



# Maximizing MTSS with Science: A Literacy Focus

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May 24, 2023

[mimtsstac.org](http://mimtsstac.org)





# Activity 0.0

- Who is here today?
  - Put your role, location, and favorite book in the chat!

# Acknowledgments

The content for this training day was developed based on the work of:

- Michigan Department of Education
- Michigan MTSS Technical Assistance Center
- Dr. Anita Archer
- Dr. Stephanie Stollar
- The National Reading Panel
- And more, please see the reference list!

# Group Agreements

## We are Responsible

- Return on time from breaks
- Take care of our needs

## We are Engaged

- Share “air time”
- Plan to participate in multiple ways
  - Chat, breakout rooms, polls, reactions, unmute
  - Ask questions



# Training Effectiveness

- At the end of the session, you will be asked to provide feedback on today's training.
- Results will be used to make improvements to professional learning and for reporting to TA Center stakeholders.
- One of the feedback questions you will see is related to promoting and positively portraying diversity among educators and learners (e.g., focus on asset-based language, positive representation of multiple identities).

# Purpose

- Build leadership capacity to define the Science of Reading (SoR) and identify principles of the science in current curricula and interventions.
- Increase stakeholder ability to leverage Multi-Tiered Systems of Support (MTSS) through meaningful integration with SoR across the tiers.

## Intended Outcomes

- Define Multi-tiered Systems of Support (MTSS) and Science of Reading (SOR) and review the reading brain.
- Identify limitations between MTSS and SOR when meaningful integration is incomplete or absent.
- Recognize key integration points across MTSS, SOR, and the Science of Instruction (Sol) to maximize student achievement and staff effectiveness.
- Acquire the knowledge to critically examine if current tiered supports and interventions align.

# Agenda

- 1.0 Define Science of Reading (SoR) & Multi-tiered Systems of Support (MTSS)
- 2.0 The Reading Brain: A Brief Overview
- 3.0 SoR and MTSS Limitations and Barriers
- 4.0 Navigation Integration: Tier 1
- 5.0 Data-Based Individualization (DBI) & Intensification: Tiers 2 & 3

# 1.0 Defining Science of Reading & Multi-tiered Systems of Support

## Shifting Mindsets



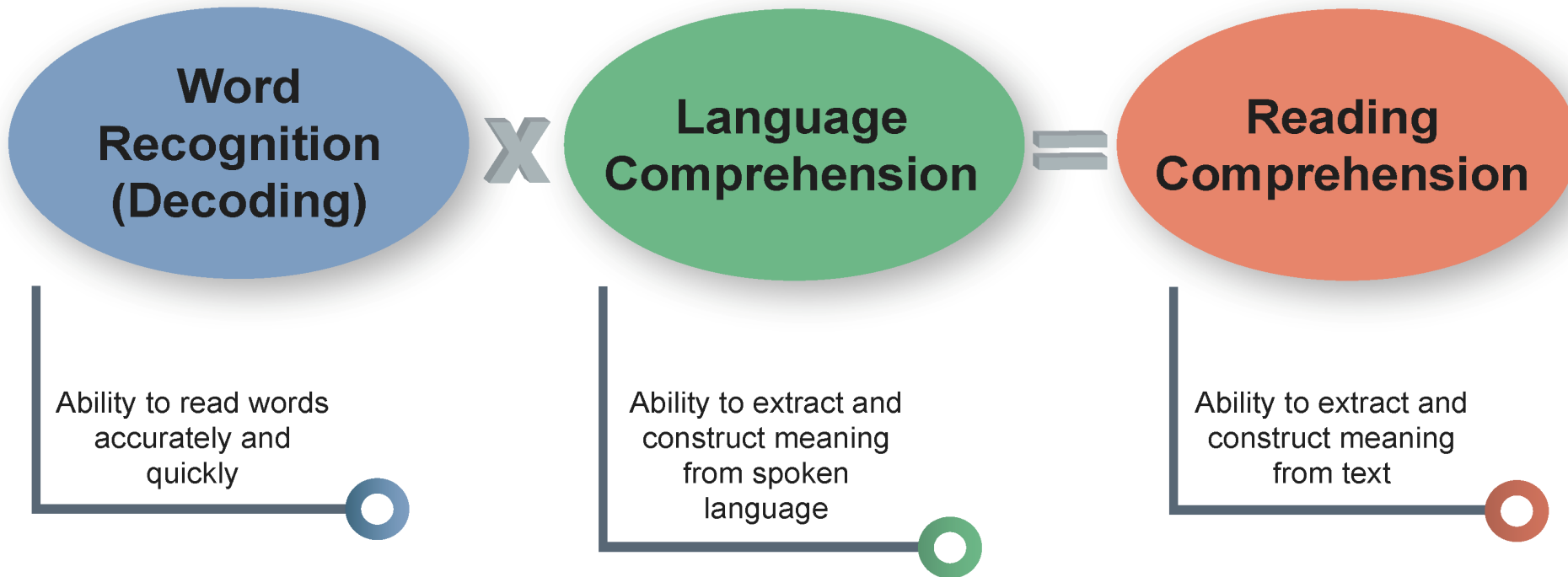
# Activity 1.1

What comes to mind when you hear the phrase “Science of Reading”

# Definition

- The science of reading is a vast, interdisciplinary body of scientifically-based research about reading and issues related to reading and writing. This research has been conducted over the last five decades across the world, and it is derived from thousands of studies conducted in multiple languages.
- The science of reading has culminated in a preponderance of evidence to inform how proficient reading and writing develop; why some have difficulty; and how we can most effectively assess and teach and, therefore, improve student outcomes through prevention of and intervention for reading difficulties.

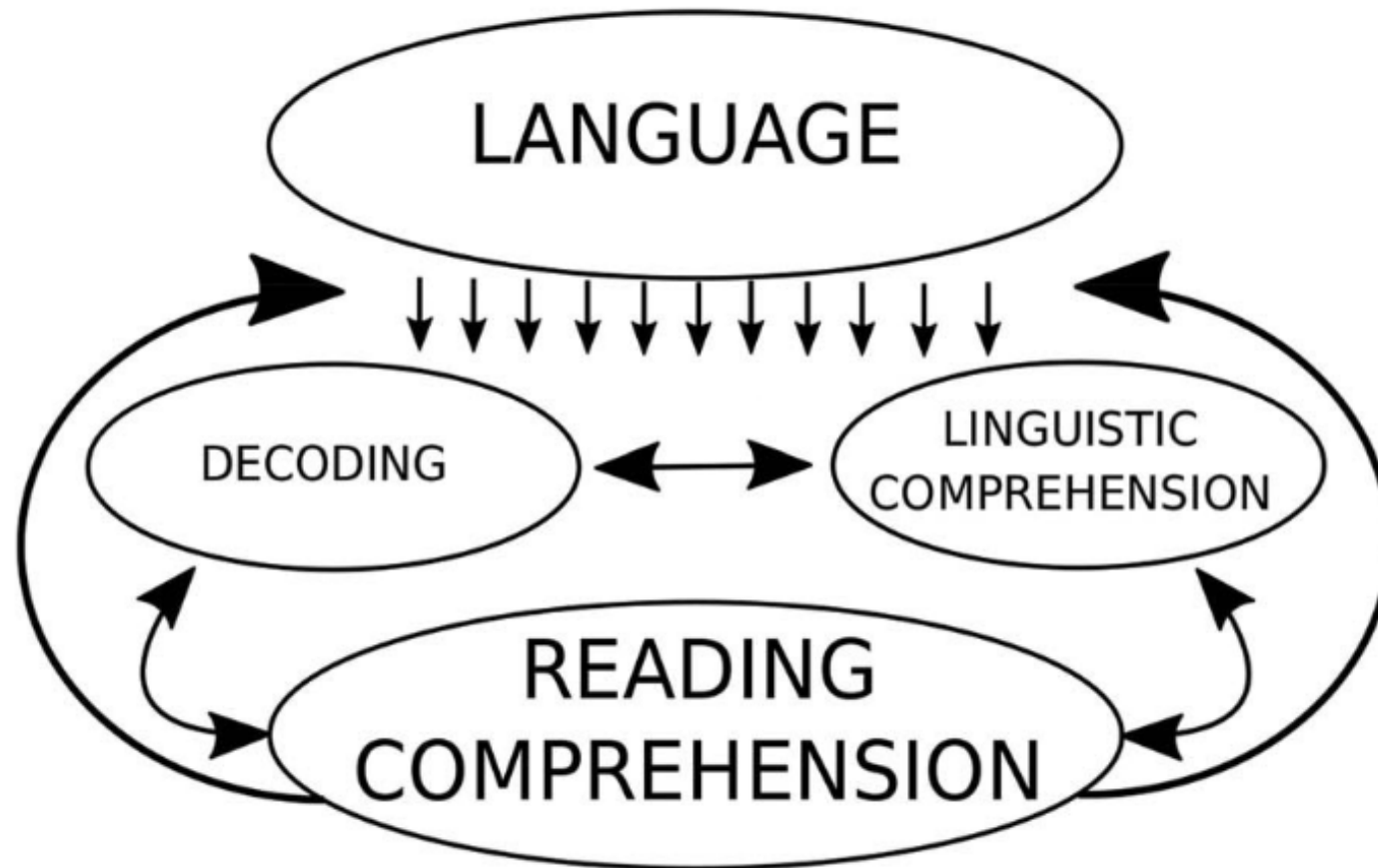
# Simple View of Reading



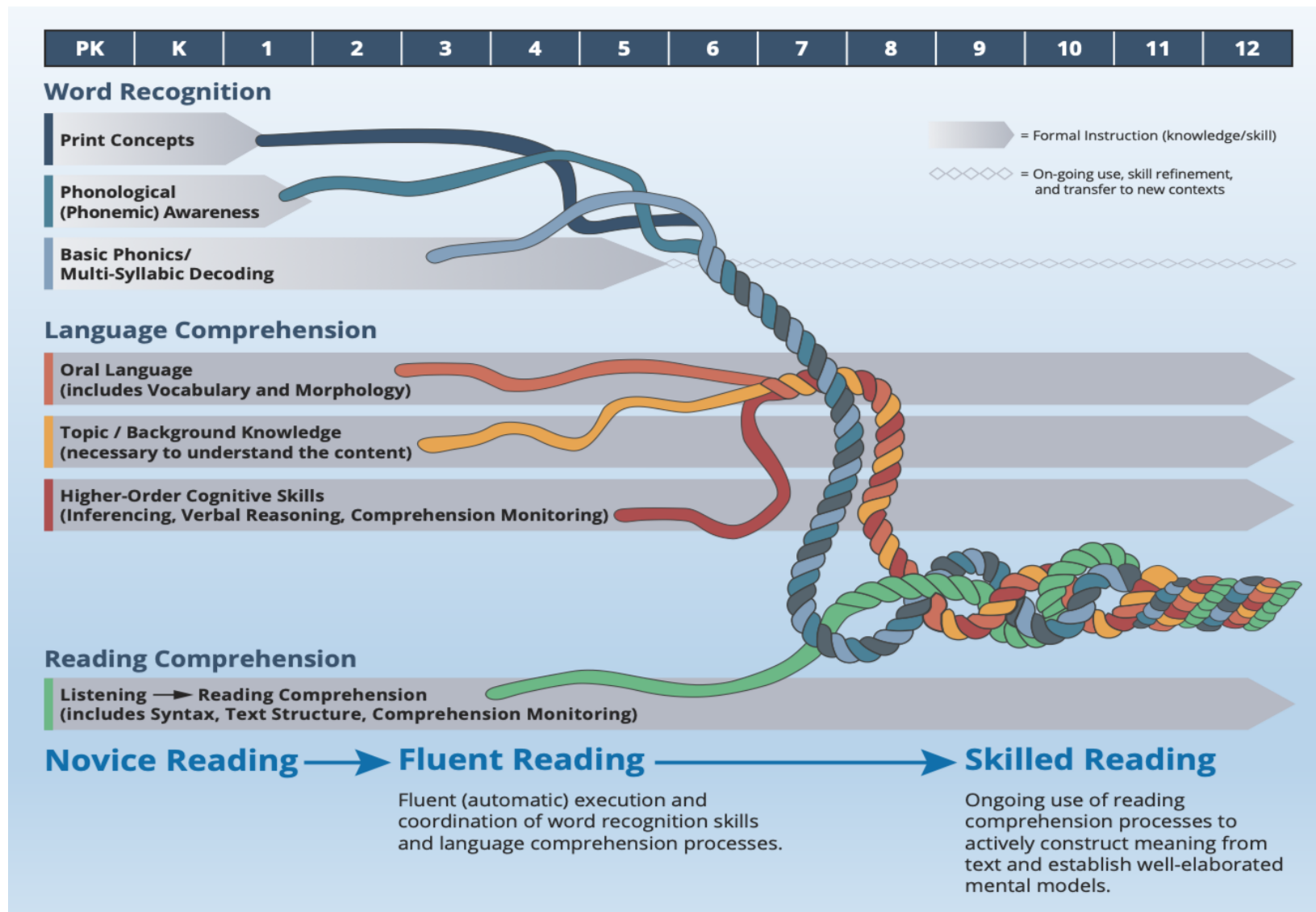
(Gough & Tunmer, 1986; Hoover & Gough, 1990; Tunmer & Hoover, 2019)



# Critical Component: Language



Nation, K. (2019)



# Reading Science

## What it is:

- Culmination of research
- Universal: outlines how literacy is acquired in the brain
- Provides guidance for instructional methods
- Data-driven
- Evidence

## What it isn't:

- Curriculum
- Ideology or fad
- Complete
  - Research is evolving and SoR requires directionality via data and implementation infrastructure



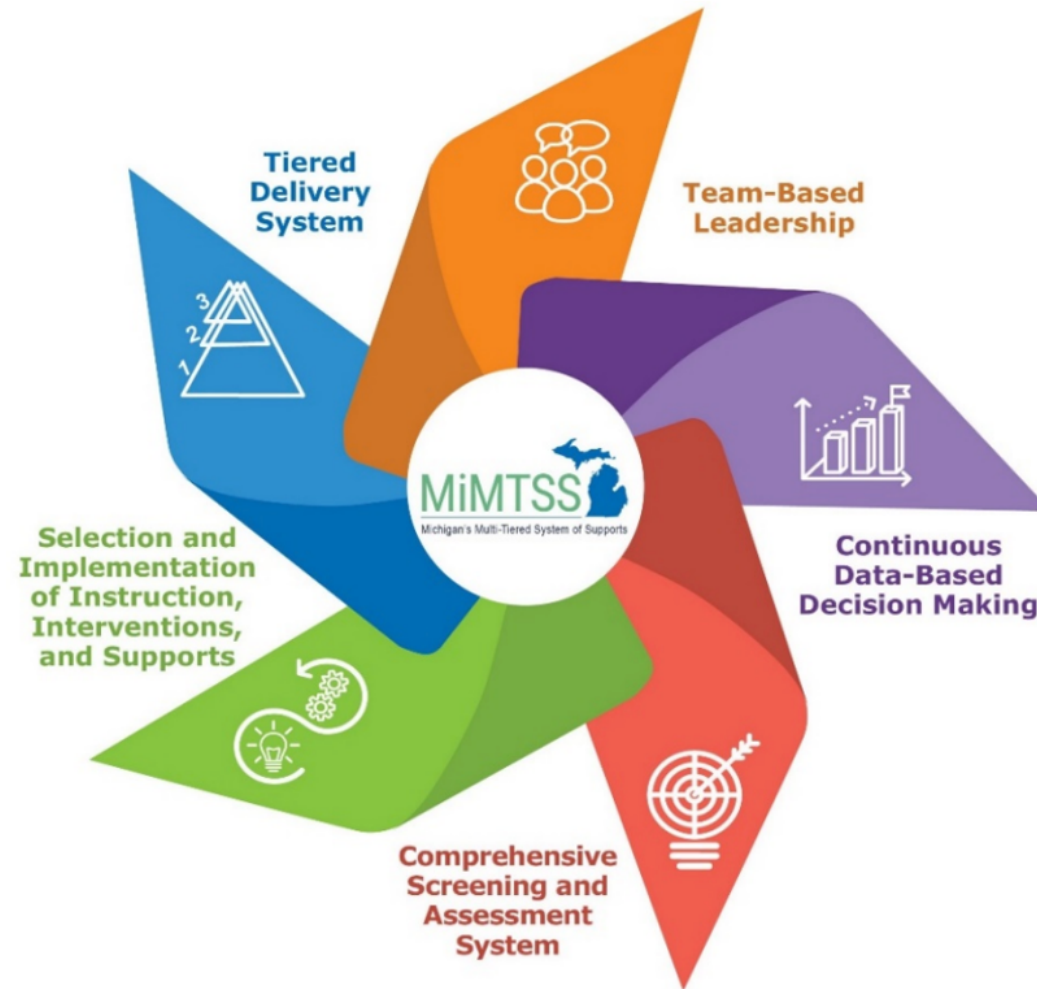
## Activity 1.2

- Self-rating 1 (strongly disagree) to 5 (strongly agree)
  - I can summarize the philosophy of MTSS
  - I can explain the seven guiding principles of MTSS
  - I can list the five essential elements of MTSS

# A Philosophy Defined

- A Multi-Tiered System of Supports (MTSS) is a comprehensive framework comprised of a collection of research-based strategies designed to meet the individual needs and assets of the whole child at all achievement levels.
- MTSS intentionally interconnects the education, health, and human service systems in support of learners, schools, centers, and community outcomes.
- The five essential components of MTSS are interrelated and complementary. Implementation of the essential components as intended provides educational settings with a framework to organize the strategies and processes needed to eliminate barriers to learning and support successful learner outcomes.

# Essential Components of MTSS



# MTSS

## What it is:

- Framework
- Individualized/variable
- A feedback loop
- Data-driven
- Mandates evidence-based practice
- Charts the course to the intended destination (literacy)

## What it isn't:

- Curriculum
- Static/invariable/uniform
- Just one practice or initiative
- Exclusionary



# What Are We Looking At?







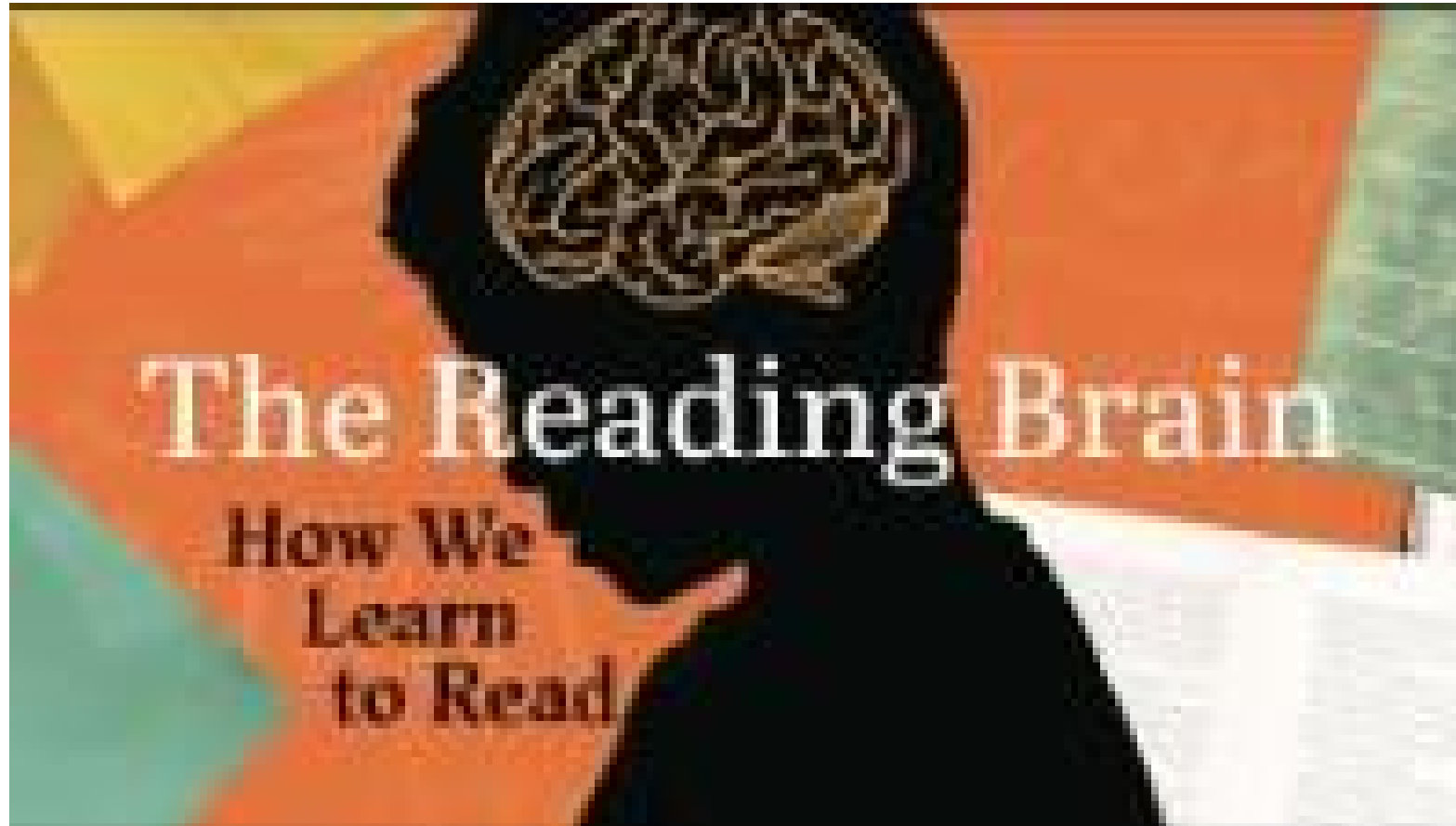
## Activity 1.3

- Have your words about SoR changed?
- Would your self-rating numbers for MTSS change?

## 2.0 The Reading Brain

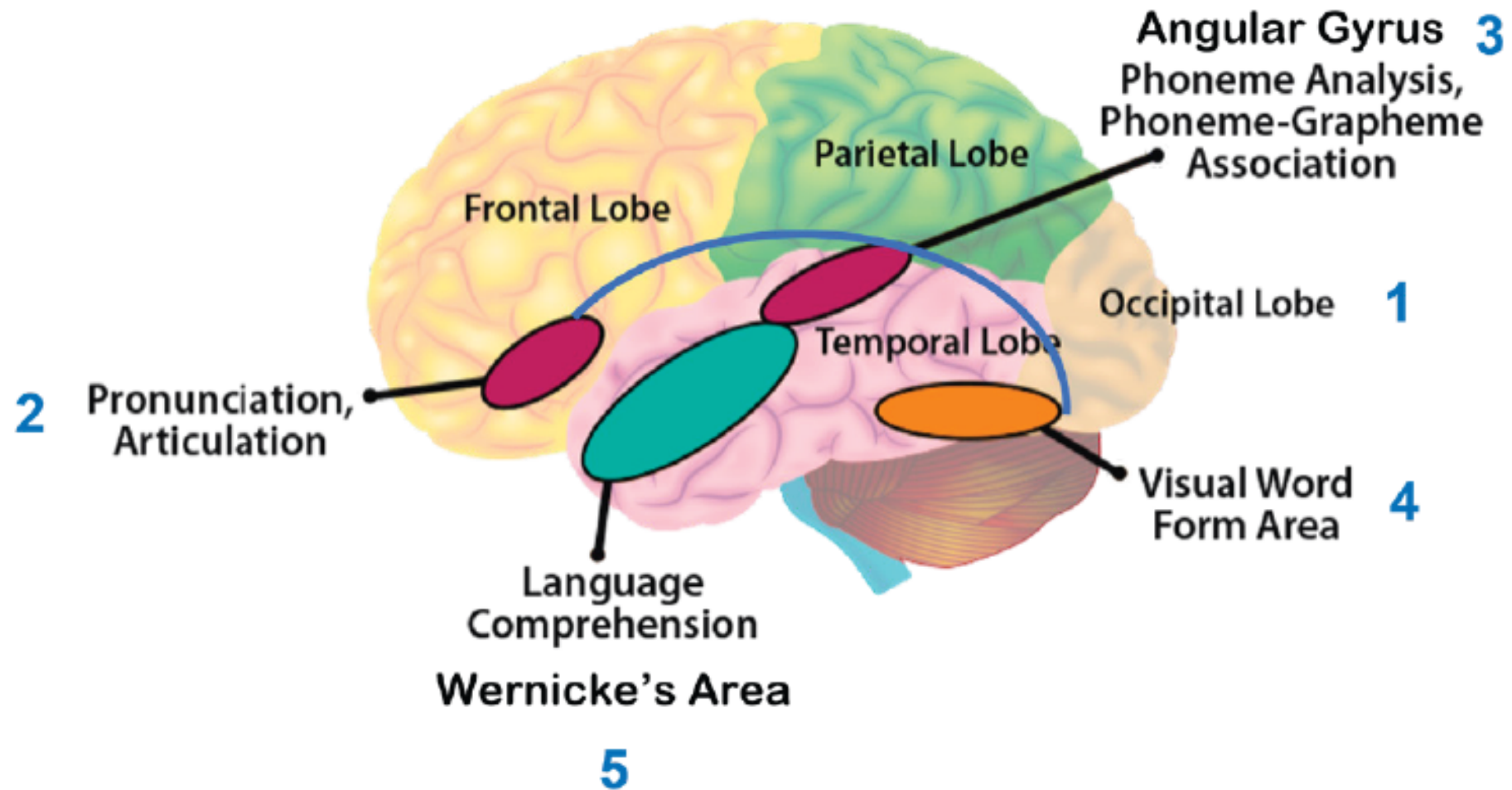
How all Brains Acquire Literacy

# It is Brain Science!



[The Reading Brain: How We Learn to Read](#)

# Literacy: A Language-based Skill



## 3.0 SoR & MTSS

### Limitations and Barriers



## Activity 3.1

When is the last time you accessed a research article?

# Hot Take: Educators on Research

- 2019 Survey
- Jefferson Education Exchange
  - 1334 respondents
  - All 50 states and D.C.
  - 9 out of 10 annually access via:
    - Conference/colleague (91%)
    - Journal (92%)
    - Blogs/News Articles (94%)
- Smaller Follow-up Study
- Jefferson Education Exchange
  - 157 respondents
  - 16% research informs instruction

[Educator Voices on Education Research; EdMarket Brief: Teachers Say They're Accessing Research; Putting it to Use is Another Story](#)

# SoR: Systemic Limitations

- Requires
  - Access to the science
  - Understanding of how the brain learns to read
  - Knowledge of the what and why of instructional targets
  - Aligned tools and strategies for effective implementation (curriculum/interventions/intensification)
  - Coordinated PD and coaching
  - Commitment to EBP in practice
  - Fidelity

[The Reading League: Science of Reading Defining Guide](#)



## SoR: Local Barriers

- Personal bias
  - Philosophical penchant
- Viewing SoR as a temporary initiative
  - Wait for the storm to pass
- Funding
  - Make do with what you have
- Cognitive resources/burnout
  - SoR buy-in requires top-down support; teachers can't “go it alone”

## MDE on theory versus evidence

“Educators should use practices that are empirically proven (i.e., have undergone rigorous field testing) to teach children and adolescents to read. In the absence of empirically proven practices, using literacy practices that are scientifically informed theories is not necessarily bad. However, it is problematic if scientifically informed theories are being used instead of practices that have been empirically proven to be effective.”

# MTSS Limitations

- Reliant on
  - Knowledge-base and skill level of educators
  - Valid evaluation, progress monitoring, and intervention intensification
  - Accurate data analysis
  - Selection of tools and strategies aligned with evidence-based practice
  - Consistency across tiers
  - Fidelity

# EBP: A Closer Look



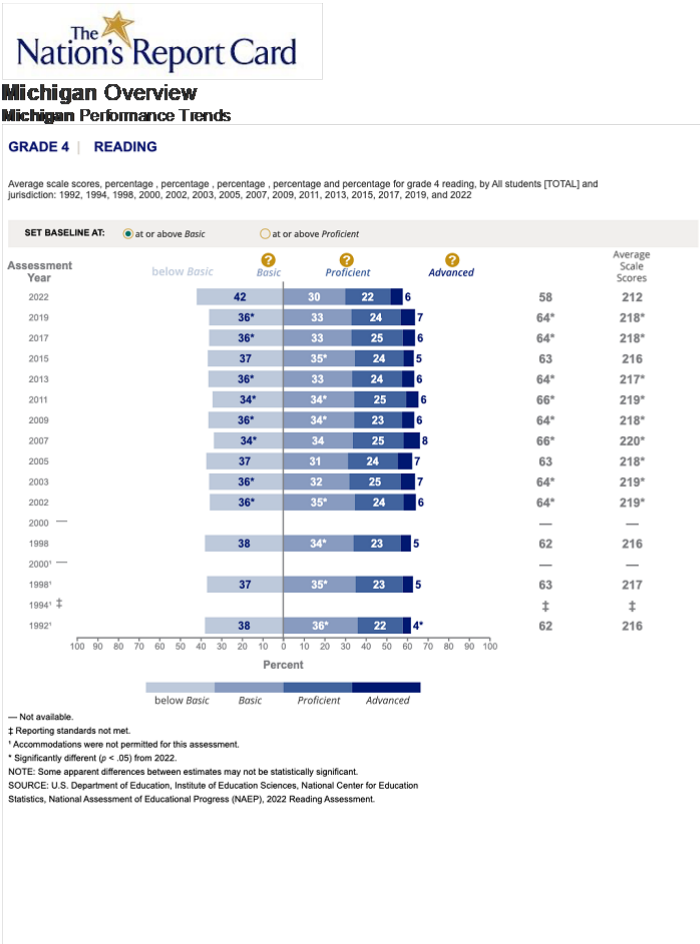
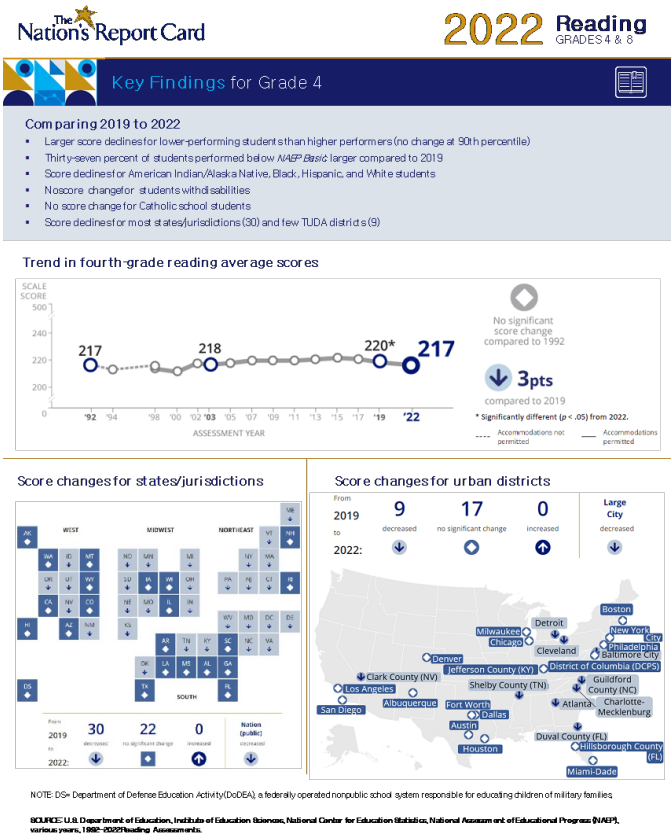
[Dr. Sally Shaywitz on EBP vs Research-based](#)



## Activity 3.2

What barriers to SoR and MTSS can you identify where you serve?

# Our Why: Equity in Education



# Student-Centered Education

## EQUALITY:

Everyone gets the same – regardless if it's needed or right for them.



## EQUITY:

Everyone gets what they need – understanding the barriers, circumstances, and conditions.



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## Activity 3.3

Reflection: What Does the Equity Look Like in Education?



# Sensemaking



## 4.0 Navigation Integration: Tier 1

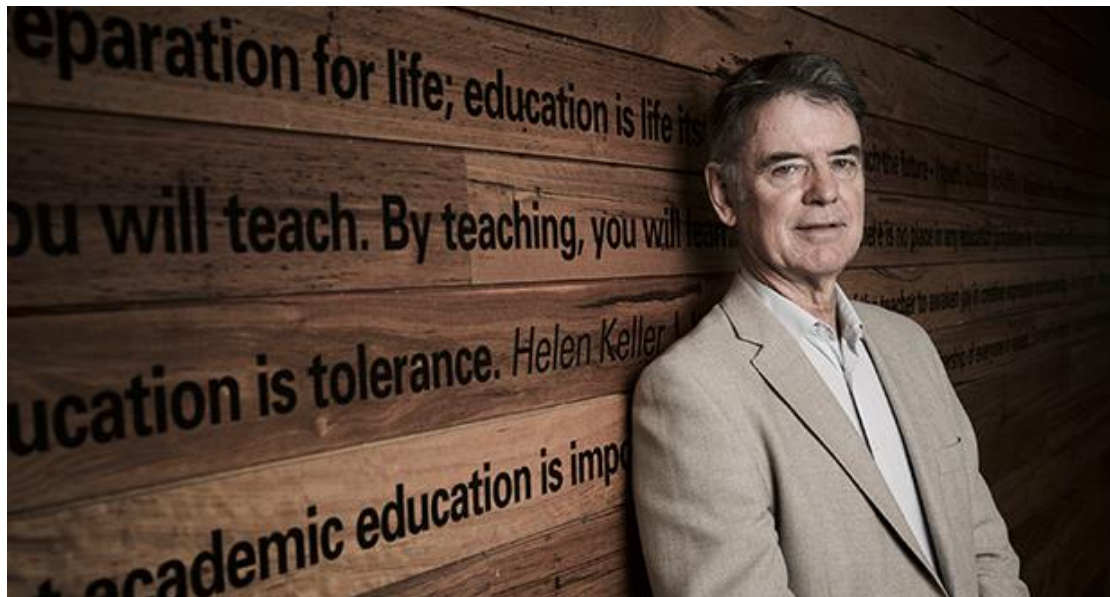
### Leveraging Systems and Science

## Activity 4.1



# Equity and Student Achievement

## Visible Learning<sup>plus</sup> 250+ Influences on Student Achievement



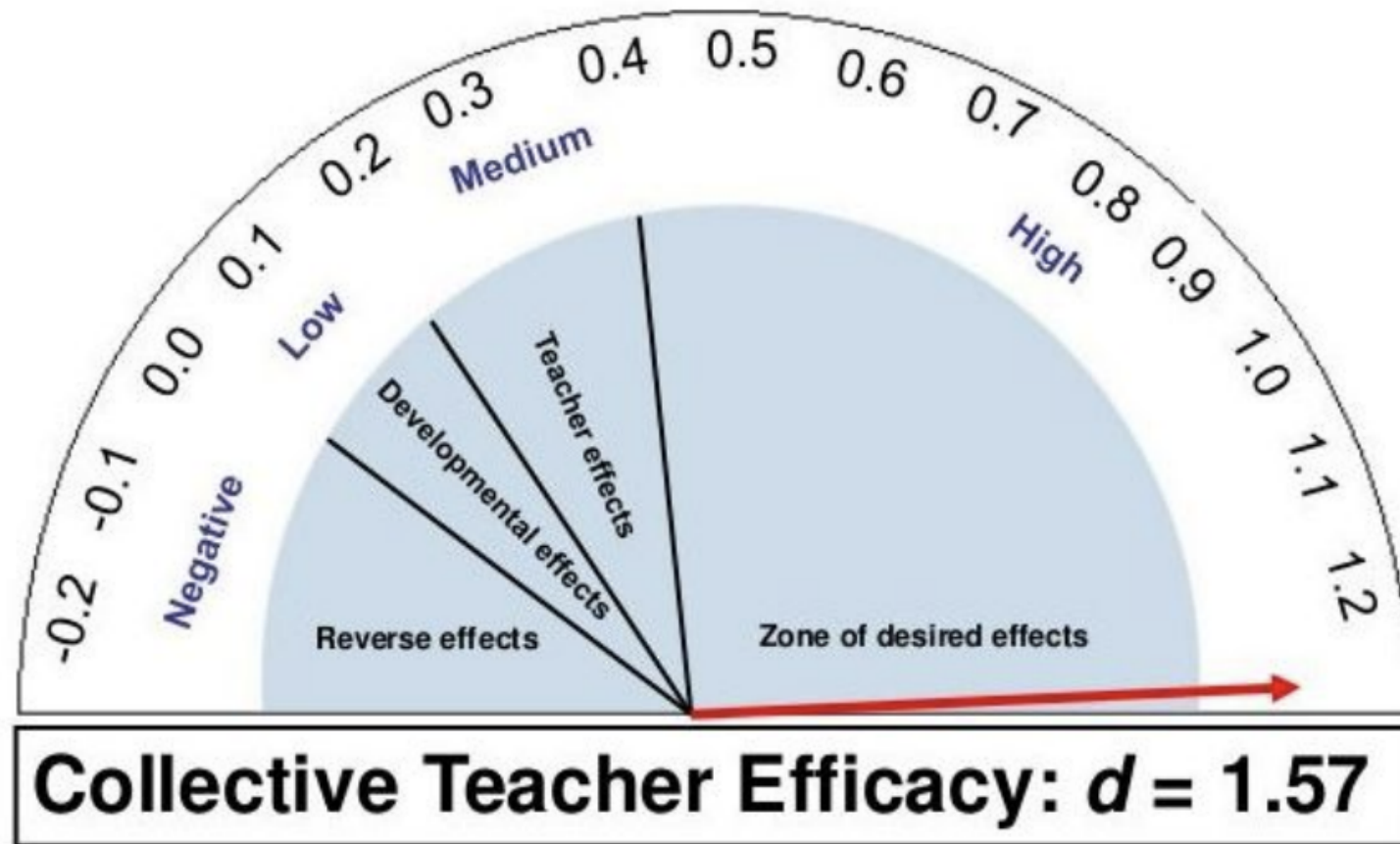
CLASSROOM	ES	TEACHER	ES	TEACHING: Focus on student learning strategies	ES	TEACHING: Focus on teaching/instructional strategies	ES	TEACHING: Focus on implementation method	ES
<b>Classroom composition effects</b>		<b>Teacher attributes</b>		<b>Strategies emphasizing student meta-cognitive/self-regulated learning</b>		<b>Strategies emphasizing learning intentions</b>		<b>Implementations using technologies</b>	
Detracking	● 0.09	Average teacher effects	● 0.32	Elaboration and organization	● 0.75	Appropriately challenging goals	● 0.59	Clickers	● 0.22
Mixed-ability grouping	● 0.27	Teacher clarity	● 0.75	Elaborative interrogation	● 0.42	Behavioral organizers	● 0.42	Gaming/simulations	● 0.35
Multi-grade/age classes	● 0.04	Teacher credibility	● 0.90	Evaluation and reflection	● 0.75	Clear goal intentions	● 0.48	Information communications technology (ICT)	● 0.47
Open vs. traditional classrooms	● 0.01	Teacher estimates of achievement	● 1.29	Meta-cognitive strategies	● 0.60	Cognitive task analysis	● 1.29	Intelligent tutoring systems	● 0.48
Reducing class size	● 0.21	Teacher expectations	● 0.43	Help seeking	● 0.72	Concept mapping	● 0.64	Interactive video methods	● 0.54
Retention (holding students back)	● -0.32	Teacher personality attributes	● 0.23	Self-regulation strategies	● 0.52	Goal commitment	● 0.40	Mobile phones	● 0.37
Small group learning	● 0.47	Teacher performance pay	● 0.05	Self-verbalization and self-questioning	● 0.55	Learning goals vs. no goals	● 0.19	One-on-one laptops	● 0.16
Tracking/streaming	● 0.12	Teacher verbal ability	● 0.22	Strategy monitoring	● 0.58	Learning hierarchies-based approach	● 0.76	Online and digital tools	● 0.29
Within class grouping	● 0.18	<b>Teacher-student interactions</b>		Transfer strategies	● 0.86	Planning and prediction	● 0.62	Programmed instruction	● 0.23
<b>School curricula for gifted students</b>		Student rating of quality of teaching	● 0.50	<b>Student-focused interventions</b>		Setting standards for self-judgement	● 0.62	Technology in distance education	● 0.01
Ability grouping for gifted students	● 0.30	Teachers not labeling students	● 0.61	Aptitude/treatment interactions	● 0.19	<b>Strategies emphasizing success criteria</b>		Technology in mathematics	● 0.33
Acceleration programs	● 0.68	Teacher-student relationships	● 0.52	Individualized instruction	● 0.23	Mastery learning	● 0.57	Technology in other subjects	● 0.55
Enrichment programs	● 0.53	<b>Teacher education</b>		Matching style of learning	● 0.31	Worked examples	● 0.37	Technology in reading/ literacy	● 0.29
<b>Classroom influences</b>		Initial teacher training programs	● 0.12	Student-centered teaching	● 0.36	<b>Strategies emphasizing feedback</b>		Technology in science	● 0.23
Background music	● 0.10	Professional development programs	● 0.41	Student control over learning	● 0.02	Classroom discussion	● 0.82	Technology in small groups	● 0.21
Behavioral intervention programs	● 0.62	Teacher subject matter knowledge	● 0.11	<b>Strategies emphasizing student perspectives in learning</b>		Different types of testing	● 0.12	Technology in writing	● 0.42
Classroom management	● 0.25			Peer tutoring	● 0.53	Feedback	● 0.70	Technology with college students	● 0.42
Cognitive behavioral programs	● 0.29			Volunteer tutors	● 0.26	Providing formative evaluation	● 0.48	Technology with elementary students	● 0.44
Decreasing disruptive behavior	● 0.34			<b>Learning strategies</b>		Questioning	● 0.48	Technology with high school students	● 0.30
Mentoring	● 0.12			Deliberate practice	● 0.79	Response to intervention	● 1.29	Technology with learning needs students	● 0.57
Positive peer influences	● 0.53			Effort	● 0.77	<b>Teaching/instructional strategies</b>		Technology with learning needs students	● 0.57
Strong classroom cohesion	● 0.44			Imagery	● 0.45	Adjunct aids	● 0.32	Use of PowerPoint	● 0.26
Students feeling disliked	● -0.19			Interleaved practice	● 0.21	Collaborative learning	● 0.34	Visual/audio-visual methods	● 0.22
				Mnemonics	● 0.76	Competitive vs. individualistic learning	● 0.24	Web-based learning	● 0.18
				Note taking	● 0.50	Cooperative learning	● 0.40	<b>Implementations using out-of-school learning</b>	
				Outlining and transforming	● 0.66	Cooperative vs. competitive learning	● 0.53	After-school programs	● 0.40
				Practice testing	● 0.54	Cooperative vs. individualistic learning	● 0.55	Distance education	● 0.13
				Record keeping	● 0.52	Direct instruction	● 0.60	Home-school programs	● 0.16
				Rehearsal and memorization	● 0.73	Discovery-based teaching	● 0.21	Homework	● 0.29
				Spaced vs. mass practice	● 0.60	Explicit teaching strategies	● 0.57	Service learning	● 0.58
				Strategy to integrate with prior knowledge	● 0.93	Humor	● 0.04	<b>Implementations that emphasize school-wide teaching strategies</b>	
				Study skills	● 0.46	Inductive teaching	● 0.44	Co- or team teaching	● 0.19
				Summarization	● 0.79	Inquiry-based teaching	● 0.40	Interventions for students with learning needs	● 0.77
				Teaching test taking and coaching	● 0.30	Jigsaw method	● 1.20	Student support programs – college	● 0.21
				Time on task	● 0.49	Philosophy in schools	● 0.43	Teaching creative thinking	● 0.34
				Underlining and highlighting	● 0.50	Problem-based learning	● 0.26	Whole-school improvement programs	● 0.28
						Problem-solving teaching	● 0.68		
						Reciprocal teaching	● 0.74		
						Scaffolding	● 0.82		
						Teaching communication skills and strategies	● 0.43		

PAGE 2 of 21 November 2007

The Visible Learning<sup>plus</sup> program materials are licensed from the Visible Learning Limited Partnership and Cogniton Education Group

## Hattie's Ranking Article

# Effect Size in Education



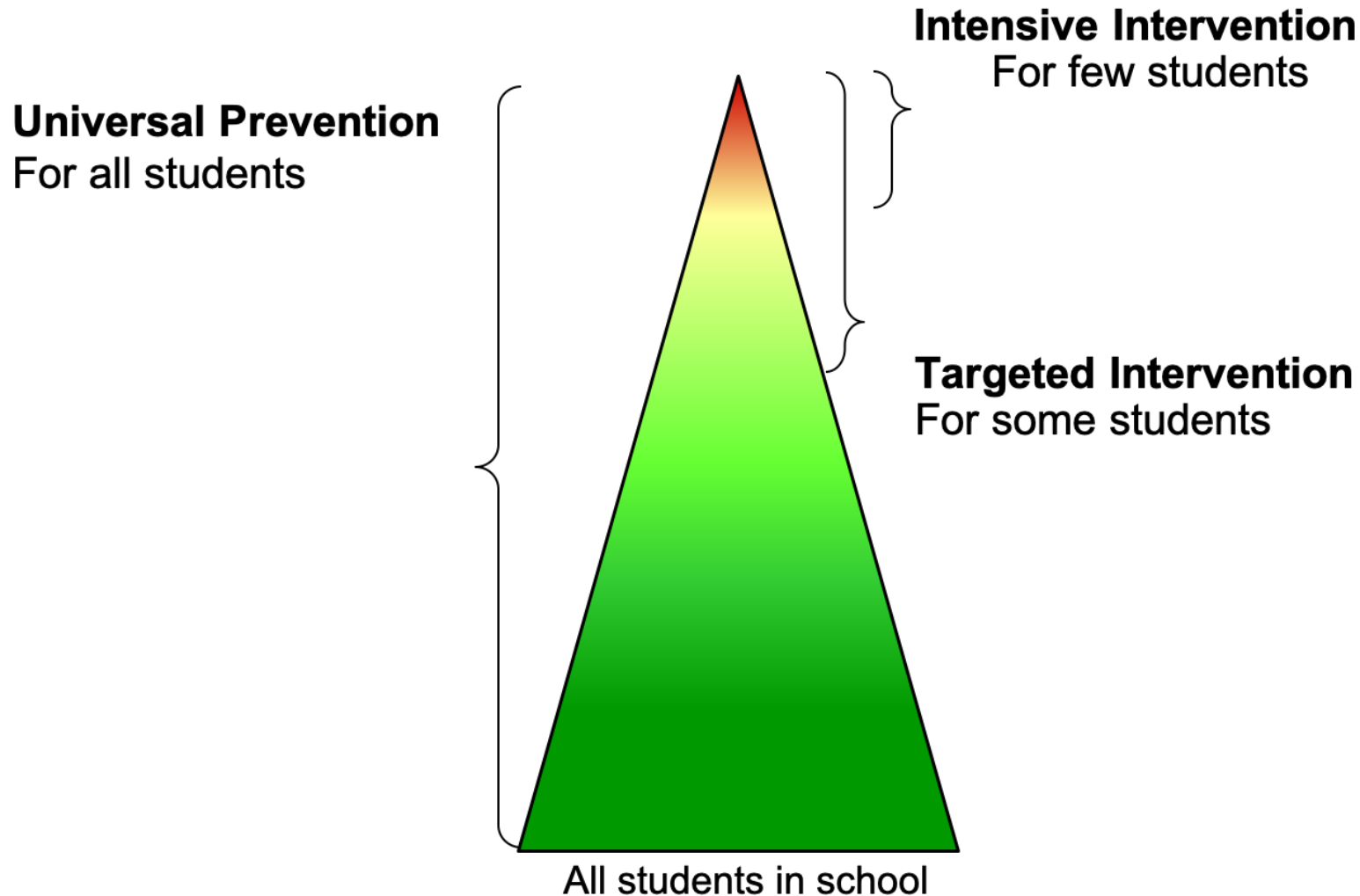
[Building Collective Teacher Efficacy](#)

# MTSS: Framework for Instruction & Intensification



Science of Reading with  
Science of Instruction

# Connections: Who, how, and what



- Who?
  - Parents/caregivers/students
  - Building Leadership Teams
  - Educators/Support Staff
  - Admin/Decision Makers
- How? What?
  - Explicit, systematic, diagnostic, cumulative instruction
  - Equity



## What to Teach

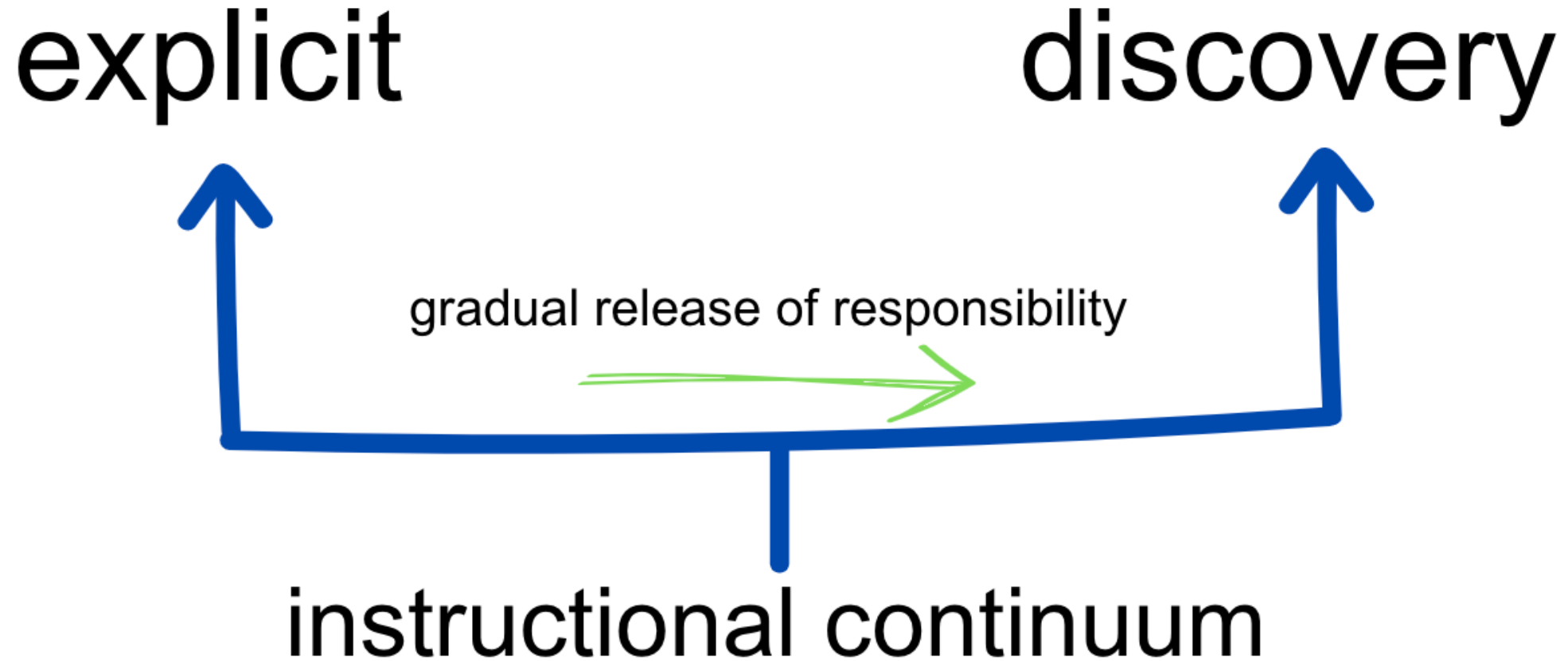
# National Reading Panel



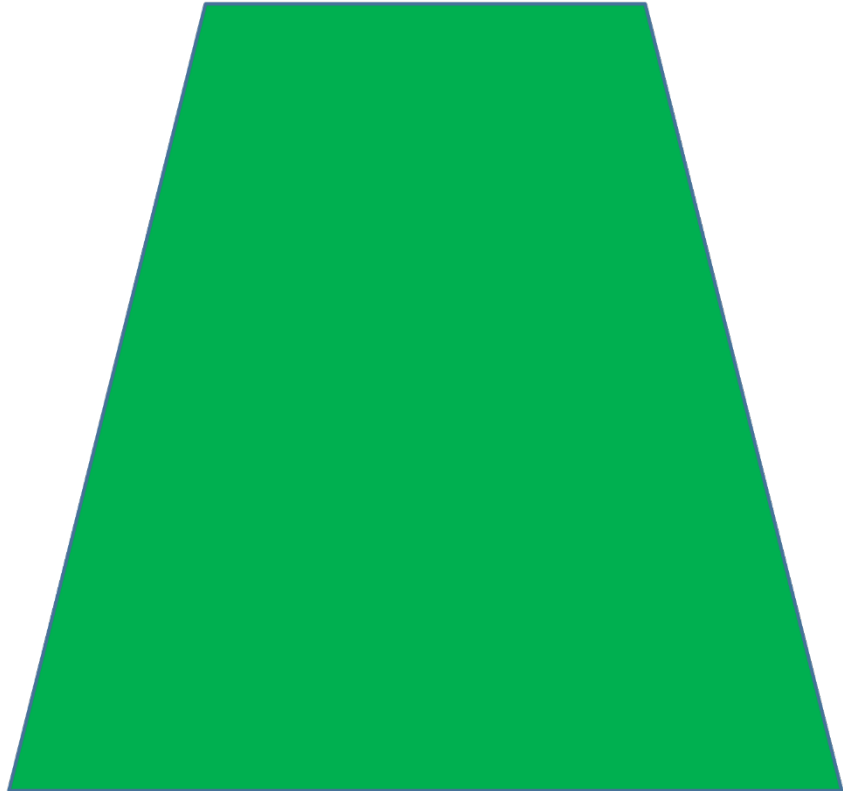
- Phonemic awareness (PA)
- Phonics
- Fluency
- Vocabulary
- Comprehension



# How to **Teach**: Science of Instruction (Sol)



# Tier 1: Core Reading Instruction



- All students
  - ELL, IEP, gifted, average
- Gets most learners to grade-level (80%)
  - Must be high-quality, SoR aligned
- Data-informed
  - Universal screening
  - Where are most kids?
  - Who needs intensification?
    - Sooner the better

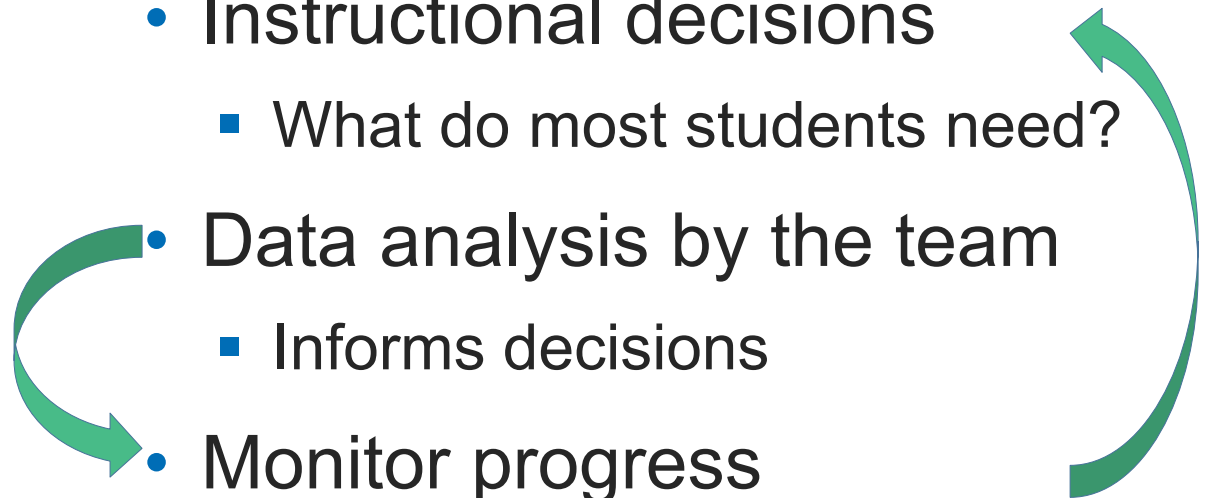
# Integration in Tier 1

## SoR + SoI



## MTSS

- Content
    - High-Quality Core Curriculum
      - Clear learning targets
      - Scope/sequence
      - Adequate teacher training
  - Instructional Methods
    - Explicit
    - Systematic
    - Differentiation
- Universal screening by grade
    - Who knows what?
  - Instructional decisions
    - What do most students need?
  - Data analysis by the team
    - Informs decisions
  - Monitor progress



# High-Quality Core Instruction: Tier 1 Integration



# SoR and Instruction

- Systematic
  - Structured
  - Established scope and sequence
- Explicit
  - Clear
  - Direct & deliberate instruction
- Cumulative
  - Step-by-step; sequential
  - Skills built upon one another

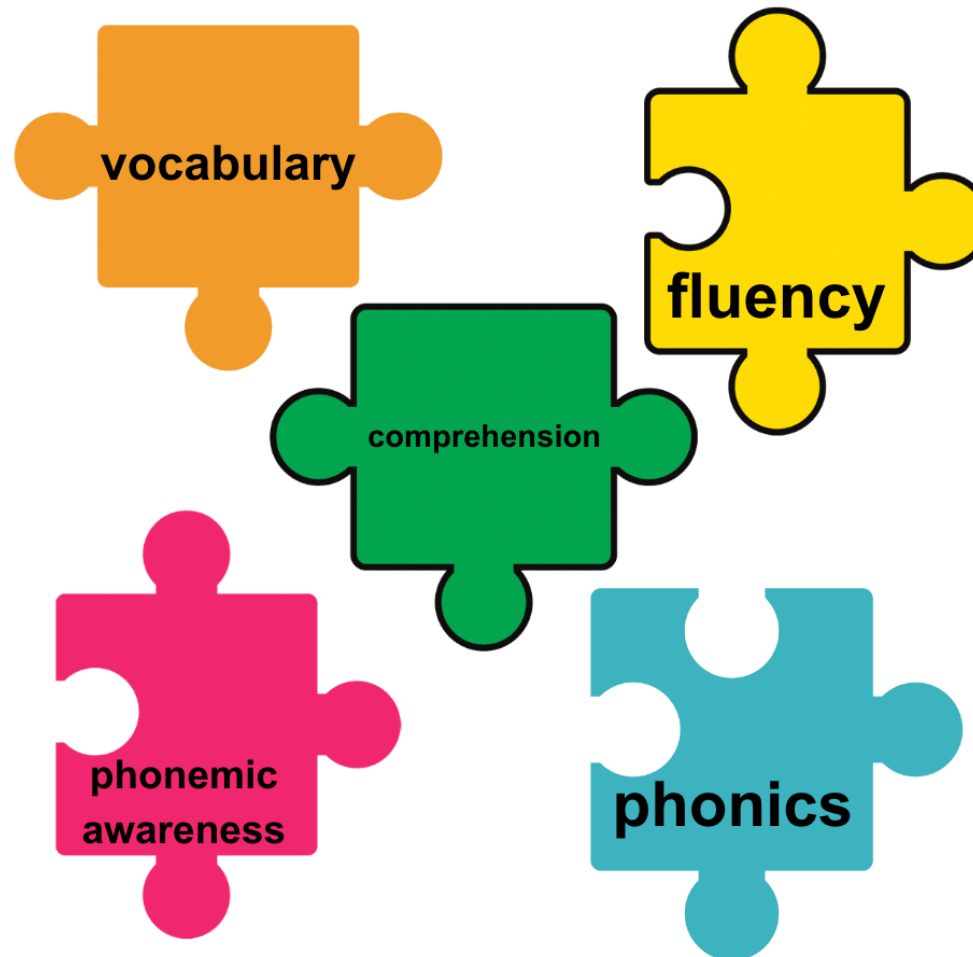




# Explicit Instruction Unpacked

- Critical content
- Sequential
- Break down skills/strategies
- Organized/focused
- State lesson goal
- Targeted review
- Step-by-step demo
- Clear/concise language
- Examples/non-example
- Guided practice
- Frequent responses
- Brisk pace
- Help organize knowledge
- Monitor performance
- Immediate corrective feedback
- Distributed practice
- Cumulative practice

# Instructional Components



# Phonemic Awareness

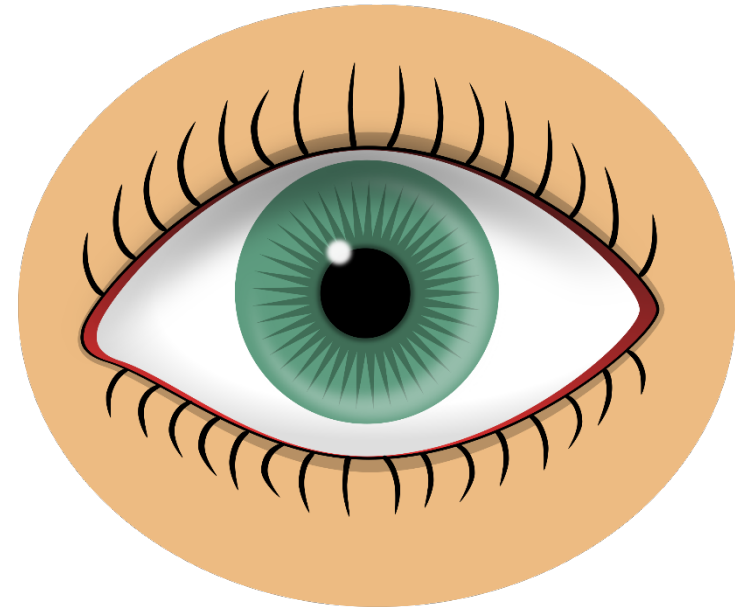
- Awareness of
  - Individual speech sounds in syllables
    - Consonants and vowels
    - Smallest unit of meaning
- Ability to Consciously Manipulate
  - Blend phonemes
  - Segment phonemes





# Learners must know: Phonics

- Alphabetic principal
  - Letters represent speech sounds
    - Phoneme/grapheme correspondence
- Language is represented in writing (orthography)
- Letters are a code for language
  - Decode = break the code based on the relationship between sounds and letters





## Activity 4.2

### Phonemic Awareness or Phonics?

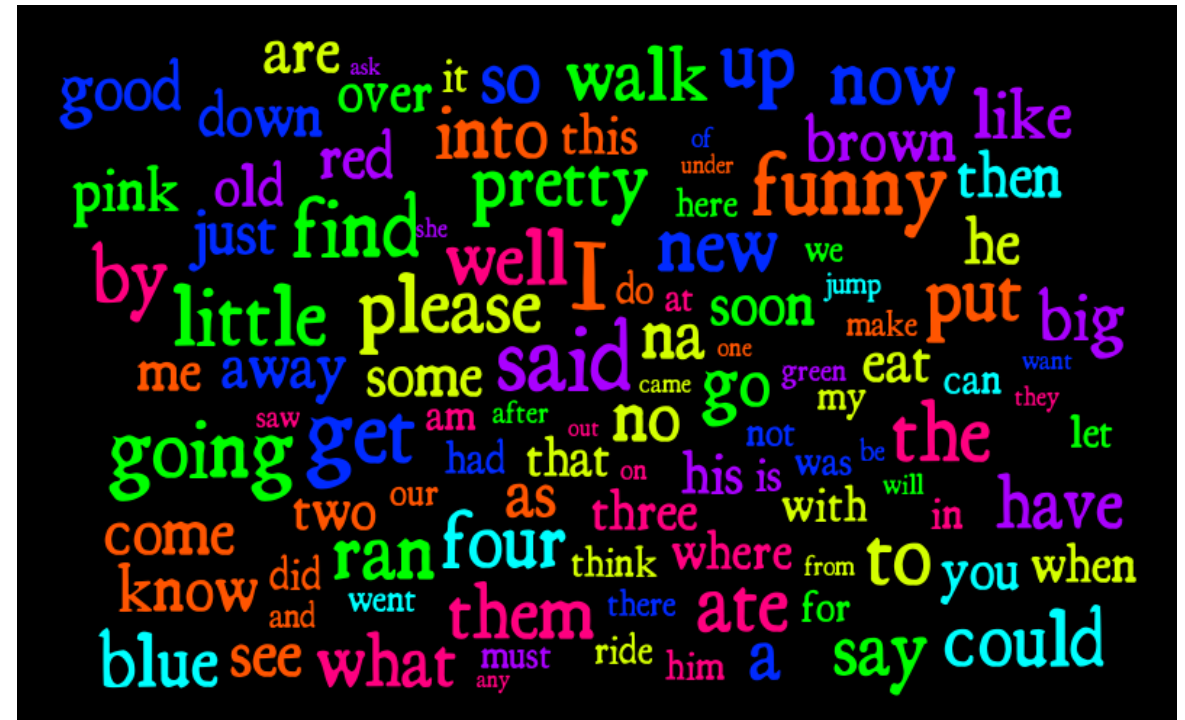
# Fluency

- Speed and accuracy of oral reading
- Facilitates ability to
  - Make meaning
  - Understand deeply
- Evidenced by
  - Fast, accurate, expressive oral reading
- Allows for
  - Silent reading comprehension



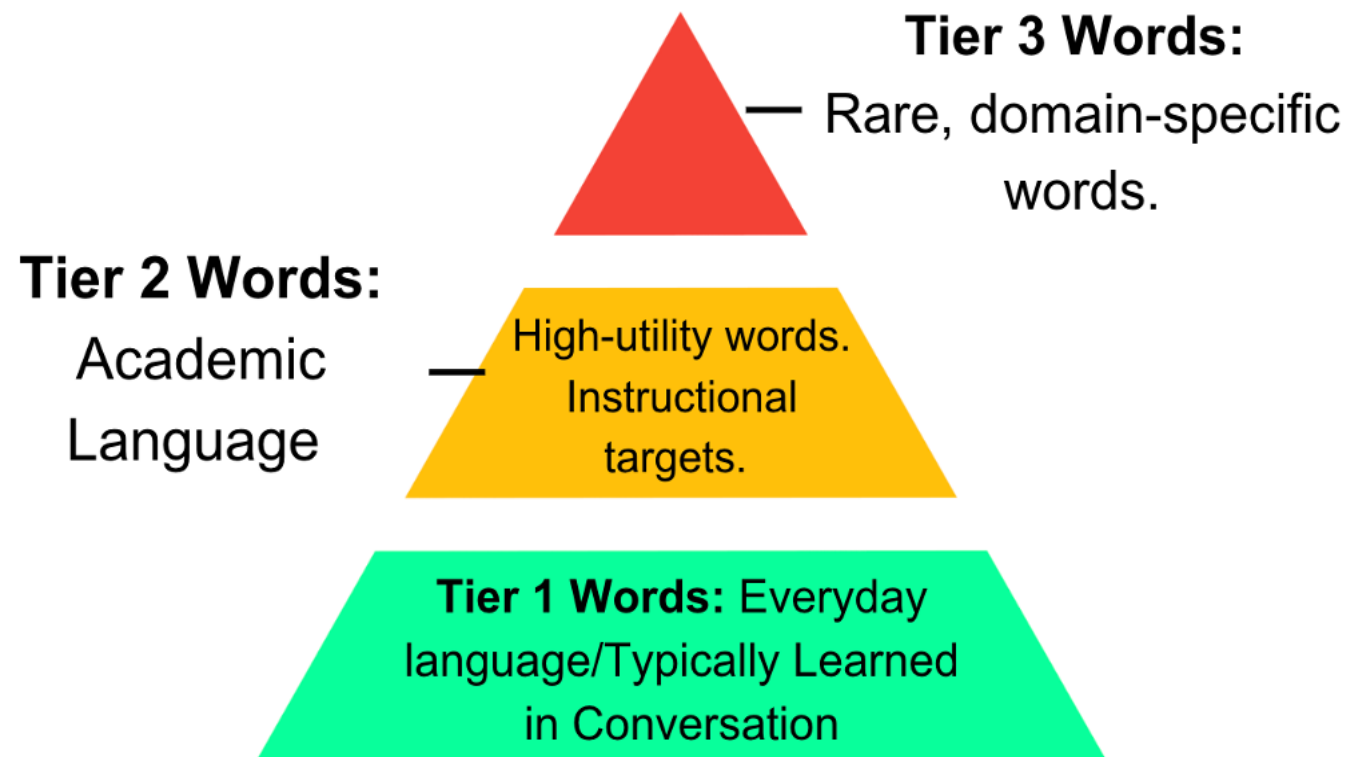
# Instant recognition

- Sight words
  - Read as if by sight
  - Orthographic mapping
    - Brain-based process
    - Words stored in long-term memory
    - Allows for instant recall
    - Increases automaticity
    - I can't help but read



# Vocabulary

- Broadly:
  - Words in a language are used to understand and communicate thought
- Individually
  - Learner's mental dictionary (lexicon)
    - Serve multiple purposes
    - Influenced by breadth & depth



# Comprehension

## Learner

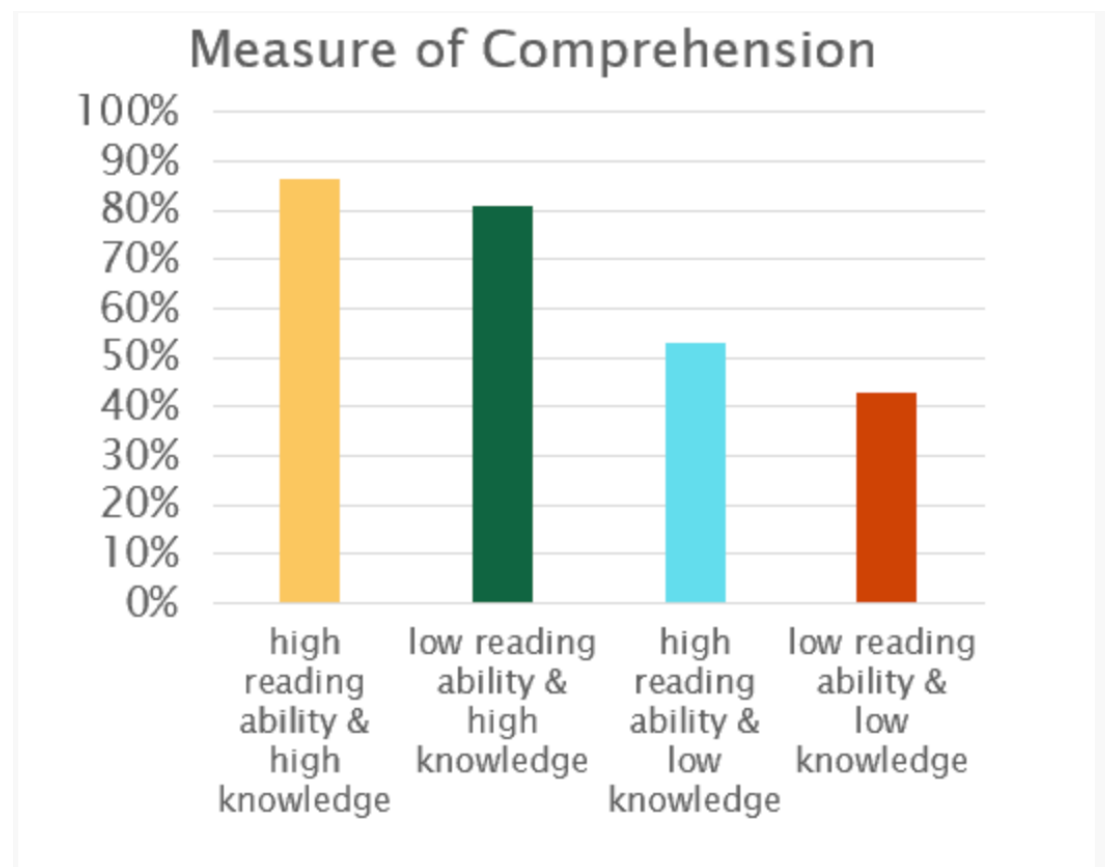
- Language Comprehension = vital for reading comprehension
- **Background knowledge will vary**

## Educator

- Specialized knowledge
  - Professional Development
    - Learning, sharing, applying knowledge
- High-quality text selection
  - Critical Content/Purpose
    - Content& literacy goals
- Text reading
  - What to focus on

Hennessey, 2020

# Background Knowledge Positively Impacts Ability



Retch and Leslie (1988)

When Tier 1 isn't working:



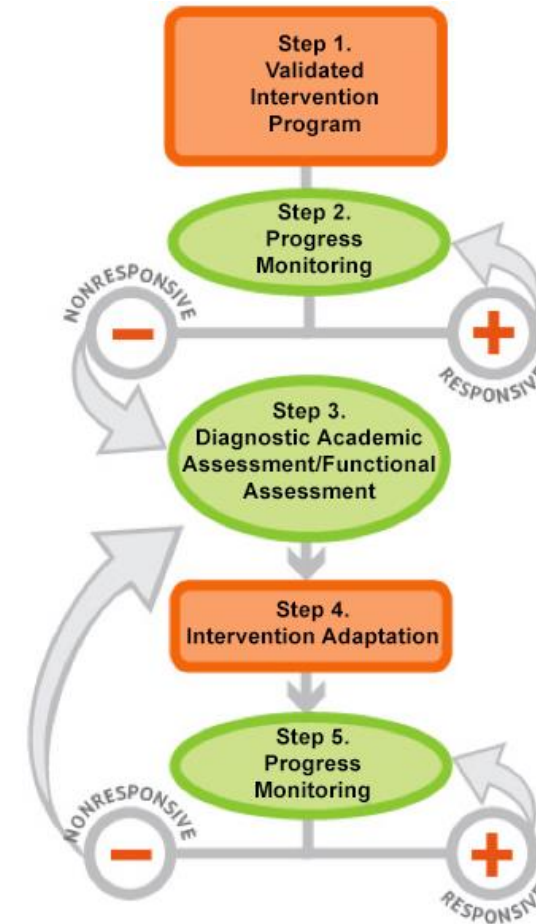


# 5.0 Data-Based Individualization (DBI) and Instructional Intensification

Tiers 2 & 3

# Defining Data-Based Individualization (DBI)

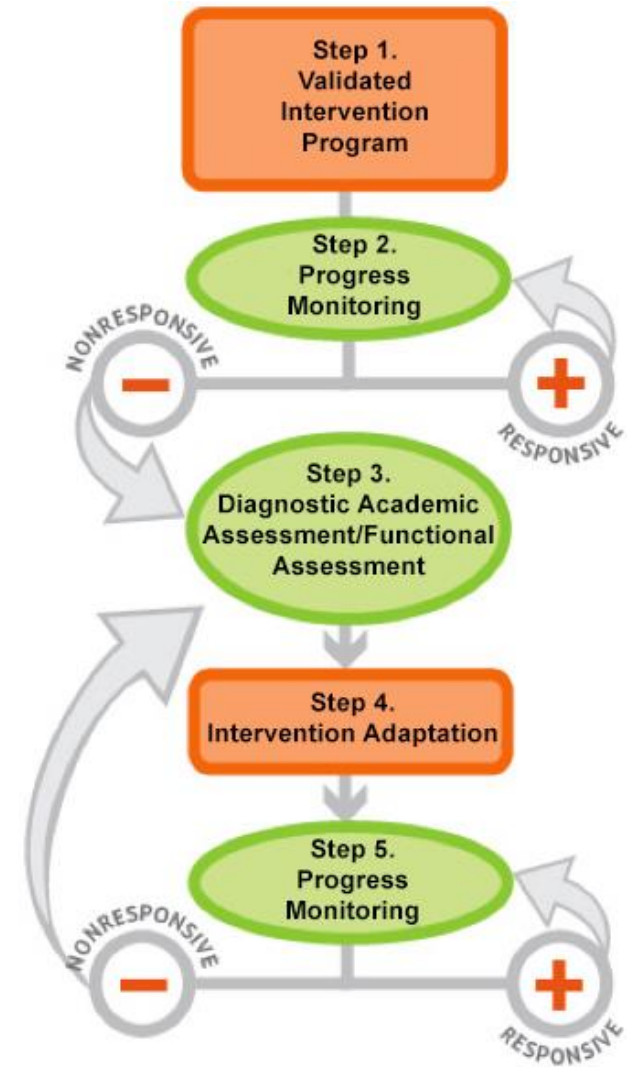
- A research-based, systematic process for using data to determine *when and how* to intensify instruction.
- NOT A ONE TIME FIX



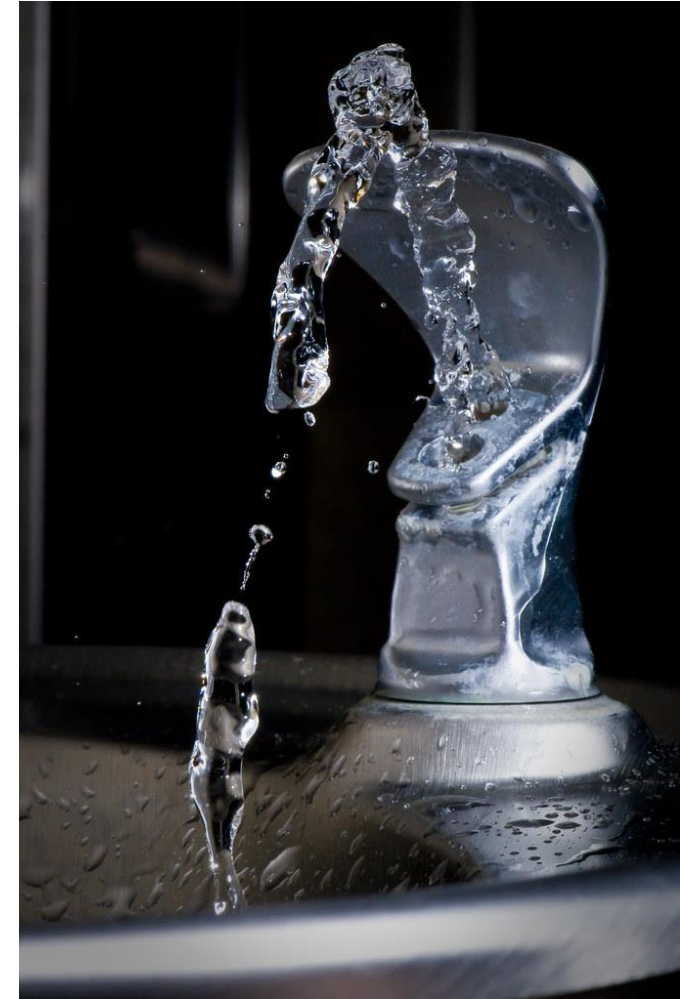
Source: National Center on Intensifying Intervention

# 5 Steps in the DBI Process

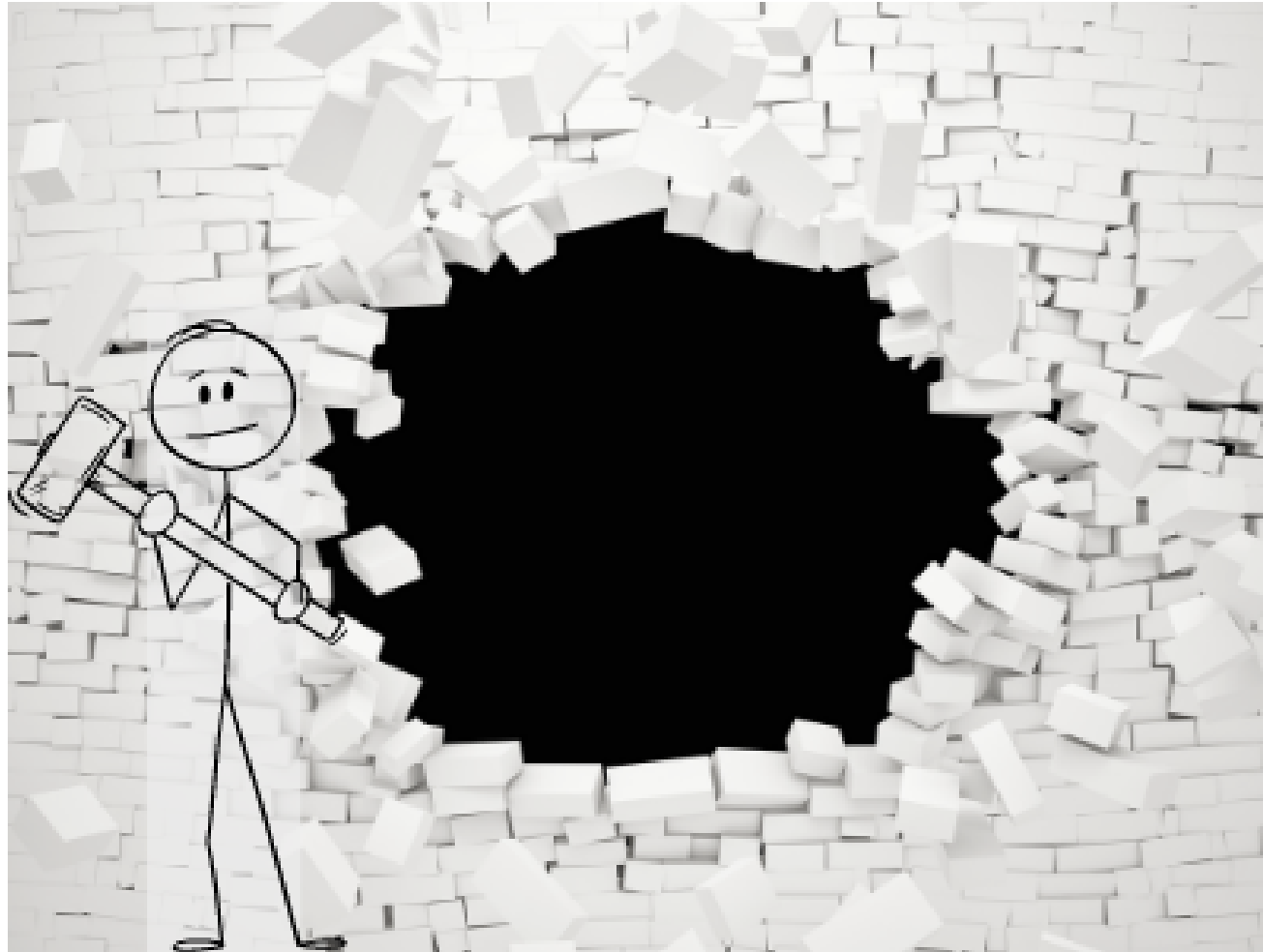
1. Implement an appropriate **Validated Intervention Program**
2. Begin **Progress Monitoring**
  - If student is **non-responsive** to instruction...
3. Collect additional **Diagnostic Data**
4. Implement an **Intervention Adaptation**
5. Continue **Progress Monitoring**
  - If student is **non-responsive**, repeat steps 3-5



## Activity 5.1

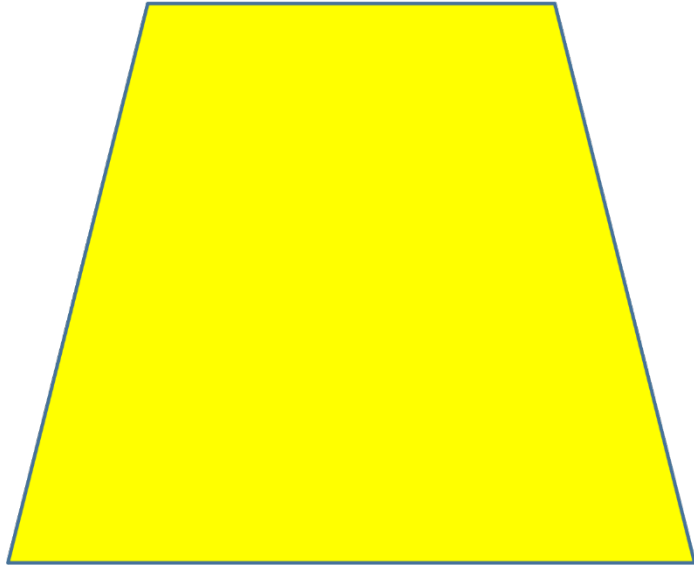


# Continuity



## Tier 2: Differentiated Targeted Instruction

Some learners



- Not for everyone
  - Should get more students to grade level (additional 7-15%)
- Standard treatment protocol
  - Defined in an intervention platform
  - Data-driven
- Adequate Interventionist Training
  - Consistency across providers
- Foundation of DBI process



# Monitoring Progress or Progress Monitoring?

## Monitoring Progress vs. Progress Monitoring

**Monitoring progress** is not the same as **progress monitoring**.

### Monitoring Progress

- Can occur daily
- Occurs during instruction
- Provides data for immediate, real-time instructional decisions
- Aligns with HLPs (e.g., interpreting student thinking)
- Often informal or unstandardized
- Uses formative assessments, questioning, providing feedback, and similar strategies.
- Used for ALL students

### Progress Monitoring

- Standardized delivery
- Requires valid and reliable measures
- Frequency depends on intensity of instruction and developer recommendations
- Requires ongoing data (i.e., 6-9 data points) for valid interpretation
- Used for entitlement decisions
- Requires graphed data
- Used for students receiving targeted and intensive intervention (~20-25% of population)

## Integration: Tier 2

SoR + Sol



MTSS

- Content
  - Validated Intervention Program
    - Purposeful Selection
    - Implemented with Fidelity
- Instructional Routines
  - Consistent
  - Predictable
  - Implemented with Fidelity
- Monitor Progress
  - Established Timeline
  - Valid and Reliable Assessment
    - Curriculum-based measure
    - Global Outcome Measure
    - In-Program Mastery Assessment



# Progress Monitoring: Tier 2

## Responsive

- Continue Standard Treatment Protocol
- Continue Progress Monitoring

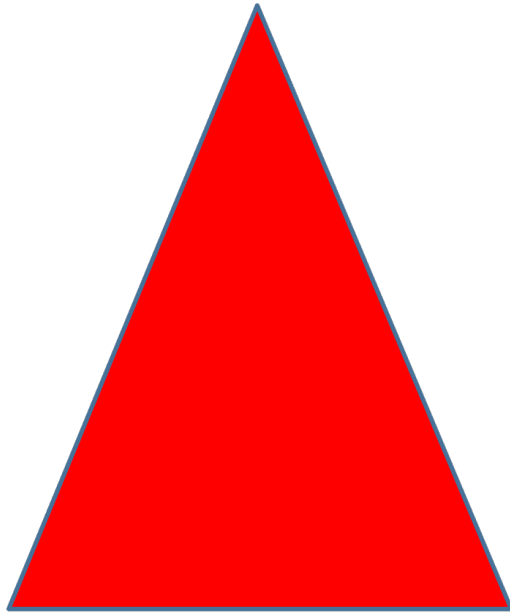
## Non-responsive

- Diagnostic Assessment
  - Includes informal
- Hypothesis: Why is there no response?
  - Team-based data analysis
- Adapt/intensify intervention
  - Analysis determines need
- Progress Monitor

Source: National Center on Intensifying Intervention

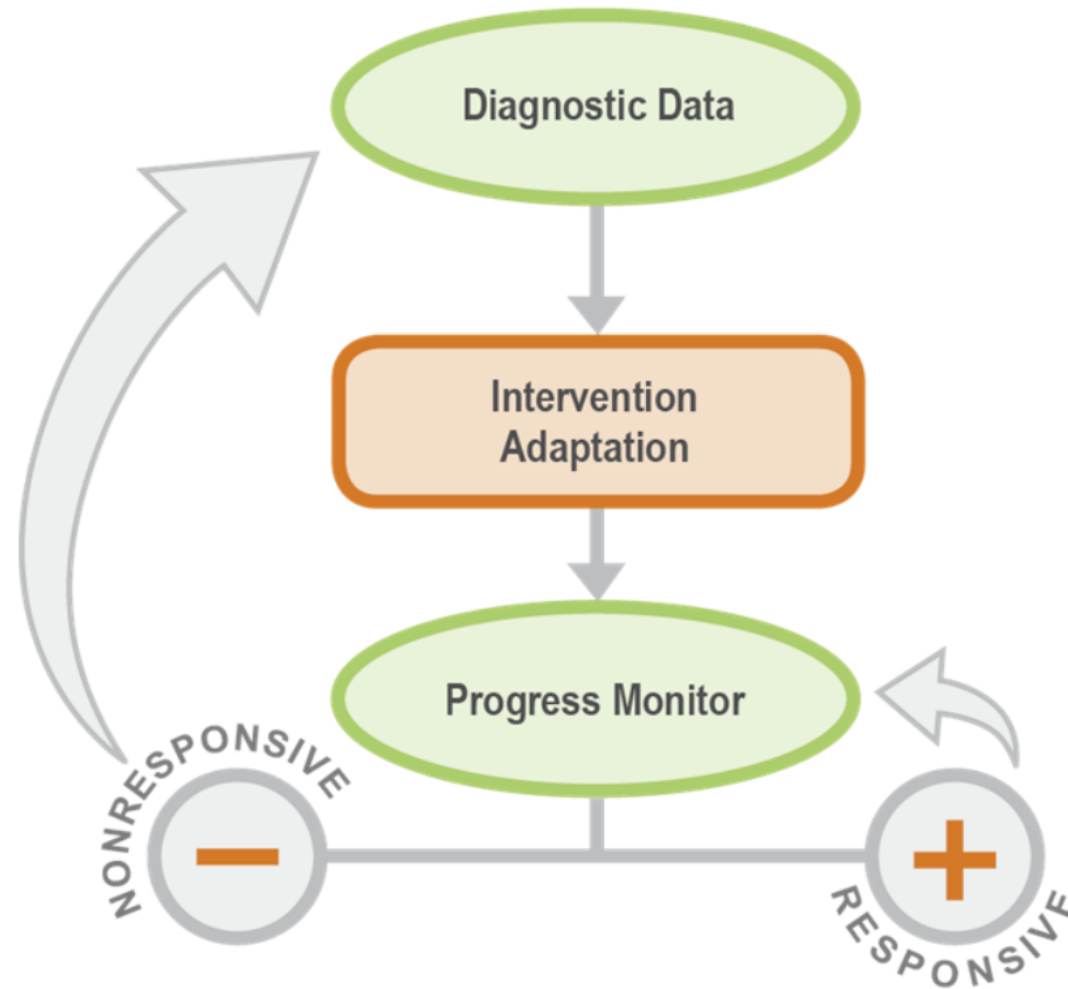
# Tier 3: Individualized Intensified Instruction

Few learners



- Few students
  - Should get the remaining 3-5% to grade-level
- Individualized
  - Matched to student need
- Driven by diagnostic data
  - What is contributing to the need for more progress?
- Routine Progress Monitoring
  - Timeline defined by the team

# DBI: An Ongoing Process



## Activity 5.2



## Closing Review

- The Science of Reading should inform content and instructional decisions.
- MTSS requires DBI.
- Teamwork = essential.
- Top-down support is essential for system-wide SoR and Sol implementation.
- Fidelity is critical. Continuity across tiers matters.
- Professional Development and continuous support are paramount in a successful MTSS system.

# Stay Connected



@MichiganMTSS



Michigan's MTSS  
TechnicalAssistance Center



@MiMTSSTACenter

Visit [MiMTSS TA Center Website](https://mimtsstac.org/)

(<https://mimtsstac.org/>)

Stay up to date on offerings!

[Join our listserv](https://lp.constantcontactpages.com/su/ePs3zCv)

(<https://lp.constantcontactpages.com/su/ePs3zCv>)

Please reach out with any questions

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