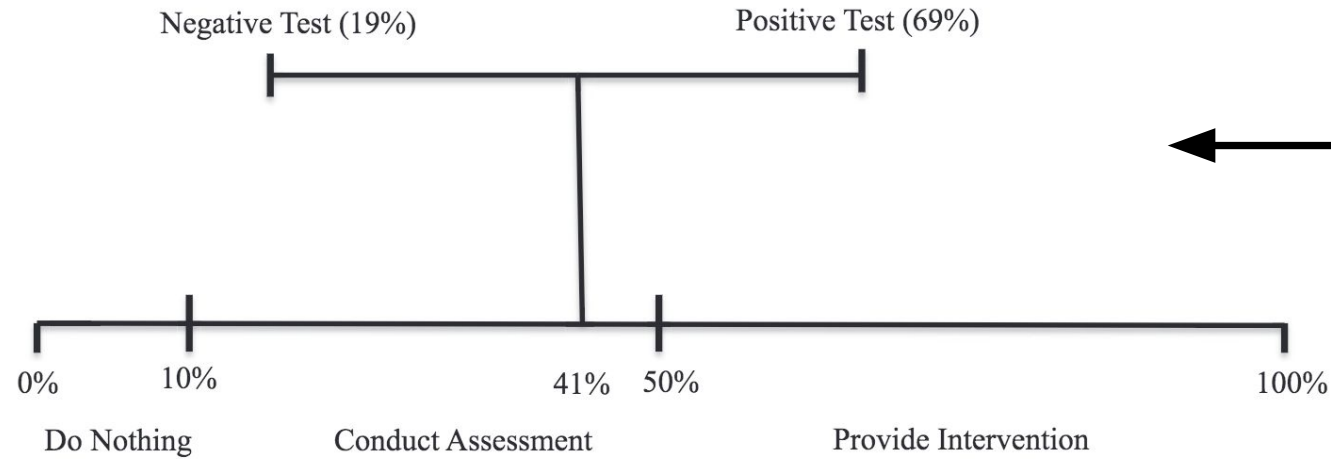
Create Intervention Materials



Screening Alone, When Risk is High, Causes Decision Errors

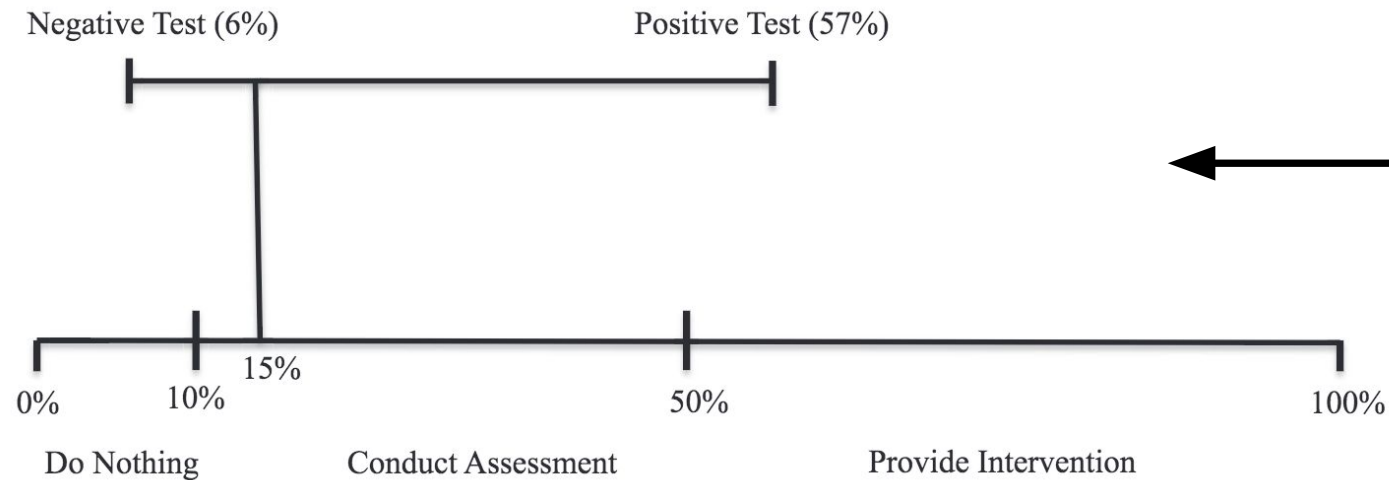


Negative Post-Test Probability (Orange Line) = the probability of a child who has PASSED the screening FAILING the year-end test.



← Same Screener, Not Useful Before Intervention

Figure 4. Accuracy of the mathematics screener for students who receive a free or reduced-price lunch.



← Same Screener, Useful After Intervention

Figure 5. Illustration of the use of intervention to reduce overall risk and permit more accurate screening decisions.

Here is a Class at Screening

Classwide Intervention

Screening

Students

Growth

Fall 2019-20 Screening Results

The results are in. Let's take a look...

Classroom Performance

4% of your class reached the target on all of the screening assessments. Extra practice will help you reach mastery at this grade level.

The classwide intervention has already been started.

8%

Measure 1

19%

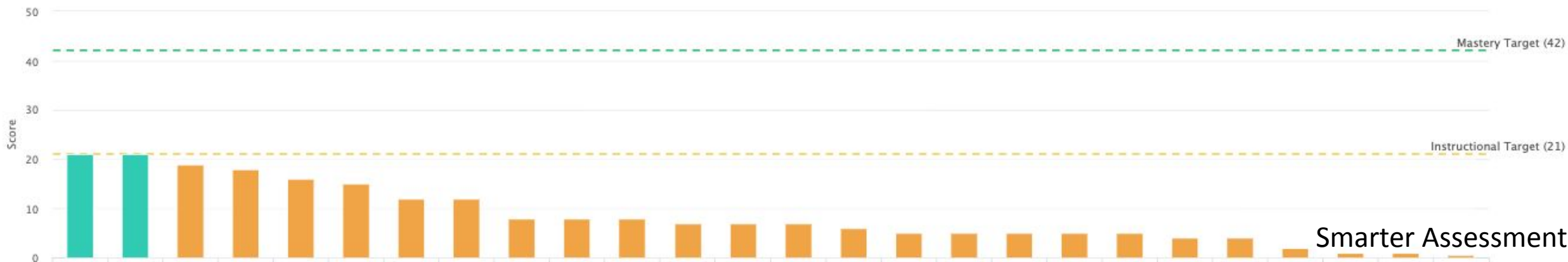
Measure 2

19%

Measure 3

Measure 1: Fact Families: Addition/Subtraction 0-20

Your students' screening scores compared to the target score.



Students Show Rapid Growth

Classwide Intervention

Screening

Students

Growth



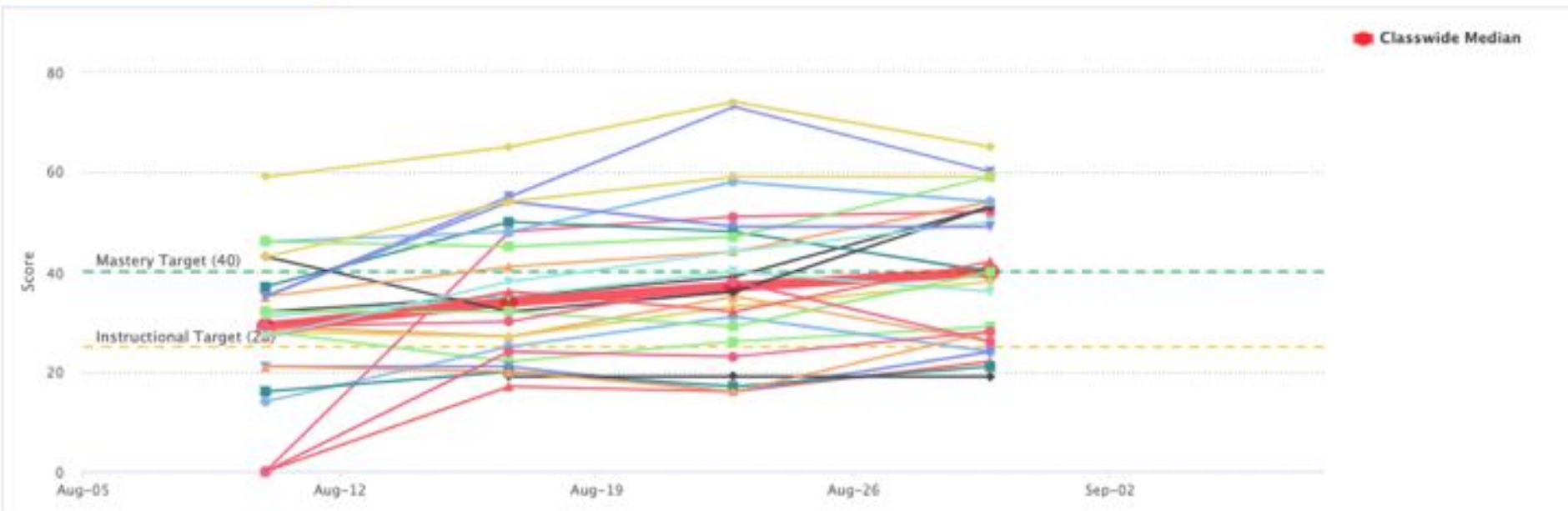
Your class is currently in class wide intervention. Complete intervention activities daily and enter progress monitoring scores weekly.

Mixed Addition/Subtraction 0-20

Create Intervention Materials to View or Print

Create Intervention Materials

Classwide Rate of Improvement: 3.8



Hide Students scores

Intervention Progress

- Mixed Addition/Subtraction 0-20
- Fact Families: Add/Subtract 0-9
- Fact Families: Addition/Subtraction 0-20
- Addition 3-Digit Numbers with & without Regrouping
- Subtraction 3-Digit Number with & without Regrouping
- Add/Subtract 3-Digit Numbers with & without Regrouping
- Multiplication 0-9
- Multiplication 5-9
- Division 0-9
- Fact Families: Multiplication/Division 0-9
- Multiplication 0-12
- Division 0-12
- Fact Families: Multiplication/Division 0-12

These Are the Students who Need Individual Intervention

Classwide Intervention

Screening

Students

Growth

Fall 2019-20 Screening Results

The results are in. Let's take a look...

Classroom Performance

4% of your class reached the target on all of the screening assessments. Extra practice will help you reach mastery at this grade level.

The classwide intervention has already been started.

8%

Measure 1

19%

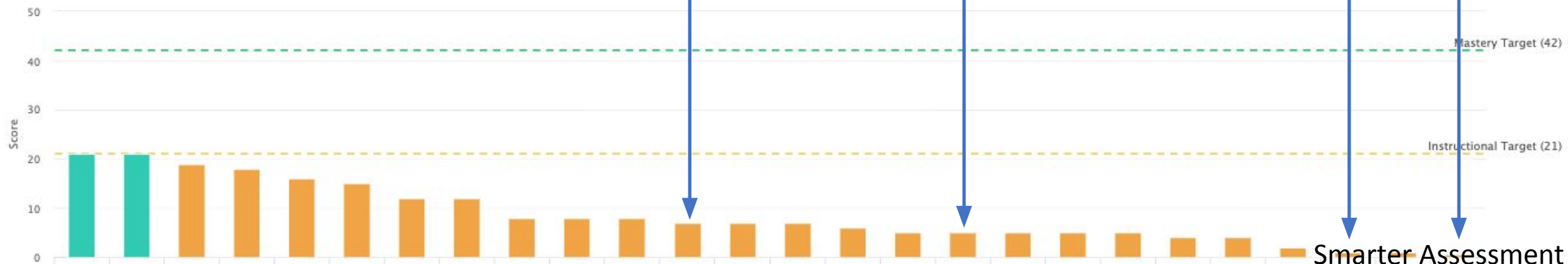
Measure 2

19%

Measure 3

Measure 1: Fact Families: Addition/Subtraction 0-20

Your students' screening scores compared to the target score.



Want to Know More About Academic Screening?

- <https://youtu.be/lz18MC5mgkY>
- <https://www.nasponline.org/resources-and-publications/resources-and-podcasts/covid-19-resource-center/return-to-school/considerations-for-academic-screening-upon-the-return-to-school>
- VanDerHeyden, Broussard, & Burns (2019). Classification Agreement for Gated Screening in Mathematics: Subskill Mastery Measurement and Classwide Intervention. Assessment for Effective Intervention.
- https://www.researchgate.net/publication/336702020_Classification_Agreement_for_Gated_Screening_in_Mathematics_Subskill_Mastery_Measurement_and_Classwide_Intervention
- <https://charts.intensiveintervention.org/ascreening>

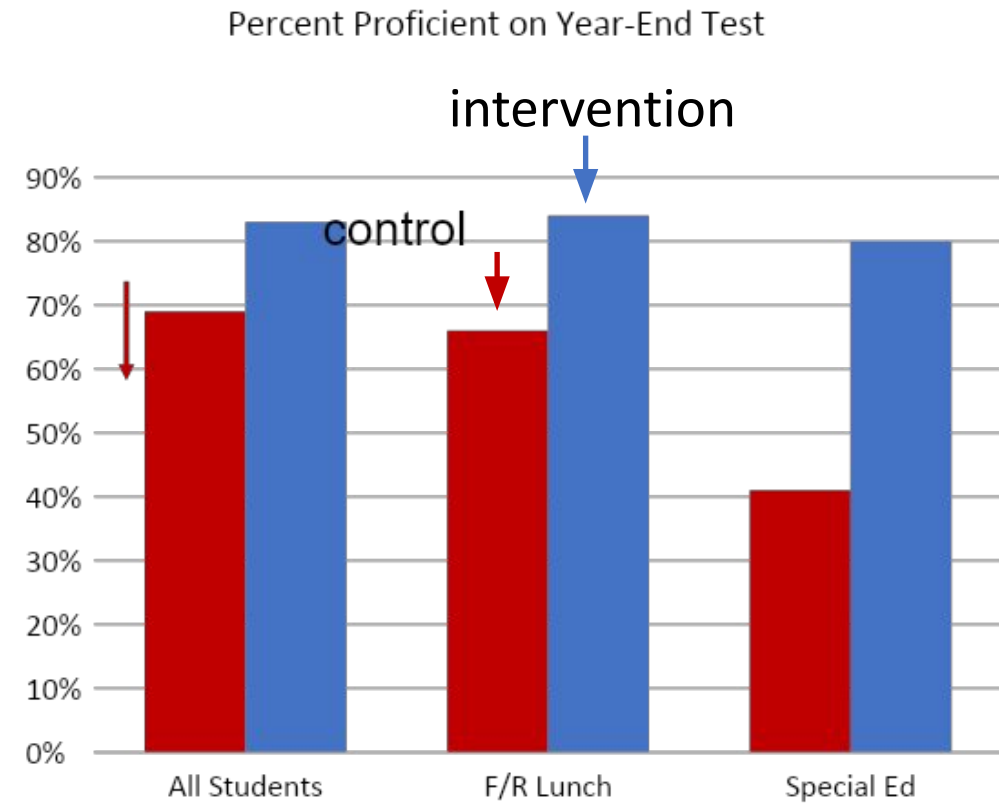
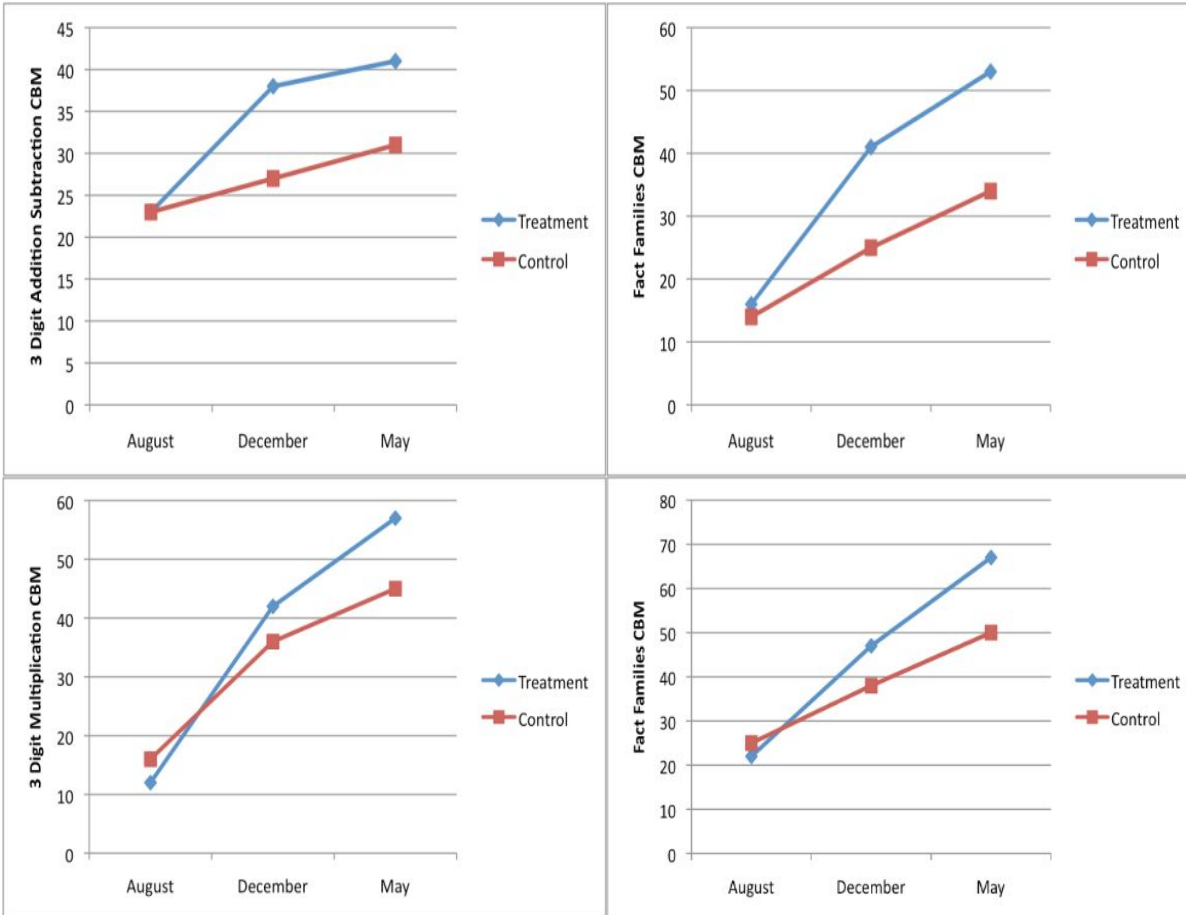
Add a Layer to Your MTSS Model

Classwide Intervention = Tier 1.5 (and It Works)

ES = .68 CBMs

ES = .18 Gr 4

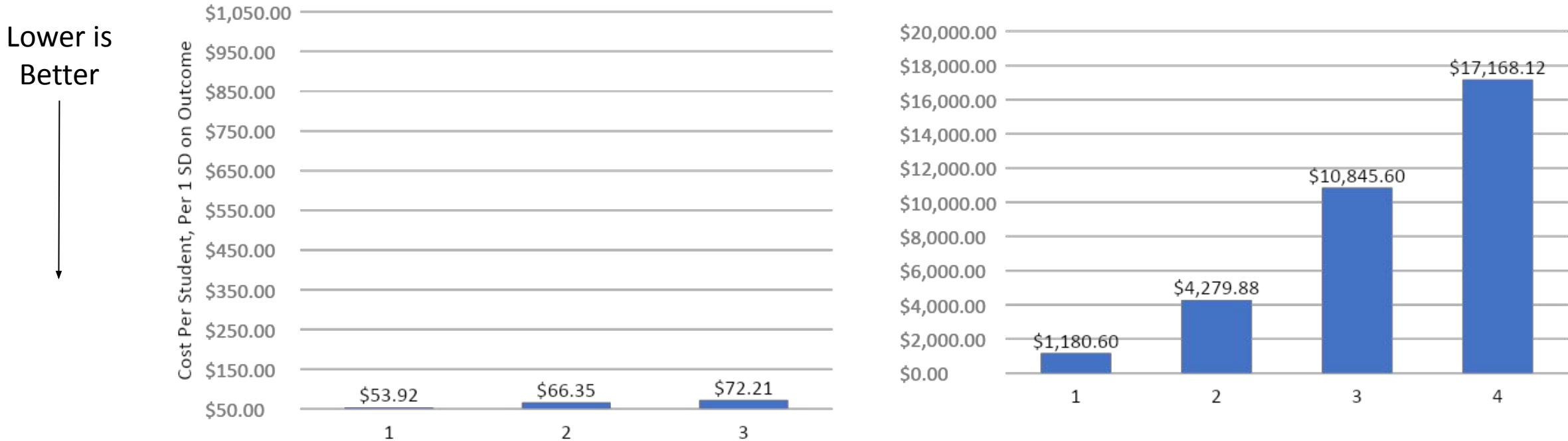
ES = .79 for at-risk



Classwide Intervention Gives You a Strong ROI

Cost Per Student, Per 1 SD gain in outcome

Incremental Cost Effectiveness Ratios



“Changing math curricula as an approach for whole-school intervention when large numbers of students do not achieve proficiency is more costly than targeted, preventative math intervention” (Barrett & VanDerHeyden, 2020)

Barrett, C. A., & VanDerHeyden, A. M. (2020). A cost-effectiveness analysis of classwide math intervention. *Journal of School Psychology, 80*, 54-65. <https://doi.org/10.1016/j.jsp.2020.04.002>

Classwide Intervention

How To Get Started:

- Intervention protocol.
 - Here is one to try:
https://www.sourcewelltech.org/sites/tech/files/2020-12-31/SpringMath_SampleClassIntervention_0819.pdf

Effective intervention wide intervention

Avoid intervention implementation errors with Spring Math's customized, easy-to-use intervention packets. Automatically generated each week based on the prior week's outcomes, interventions are aligned to Common Core State Standards and student needs. Intervention packets provide all materials necessary for effective intervention.

- Teacher-centered materials and instructions to complete in just 15 minutes a day
- Peer tutoring tools that are based on a proven model
- Printable student materials to build conceptual understanding and practice skills
- Embedded coaching, including cohort user groups and ongoing implementation support

Classwide interventions

- Accelerate each student's growth
- Promote mastery of essential outcomes
- Identify students who may be falling behind

Individual interventions

- Drill down to student's exact areas of need
- Bring skills to mastery
- Build conceptual understanding



View a sample [classwide intervention](#) or [individual intervention](#) (PDF)

Classwide Intervention

Workers



We use our **brains** to **think**.



We use our **mouths** to **explain**.



We use our **hands** to **write**.

Helpers



We use our **ears** to **listen**.



We use our **eyes** to **watch**.



We use our **mouths** to **help**.

Intervention Protocol

Classwide Fact Families: Add/Subtract 0-9

Student:

Grade: 01

Teacher: Paul Muyskens

Class name: 1 Mathematics (-Hayden-)

Date: 1/22/2019

Classwide Math Intervention

Preparation:

- This is your master set of materials for the week.
- Make 1.5 copies of the practice sheets Day 1-5 for each student in your class (ex. if you have 20 students make 30 copies). Each student will have one copy for independent practice, while each pair of students will have one copy for paired practice.
- If you are using flashcards to practice, you can make only 1 copy per student.
- To set up your student pairs click on "Students" in your dashboard, then "Suggested Student Pairs."
- Identify the first "Worker," which should be the higher-performing student. This student will always work first.

- Say, **It's time for Spring Math. Please get together with your math partner. Please take out your practice materials, have your colored pen and pencil out, and show me you are ready.**
- Say, **Workers, your job is to work as many problems correctly as you can. As you work, be sure to talk through the problem so your partner can HEAR and SEE you solve the problem. Use a quiet voice while you work.**
- Say, **Helpers, your job is to follow along, listen and watch as the worker is working problems. If you see an error, speak up! Say, "Stop, Let's check this one."**

You should give the worker a hint, point to the exact error, but don't give them the answer. See if the worker can fix the error.

If the worker is stuck, give the answer but solve it aloud so the worker knows how you got that answer. If you get really stuck, circle the problem and ask me for help.

- Set the timer for 3 minutes.
- Say, **Remember, your goal is to work as many problems as possible with 100% accuracy. Ready? Begin!** Start the timer when you say Begin.



Classwide Intervention

Improves Learning, but Makes it Clear Who Needs More

Classwide Intervention Individual Interventions Screening Students Growth

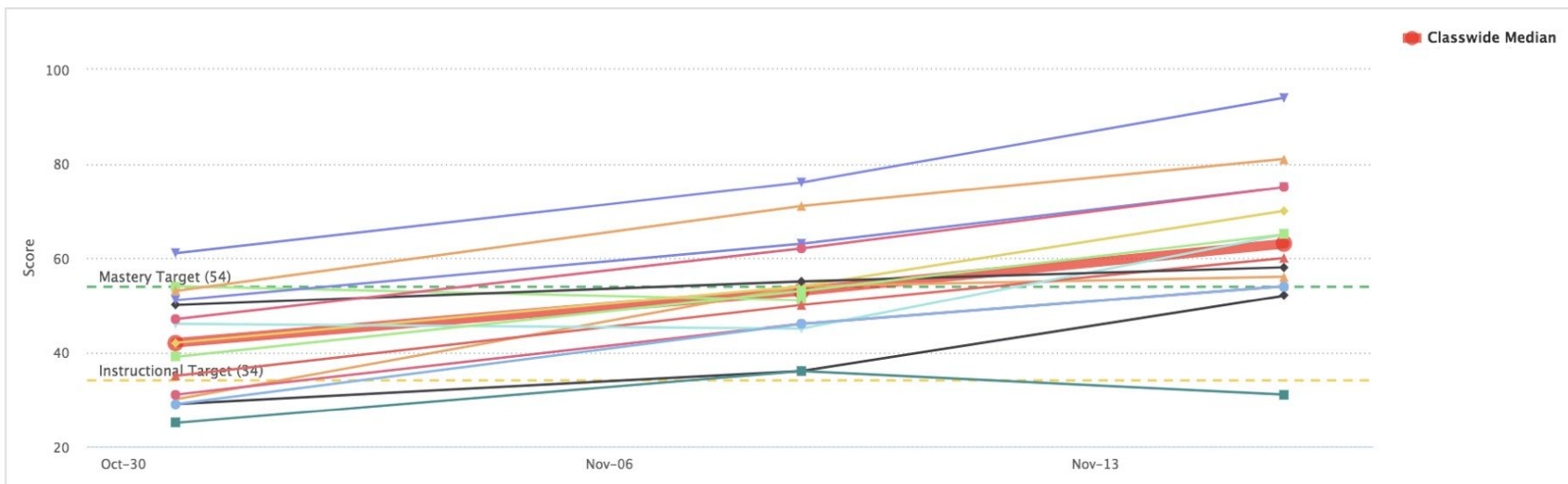
Great work, your class is ready to start working on a new intervention skill!

Your class is currently in class wide intervention. Complete intervention activities daily and enter progress monitoring scores weekly.

Mixed Addition/Subtraction 0-20

Create Intervention Materials

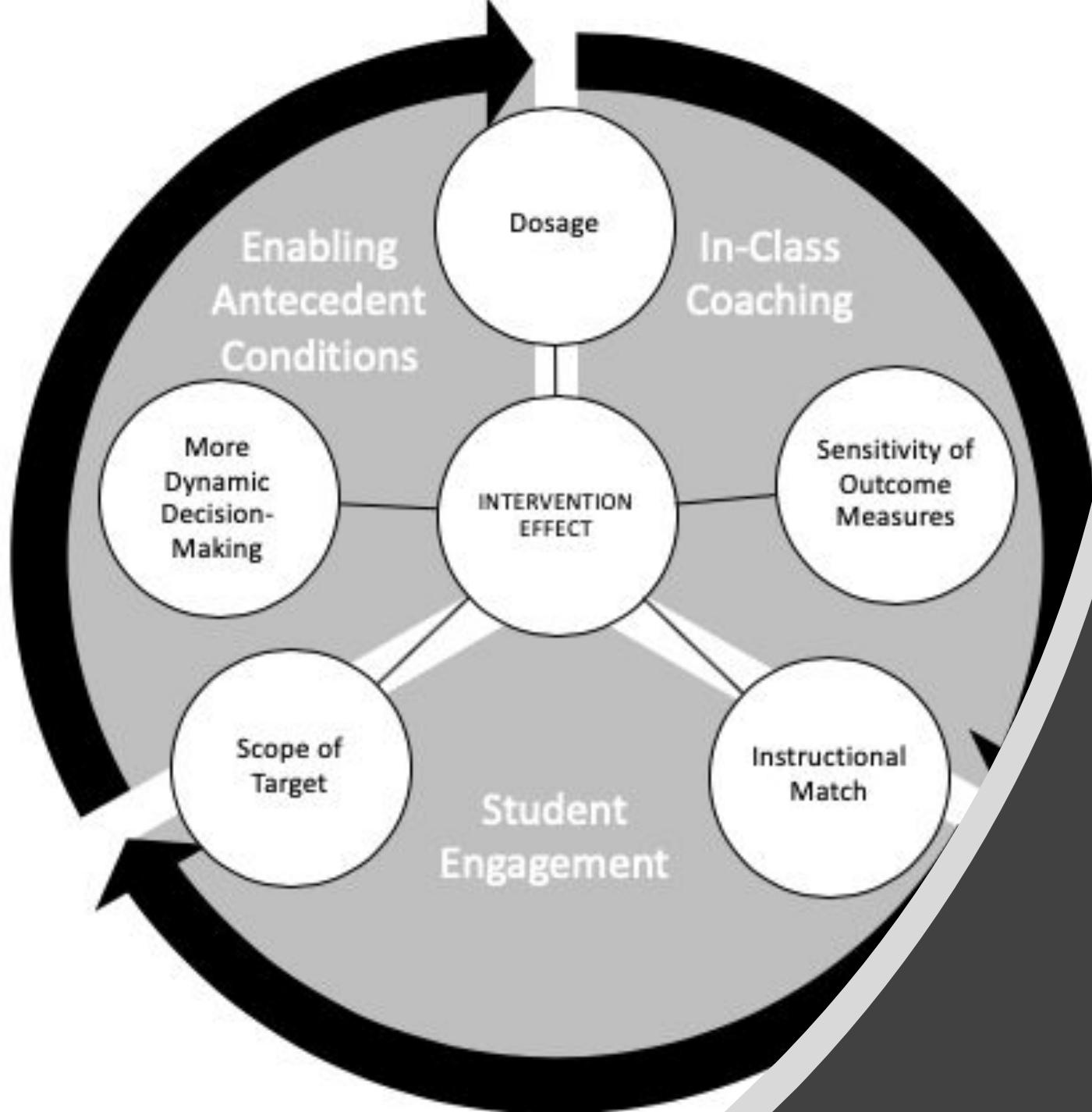
Classwide Rate of Improvement: 9.2



Hide Students scores

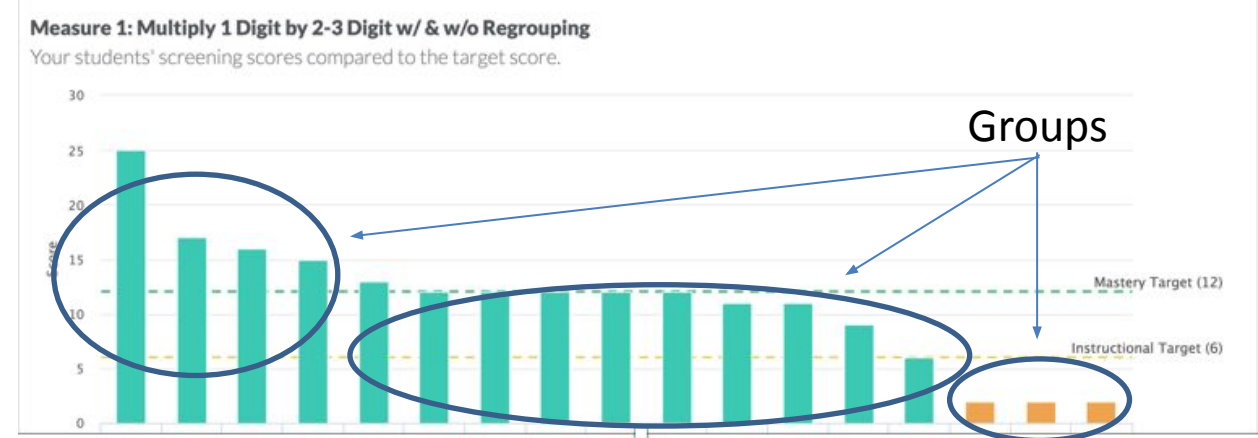
Intervention Progress

- ✓ Mixed Addition/Subtraction 0-20
- ✓ Fact Families: Add/Subtract 0-20
- ✓ Addition/Subtraction 3-Digit Numbers w & w/o Regrouping
- ✓ Multiplication 0-12
- ✓ Division 0-12
- ✓ Fact Families: Multiplication/Division 0-12
- ✓ 1-Digit Mult by 2-3 Digit w & w/o Regrouping
- ✓ 2-Digit Multiplied by 2 Digit w/o Regrouping
- ✓ 2-Digit Multiplied by 2 Digit w/Regrouping
- ✓ Div 1-digit into 2-3 digits w/o Rems
- ✓ Divide 1-Digit into 1-2 Digit with Remainders
- Divide 2-Digit into 3-4 Digit w/Remainders
- Create Equivalent Multiplication Problems w/Common Factors



Retool Your Intensification Plan

Differentiation is Not Enough



Differentiated

Matching protocols with small group needs.

Personalized

Delivering assessment-driven lesson content.

Individualized

Management of assessment-driven lesson content and tactical supports.

- Usually accomplished by organizing small groups
- Re-teach & enrich periods
- But, this is HARD to do.

“The results of the study indicate that the MAP program was implemented with moderate fidelity but that MAP teachers were not more likely than control group teachers to have applied differentiated instructional practices in their classes. Overall, the MAP program did not have a statistically significant impact on students’ reading achievement in either grade 4 or grade 5.” (Cordray et al., 2012)

Full report here: <https://files.eric.ed.gov/fulltext/ED537982.pdf>

Retool Intensification

Individualized



Differentiated

Matching protocols with small group needs.

Personalized

Delivering assessment-driven lesson content.

Individualized

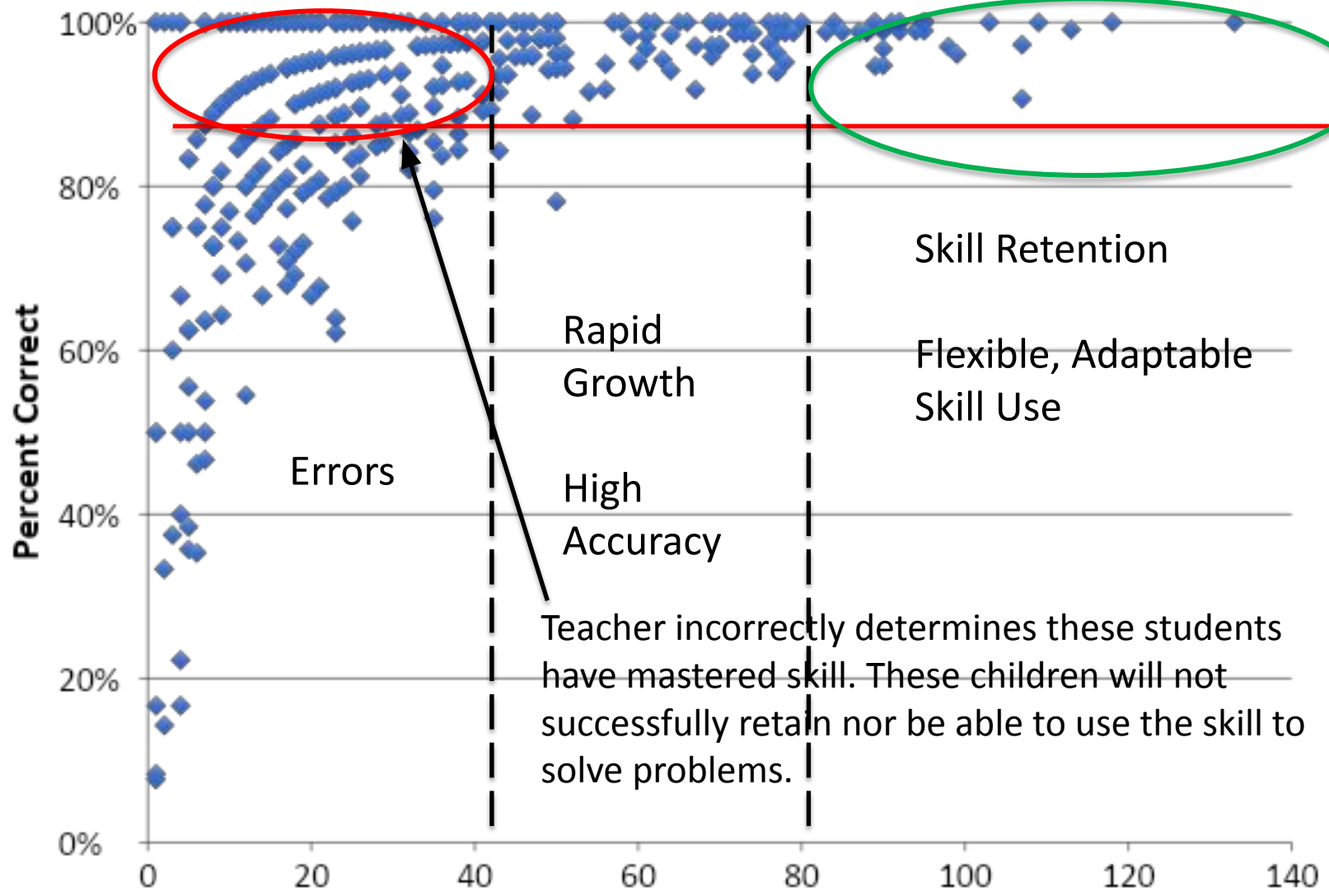
Management of assessment-driven lesson content and tactical supports.

Differentiates and customizes instruction in the context of local learning expectations, ongoing progress monitoring, implementation management, and outcomes evaluation over time.

Retool Intensification

Fluency by Accuracy

Teachers determine mastery



Errors

Rapid Growth

High Accuracy

Teacher incorrectly determines these students have mastered skill. These children will not successfully retain nor be able to use the skill to solve problems.

Skill Retention

Flexible, Adaptable Skill Use

These children are ready for more challenging work & will have high probability of learning success, generalization.

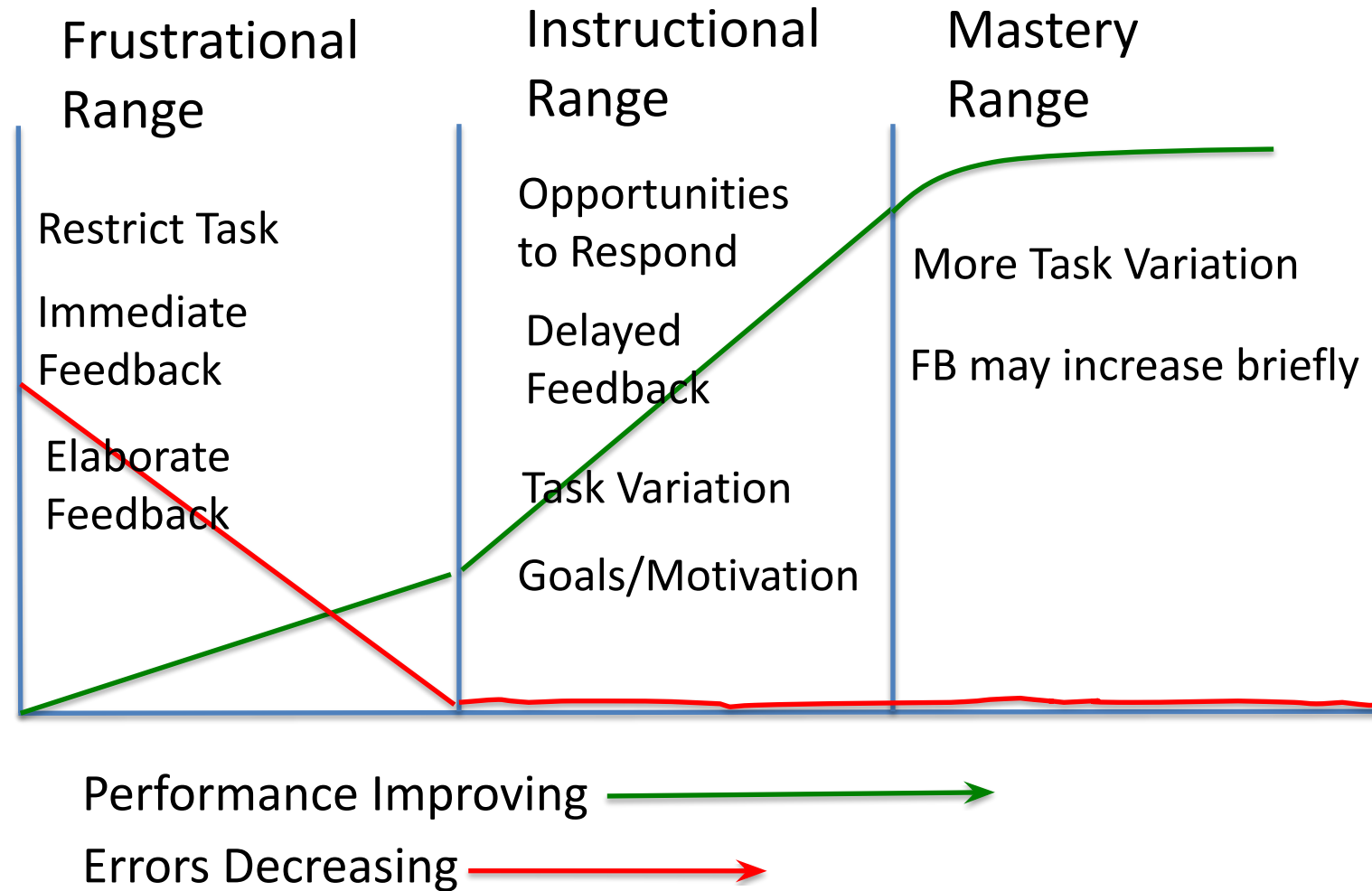
Frustrational Performance

Instructional Performance

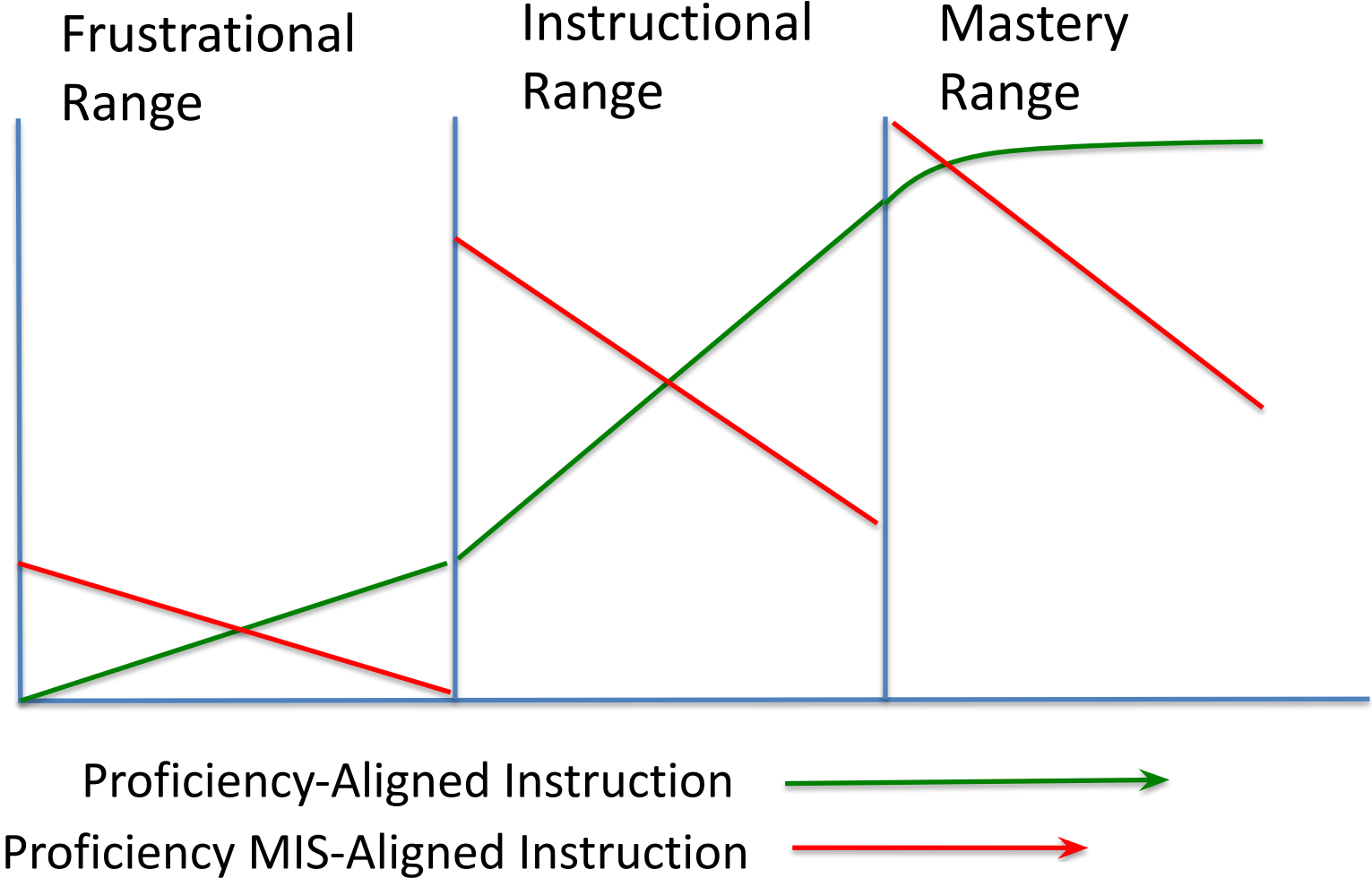
Mastery Performance

Retool Intensification

The Instructional Hierarchy: How it Works



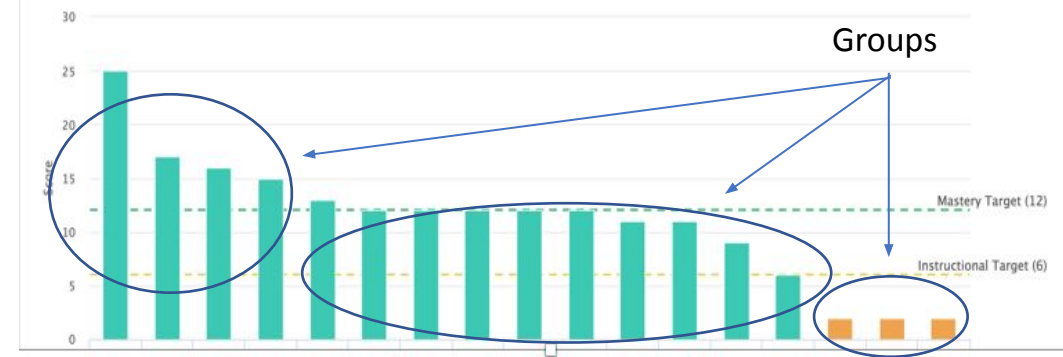
Skill x Treatment Interaction



Tier 2 Take-Aways

Measure 1: Multiply 1 Digit by 2-3 Digit w/ & w/o Regrouping

Your students' screening scores compared to the target score.



- Group size can vary (larger groups NOT associated with weakened efficacy) Clarke et al. (2017) & Doabler et al. (2018)
- Groupings must be flexible (they should change based on learner growth & need– in math this means every 1-2 weeks)
- Sessions can be brief, but more frequent is better (dosage).
- Students can work in pairs (like a mini-classwide intervention) to maximize opps to respond and/or immediate corrective feedback
- Can be used for Acquisition and Fluency-Building interventions

Children Getting the Same Intervention = Small Group

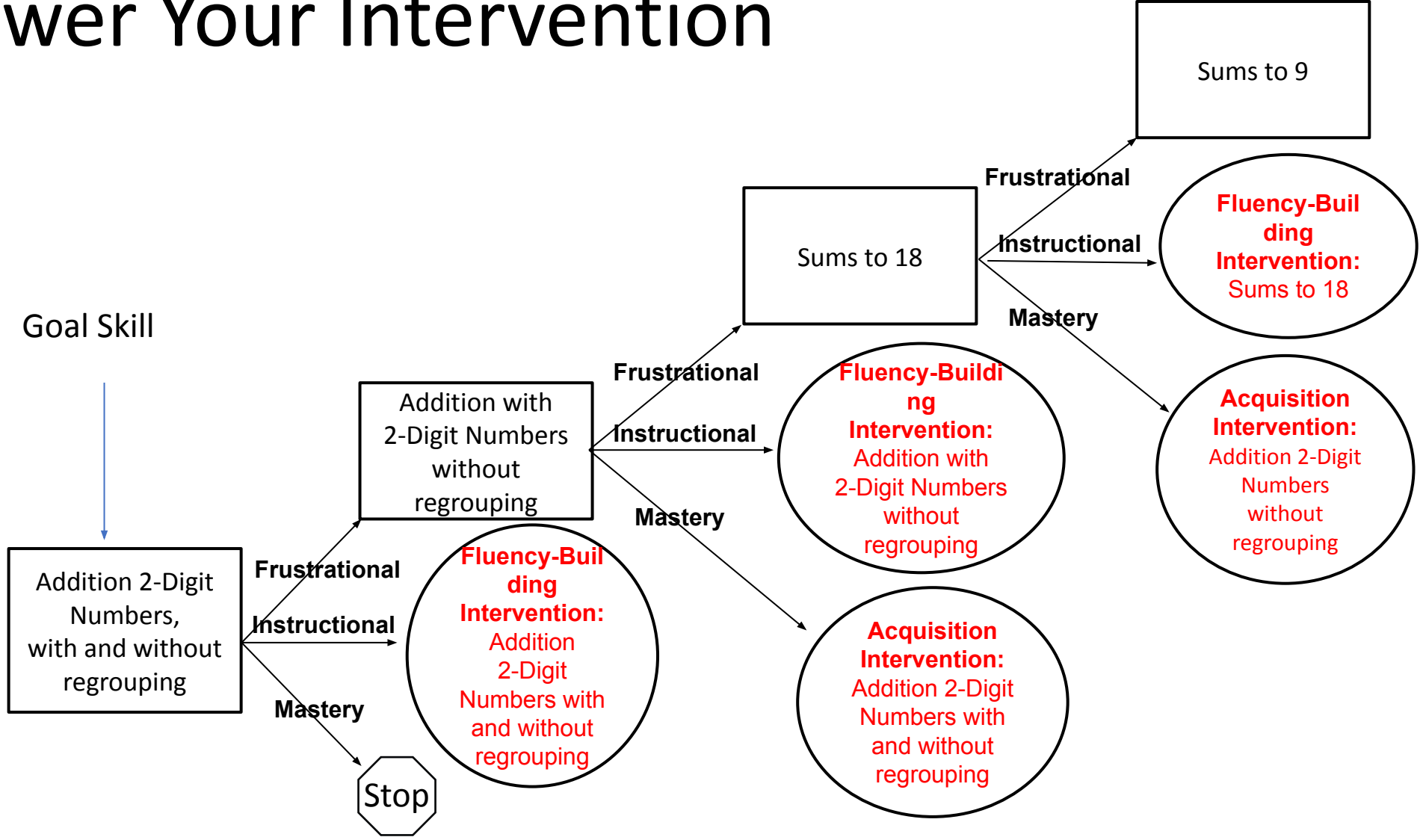
Suggested Small Groups

Name	Grade	Class	Intervention	Progress	
Group 1	Student 1	K	Teacher 1	Missing Number 0-11	Fluency
	Student 2	K	Teacher 2	Missing Number 0-11	Fluency
	Student 3	K	Teacher 1	Missing Number 0-11	Fluency
Group 2	Student 4	K	Teacher 1	More/Less Quantity ...	No Progress
	Student 5	K	Teacher 1	More/Less Quantity ...	No Progress
Group 3	Student 6	03	Teacher 3	Fact Families: Add/S...	Fluency
	Student 7	03	Teacher 3	Fact Families: Add/S...	Fluency


Close

45 total minutes instead of 105 minutes of individual intervention time! You save an hour of time per day with small-groups with no loss to efficacy.

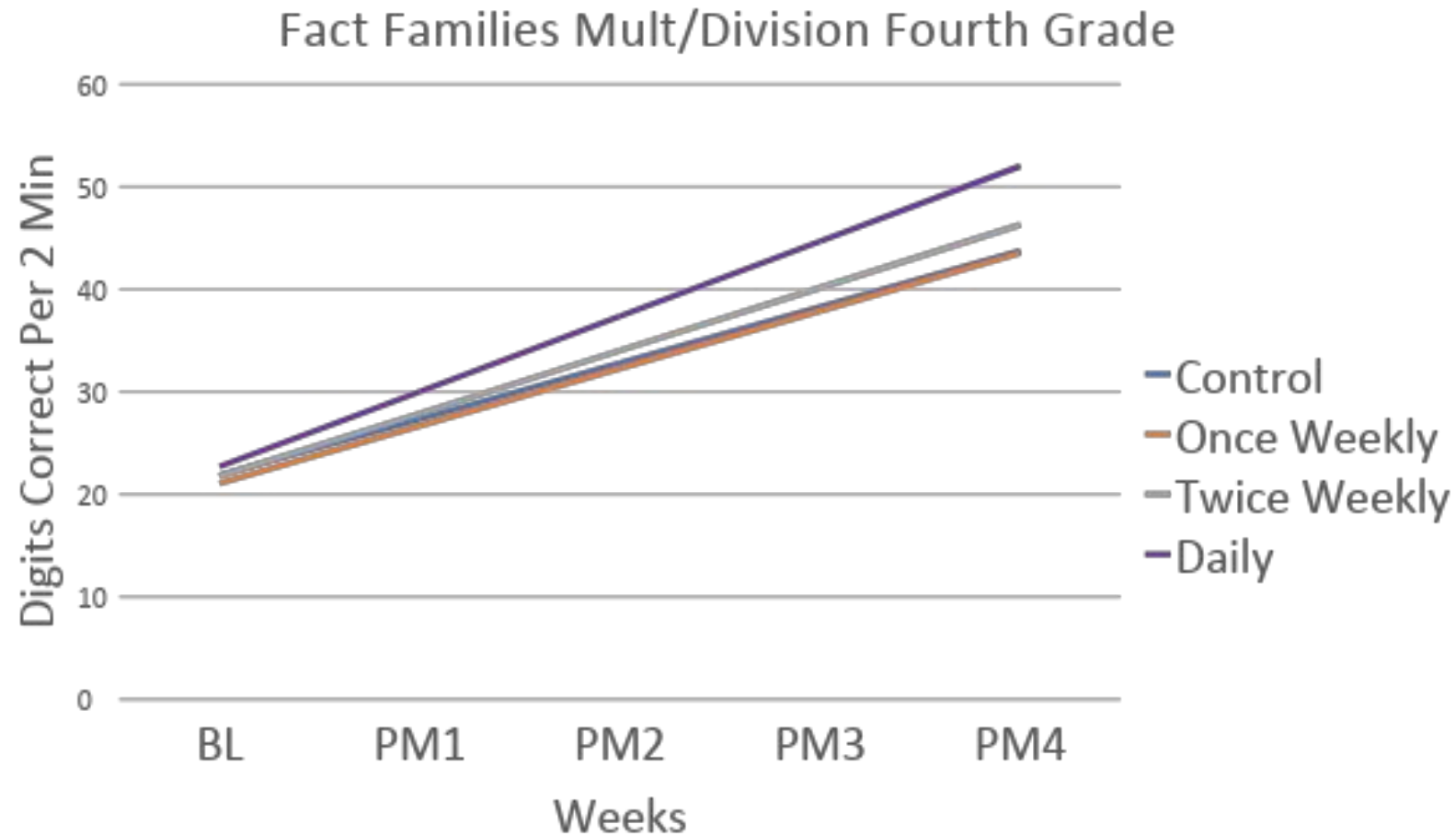
Use the Instructional Hierarchy to Power Your Intervention



You will Need a Range of Interventions & Data to Connect them to the Student

			Acquisition 			
Classwide Math Intervention	Timed Trial	Response Cards	Cover Copy Compare	Guided Practice	Incremental Rehearsal	Bingo
Classwide Reading Intervention	Repeated Reading	Nuclear Reading Intervention		Listening Passage Preview	Word Sorts	Phrase Drill

Dose What is Needed, Not What Fits Schedule



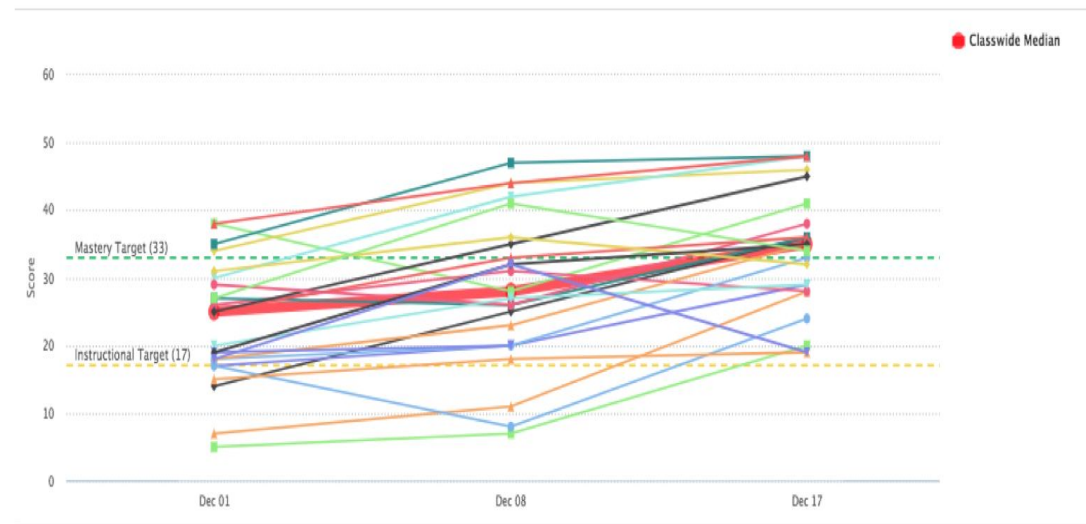
Codding, R., VanDerHeyden, Martin, R. J., & Perrault, L. (2016). Manipulating Treatment Dose: Evaluating the Frequency of a Small Group Intervention Targeting Whole Number Operations. *Learning Disabilities Research & Practice, 31*, 208-220.

This is a High-Integrity Intervention

Classwide Intervention Progress

Subtraction 0-20

Classwide Rate of Improvement: 4.5

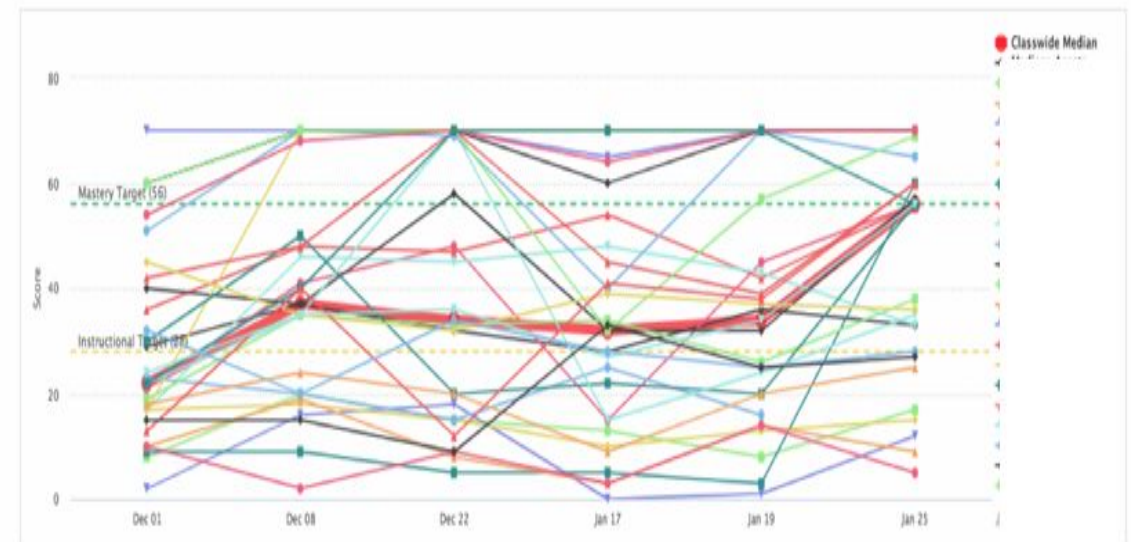


This is a Low-Integrity Intervention

Classwide Intervention Progress

Fact Families: Add/Subtract 0-20

Classwide Rate of Improvement: 2.0



Manage Implementation

- What actions are underway?
- What are the results right now?
- Where is support needed?
- Are proximal indicators headed in the right direction?
- What are the barriers we can troubleshoot?

1st Grade

← Student Groups:
View Groups

Summary Notes for 1st Grade

- [Group 01#1 \(CourseId-SectionId\)](#): Progress is fantastic. This class is progressing at 1.9 weeks per skill. We'd recommend asking this teacher what's working and if they have any tips for others!
- [Group 01#1 \(CourseId-SectionId\)](#): This class has been on one skill for over 4 weeks. It might be worth checking in with them.
- [Group 01#1 \(CourseId-SectionId\)](#): This class has low intervention consistency. This means scores aren't being entered in Spring Math each week. We would recommend checking with them to make sure the scores can be entered.
- [Group 01#2 \(CourseId-SectionId\)](#): Progress is fantastic. This class is progressing at 1.8 weeks per skill. We'd recommend asking this teacher what's working and if they have any tips for others!

[Show More](#)

Classwide Interventions

Teacher (Group)	Total Students in Interventions	Most recent score entry	Intervention Progress	Intervention Consistency	Average Weeks Per Skill	Calculations as Of Date
D User (Group 01#1 (CourseId-SectionId))	13	05/14/2018	<div style="width: 100%;"><div style="width: 100%; background-color: #00a68a;"></div></div> Intervention Skill 9 of 10	76% <small>13 of 17 weeks with scores</small>	1.9	01/10/2018 x
D User (Group 01#2 (CourseId-SectionId))	13	05/10/2018	<div style="width: 100%;"><div style="width: 100%; background-color: #00a68a;"></div></div> Intervention Skill 9 of 10	75% <small>12 of 16 weeks with scores</small>	1.8	01/22/2018 x
D User (Group 01#3 (CourseId-SectionId))	14	05/11/2018	<div style="width: 100%;"><div style="width: 100%; background-color: #00a68a;"></div></div> Intervention Skill 9 of 10	82% <small>14 of 17 weeks with scores</small>	1.9	01/09/2018 x

Individual Interventions

Teacher (Group)	Current Intervention	Most recent score entry	Intervention Consistency	Average Weeks Per Skill	Calculations as Of Date
D User (Group 01#1 (CourseId-SectionId))					
Connelly, Margaretta 1234	Sums to 20	N/A	0% <small>0 of 5 weeks with scores</small>	N/A	08/31/2018 x
D User (Group 01#2 (CourseId-SectionId))					

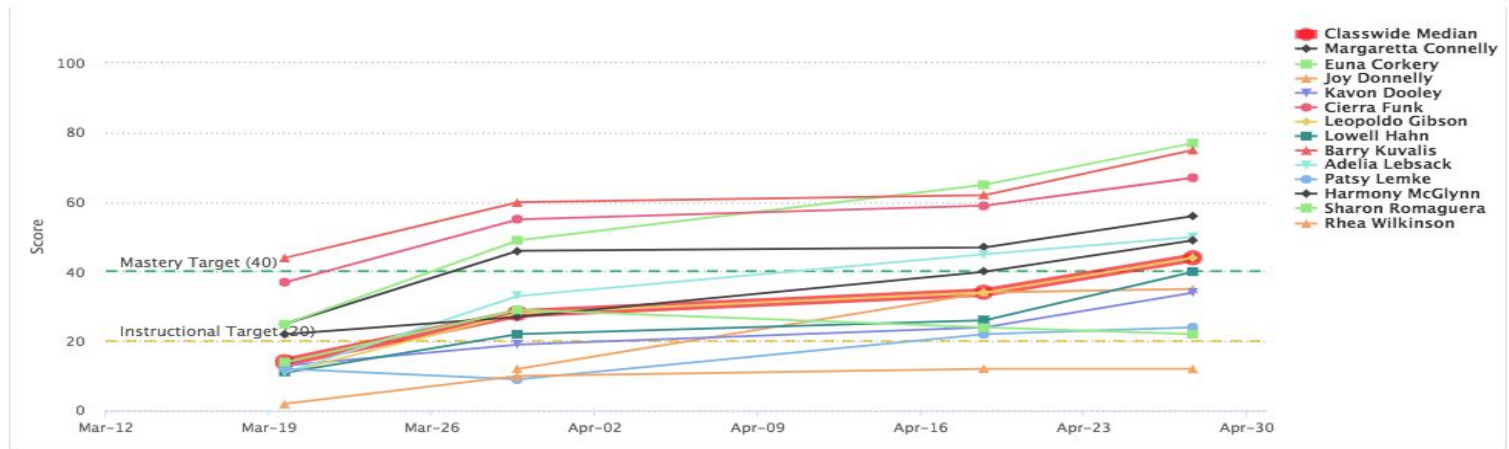
Teacher: Are Students Growing?

Your class is currently in class wide intervention. Complete intervention activities daily and enter progress monitoring scores weekly.

Fact Families: Add/Subtract 0-9

Create Intervention Materials

Classwide Rate of Improvement: 4.7



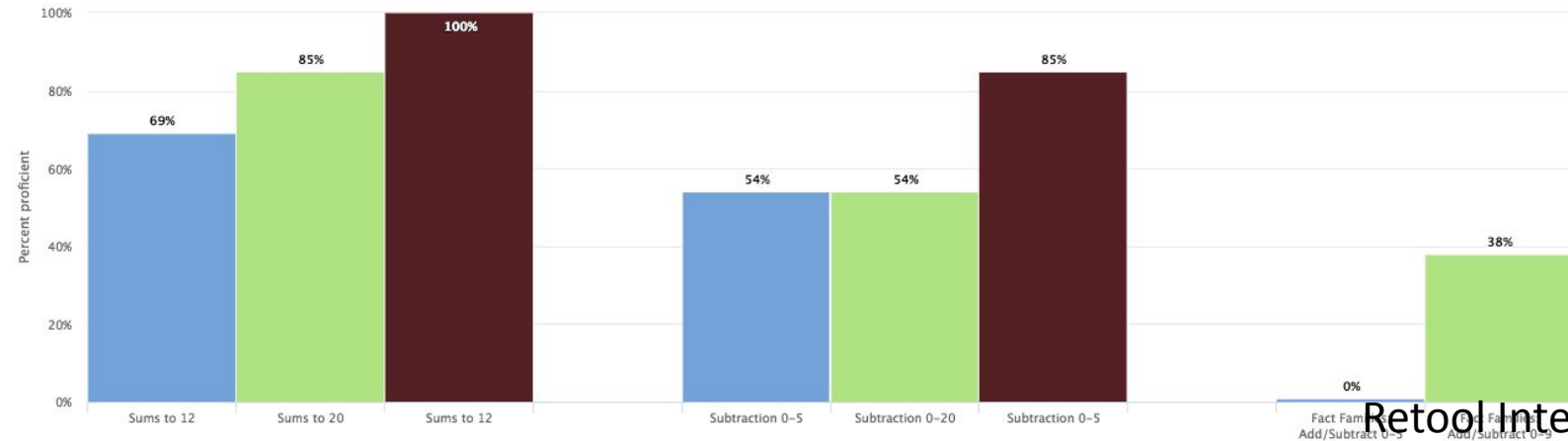
This class/group is not in the active school year. The form is disabled and kept for reference only.

Hide Students scores

Teacher: Does Growth Transfer?

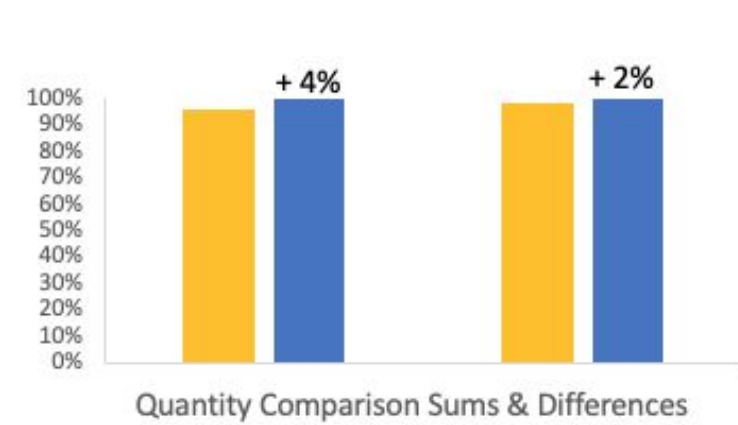
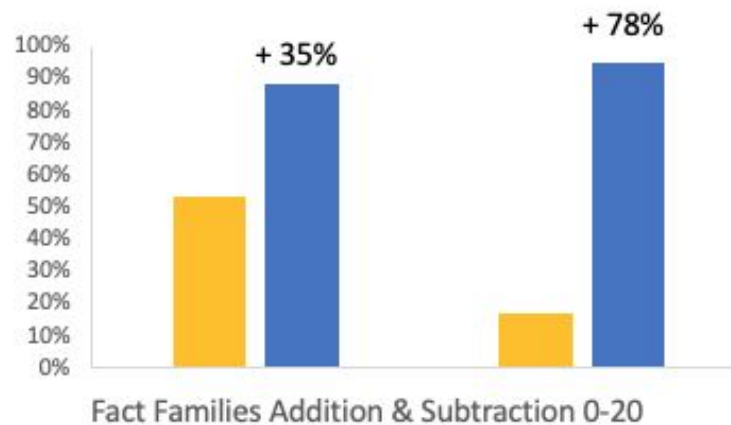
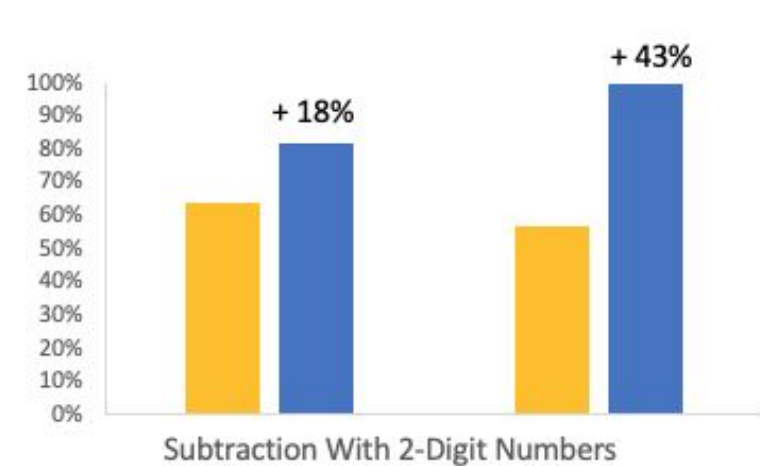
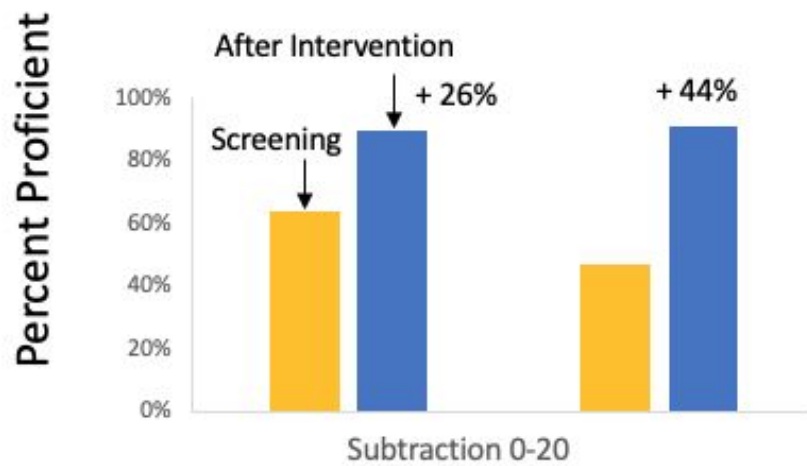
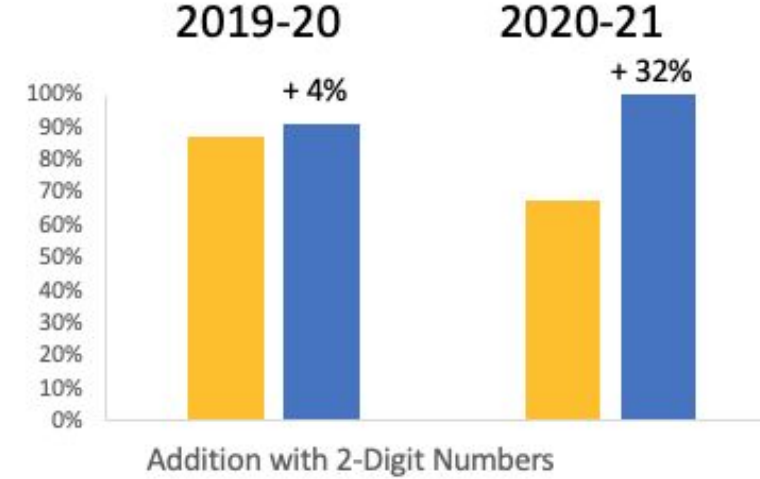
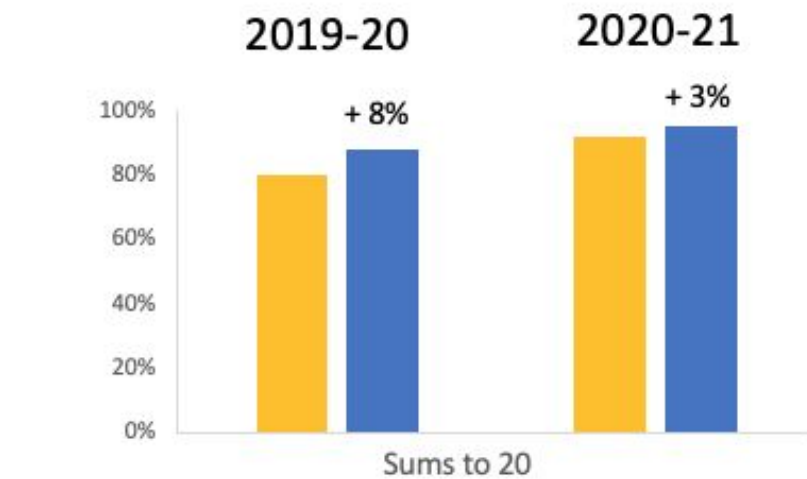
Winter To Spring

Seasonal Growth

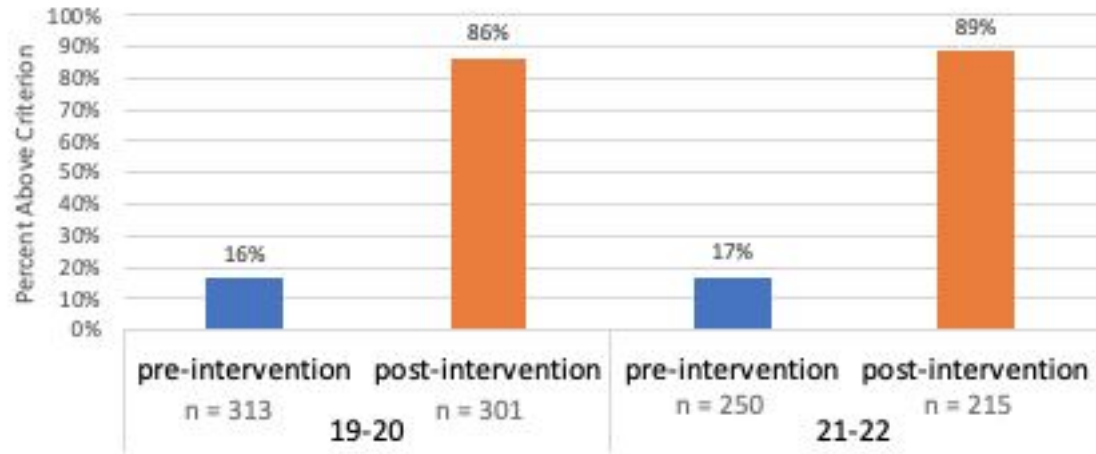


Retool Intensification

A Powerful Way to Repair Learning Loss: Focus on GROWTH



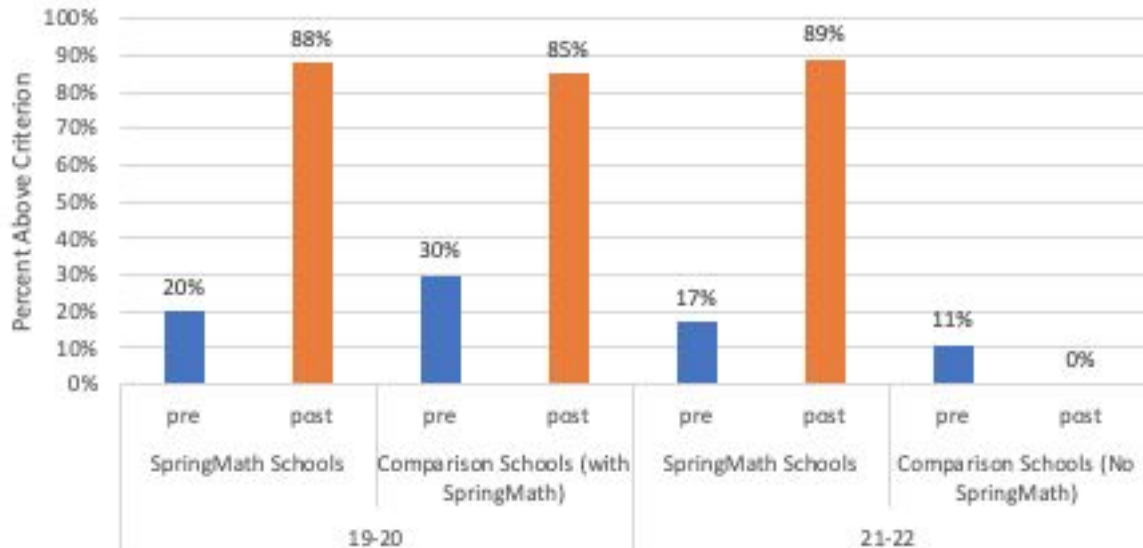
Fact Families Add & Subtract 0-20



Pre-Covid Mean gains w SpringMath +70%

Post-Covid Mean gains w SpringMath +72%

Fact Families Add & Subtract 0-20



Post-Covid Mean change in fall baseline with SpringMath -3%

Post-Covid Mean change in fall baseline without SpringMath -19%

Schools that did not use SpringMath in 20-21 are 11% proficient on measure 1. Schools that used SpringMath are 89% proficient on measure 1.



Lessons Learned in 15 Years of MTSS

Amanda VanDerHeyden
President, Education Research &
Consulting, Inc. Fairhope, AL
Founder, Spring Math
www.springmath.com



@amandavande1

