

“Tiered” Up to Support Numeracy through Effective MTSS Practices

2019 GaDOE Curriculum Directors'
Fall Conference: *Numeracy and the Whole Child*

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September 25, 2019

Outcomes for Today

- Understand the essential component of **Infrastructure** in Georgia's Tiered System of Supports for Students
- Explore how the Georgia's Tiered System of Supports for Students framework impacts numeracy instruction
- Reflect on how the subcomponents of infrastructure are essential to an effective numeracy program

Georgia's Tiered System of Supports for Students: A National Definition

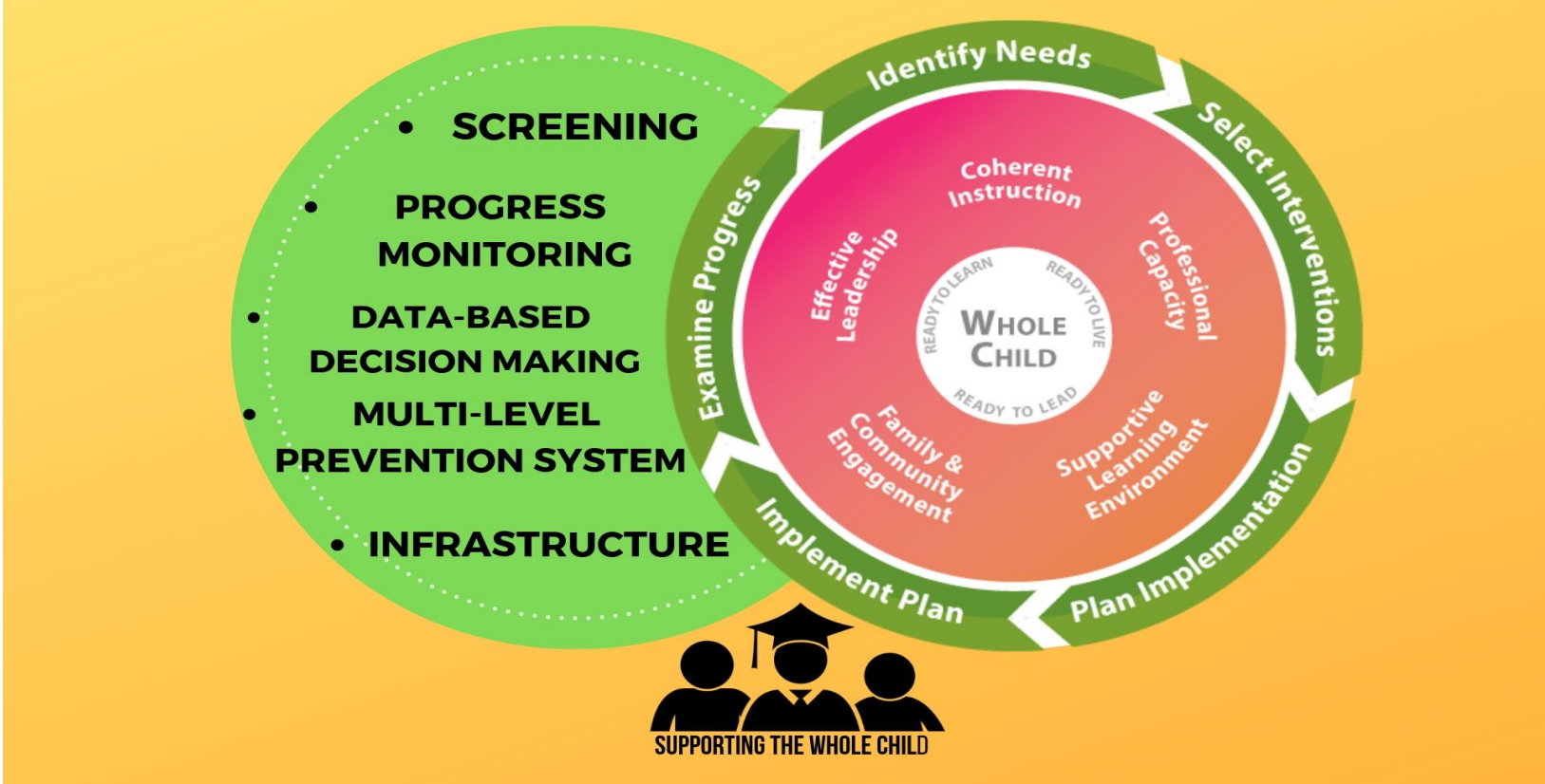
- A tiered system of supports integrates assessment and intervention within a school-wide, multi-level prevention system to maximize student achievement and reduce behavioral problems.
- Promotes systems alignment to increase efficiency and effectiveness of resources.

(Adopted from National Center on Response to Intervention, 2010)

Think-Pair-Share: Barrier Activity

- With your partner briefly discuss challenges that have impacted numeracy outcomes in your district.
- We will chart a few of these responses and refer to these responses during the session.

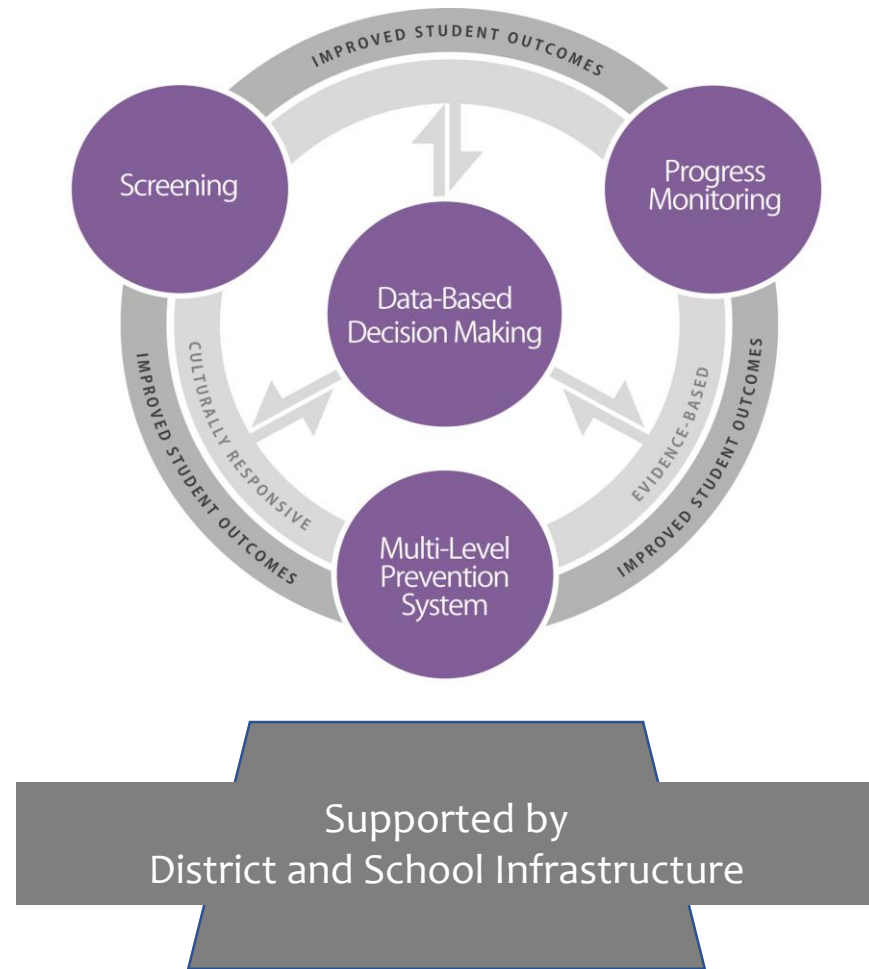
Integrating the Essential Components of Georgia's Tiered System of Supports for Students



Georgia's Tiered System of Supports for Students

- How do the following essential components impact numeracy in your district?
 1. Screening
 2. Progress Monitoring
 3. Data-based Decision Making
 4. Multi-Level Prevention System
 5. Infrastructure

Essential Components of the Nationally Aligned MTSS Framework



Georgia added the essential component of Infrastructure. Georgia will focus on Leadership, Effective Teaming, Professional Learning, and Family and Community Engagement .

Turn and Talk

What knowledge and resources are needed to support numeracy development and understanding?

Group 1: Knowledge
Group 2: Resources

Essential Component: Infrastructure

Knowledge, resources and organizational structures necessary to operationalize all components of the framework in a unified system to meet the established goals

- Prevention Focus
- **Leadership**
- **Professional Learning**
- Schedules
- Resources
- **Family and Community Engagement**
- Communication with and Involvement of All Staff
- **Effective Teaming**
- Cultural and Linguistic Responsiveness

What do districts need in their infrastructure to support effective numeracy development?

- Numeracy Plan
- Assessment Plan and Calendar
- Multi-Level Prevention System
- High-Leverage Practices
- Evidence-Based Practices
- Evidence-Based Interventions
- Implementation Fidelity Plan
- Professional Learning/Professional Learning Communities
- Family and Community Engagement
- Standards for Mathematical Practice

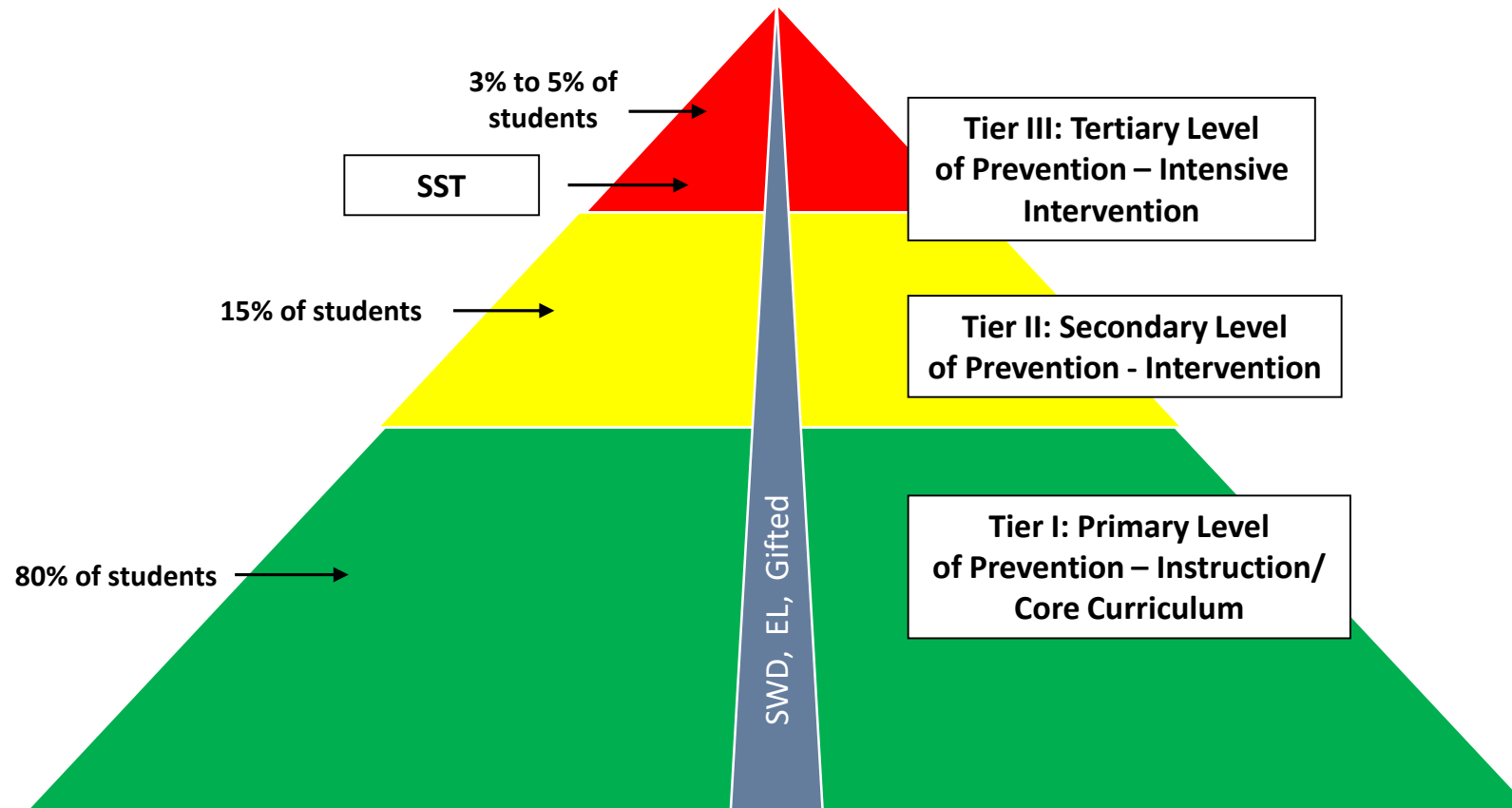
Which of the subcomponents of infrastructure impact these needs?

Numeracy Plan

- Are all teachers included in collaborative planning to unpack the standards?
- What are students expected to learn and do?
- How will we get them there?
 - What do we teach?
 - How do we teach it?
 - When do we teach it?
- What resources are needed (i.e. manipulatives, professional learning for leaders and teachers, etc.)?

Which of the subcomponents impact effective development and implementation of a numeracy plan?

Georgia's Multi-Level Prevention System



*Question to Ponder -
What factors might
impact a school that
has an inverted
pyramid based upon
their numeracy data?*

Students receive services at all levels, depending on need.

Assessment Plan

- How do you determine a student's level of risk?
- What do you use to monitor students' response to core numeracy instruction (Tier I)?
- How do you ensure progress monitoring data is collected and used effectively (Tiers II and III)?
- How do you ensure effectiveness of your assessment plan?
- What is the role of data-based decision making at each of the tiers?

Which of the subcomponents impact the development and implementation of an assessment plan?

Multi-Level Prevention System

- How do you evaluate the effectiveness of your primary level of prevention (Tier I)?
- How do you evaluate the effectiveness of your secondary level of prevention (Tier II)?
- How do you evaluate the effectiveness of your tertiary level of prevention (Tier III)?

Which of the subcomponents impact effective implementation of a Multi-Level Prevention System?

What are High-Leverage Practices (HLPs)?

Fundamental to effective teaching

Cut across content domains and grade levels

Used frequently

Supported by research

<http://www.teachingworks.org/work-of-teaching/high-leverage-practices>

How do these practices impact an effective numeracy program?

What are Evidence-Based Practices/Interventions?

Are Content
Specific

Developmentally
Appropriate

Learner
Dependent

Supported by
Research

Tessie Bailey, American Institutes for Research (tbailey@air.org)

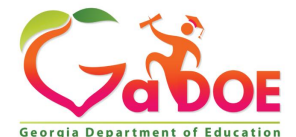
**How do these practices impact an
effective numeracy program?**

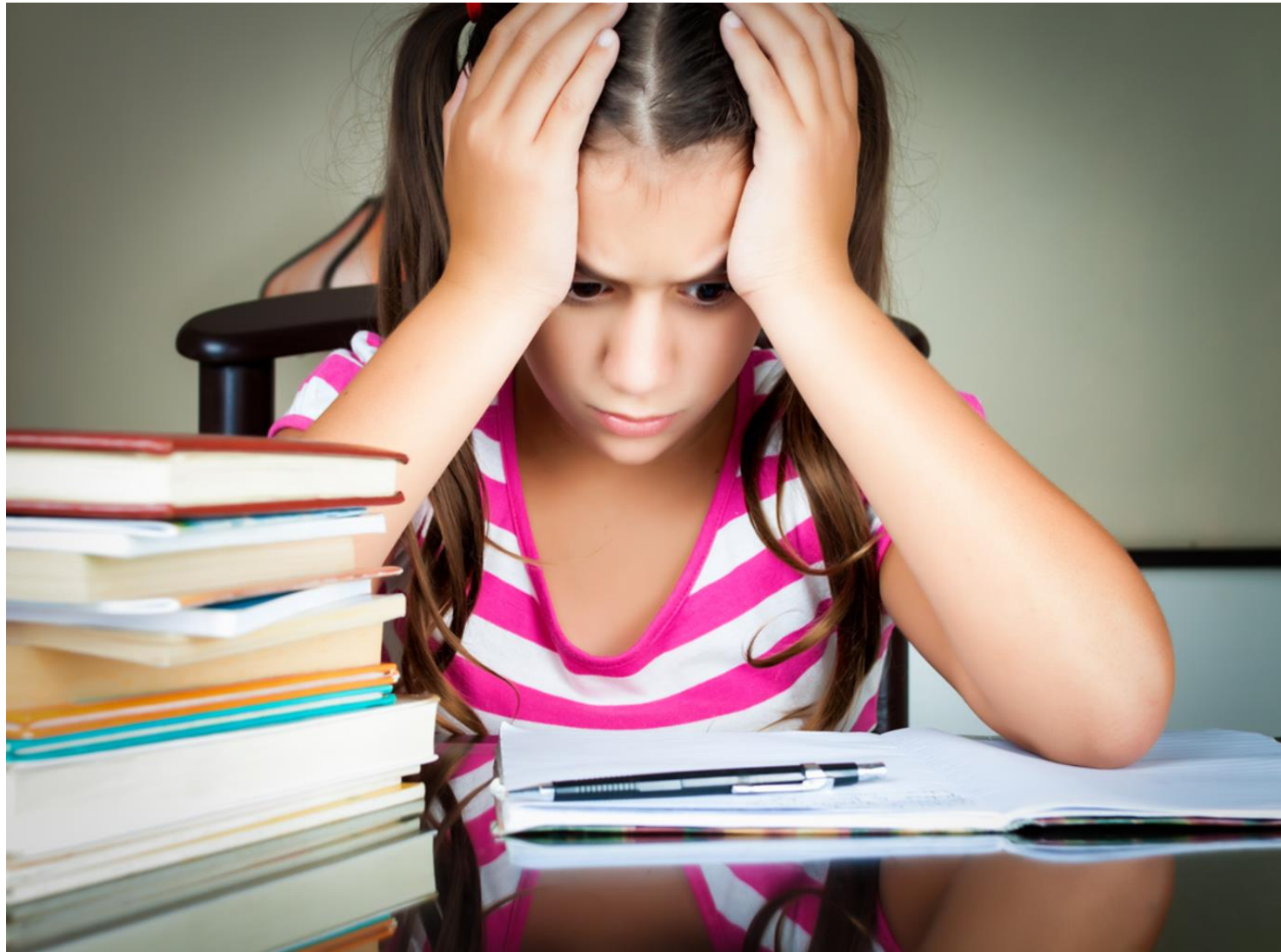
Standards for Mathematical Practice are Evidence-Based Practices for Math



Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.





What happens
when students
struggle?


Evidence-Based Practices/Interventions

Instructional Strategy	Strong Evidence	Moderate Evidence	Promising Practice
Mathematical Representation of Problems	◆		
Cognitively Guided Instruction			◆
Using visuals to support mathematics learning	◆		
Modeling with Mathematics	◆		
Collaborative Groupwork		◆	
Problem-based learning			◆
Task-based learning			◆
Building Fluency through Strategy Development		◆	

Paulding County: District and School Perspective



- Universal Screener, Database with Interventions and Progress Monitoring Tool, Intervention Bank, and Professional Learning provided by District
- Screening Data and other Multiple Data Points Used
- Professional Learning (Psychologist, SLP, Consultant, Data Teams, manipulatives, etc.)
- Two Segments of Math (Math Workshop and Needs-Based Intervention (NBI)
- Progress Monitoring (Tier II: bi-weekly and Tier III: weekly)
- Rigor Redefined and Math Interventions used during NBI
- Data Teams convene to determine movement between the tiers
- Collaborative Planning
- Job-embedded PL/Calibration Walks with the Consultant to Support Fidelity of the Intervention (Capacity-building with School-based Leadership)

State Level Perspective



What is the Georgia Numeracy Project?

The Georgia Numeracy Project is a free, optional, evidence-based resource for schools and districts to use to help students build a solid foundation in numeracy.



Richard Woods, Georgia's School Superintendent | Georgia Department of Education | Educating Georgia's Future

Numeracy Project: Evidence-based Practices

	Included in design of Georgia Numeracy Project	Strong Evidence	Moderate Evidence	Minimal Evidence
1. Screen all students to identify those at risk for potential mathematics difficulties and provide interventions to students identified as at risk.	√		◆	
2. Instructional materials for students receiving interventions should focus intensely on in-depth treatment of whole numbers in kindergarten through grade 5 and on rational numbers in grades 4 through 8.	√			◆
3. Instruction during the intervention should be explicit and systematic.	√	◆		
4. Interventions should include instruction on solving word problems that is based on common underlying structures.	√	◆		
5. Intervention materials should include opportunities for students to work with visual representations of mathematical ideas and interventionists should be proficient in the use of visual representations of mathematical ideas	√		◆	
6. Interventions at all grade levels should devote about 10 minutes in each session to build fluent retrieval of basic arithmetic facts.	√		◆	
7. Monitor the progress of students receiving supplemental instruction and other students who are at risk.	√			◆
8. Include motivational strategies in tier 2 and tier 3 interventions				◆



Developing Foundational Numeracy in Mathematics

Georgia Numeracy Project

OVERVIEW

(click here) [Assessment Manual](#)
[Intervention Manual](#)

Tier 1
(all students)

Global Strategy Stage Assessment
(GloSS – Individual Verbal/Mental Reasoning)
Strategy Screener

Assesses Three Strategy Domains

- Addition and Subtraction
- Multiplication and Division
- Proportions and Ratios

Individual Knowledge Assessment of Number
(IKAN Part I – Individual Verbal)
Knowledge Screener

Assesses One Knowledge Domain

1. Number Sequence & Order
 - a) Number Recognition
 - b) Number Sequence
 - c) Forward and Backward Number Word Sequence

0-3
Strategy
Stage on
GloSS

4-8
Strategy
Stage on
GloSS

Individual Knowledge Assessment of Number
(IKAN Part II – Written)
Knowledge Screener

Assesses Four Knowledge Domains

1. Number Sequence & Order
2. Fractions
3. Place Value
4. Basic Facts

Numeracy Project Assessment
(Individual Verbal)
Strategy & Number Knowledge
Numeracy Intervention Instrument

Deeply Assesses Strategy & Number Knowledge

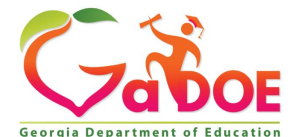
Tiers 2 & 3

Numeracy Development Intervention Activities
(Activities for Support)

These resources provide the teacher/interventionist with the activities to support students where they are in their progression and help them move to the next level of numeracy development.

<https://tinyurl.com/yxtwp2dk>

Graphic inspired by Kent ISD, Michigan



Numeracy Project and Its Connection to Georgia's Tiered System of Supports for Students

Screening	<u>GloSS and IKAN</u>
Data-based Decision Making	<u>Analyzing the data after each assessment</u>
Progress Monitoring	<u>Numeracy Intervention Instrument</u> and <u>Data Table with Graph</u>
Multi-level prevention system	Aligned <u>intervention activities</u> to address gaps at each tiered level of support

Essential Component: Infrastructure

Knowledge, resources and organizational structures necessary to operationalize all components of the framework in a unified system to meet the established goals

- **Prevention Focus**
- Leadership
- **Professional Learning**
- Schedules
- Resources

Next Steps

- In small groups, discuss possible next steps based on the information presented today.
- Be prepared to share what was discussed in your small groups with the whole group.

Georgia's Tiered System of Supports for Students

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Need More Information?

Georgia's Tiered System of Supports for Students

www.gadoe.org/TieredSystemofSupports

or

www.gadoe.org/MTSS

Resources Available

- Fact Sheets: Simplify essential components/framework
- Professional Learning Units
- Training Webinars
- Subscribe to Newsletter
- Register for Upcoming Events



Georgia's Tiered System of Supports for Students



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MTSS professionals*



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**The contents of presentation were developed under a grant from the U.S. Department of Education, #H323A170010. However, those contents do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal Government.
Project Officer, Jennifer Coffey.**





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