Colorado Department of Education
Dyslexia Pilot Project

Introduction to
Dyslexia Protocol Implementation

Presenters

Date

CTL Center on Teaching & Learning

Session Objectives

Understand	Review	Learn
Understand the definition of dyslexia, its origin, characteristics and distinguishing features.	Review the science of reading and how it can be implemented in schools to improve outcomes for students with dyslexia.	Learn how to implement the dyslexia protocol.

Pilot Project Background

- Include information about the background and goals of the pilot project

Part 1: Understanding Dyslexia

What is Dyslexia?

- "Dyslexia" means a **specific learning disability** that is **neurobiological** in origin. It is characterized by **difficulties** with **accurate or fluent word recognition**, or both, and by **poor spelling and decoding** abilities. These difficulties typically result from a **deficit in the phonological** component of language that is often **unexpected in relation to** other **cognitive abilities** and the provision of **effective classroom instruction**. Secondary consequences may include **problems in reading comprehension** and **reduced reading experience** that can **impede growth of vocabulary** and **background knowledge** (International Dyslexia Association, 2002; NICHD, 2003)

Myth

Dyslexia is an all or none condition—either you have it or you don't.

Fact

Dyslexia identification involves a complex diagnosis and relies on data and professional judgement. Evidence from assessments, educational opportunity, and the use of scientifically-based reading instruction and intervention is used to identify dyslexia.

Myth

There are no clues to dyslexia before children complete the first years of schooling.

Fact

Reading stems from spoken language. Individuals with dyslexia may have delays in speech or recognizing words that rhyme. Family history may be associated with dyslexia.

Myth

Individuals with dyslexia have the same level of condition severity and experience the same level of difficulty learning to read.

Fact

Many individuals—some who have dyslexia and some who do not—experience difficulty learning to read. Individuals with dyslexia differ in severity, from milder forms of dyslexia to more severe forms. The severity of dyslexia is connected to the level difficulty learning to read.

What is dyslexia?

- Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

Myth

Dyslexia is a reading disorder based on vision problems, which causes people to see letters backward or mix up letters like “b” and “d.”

Fact

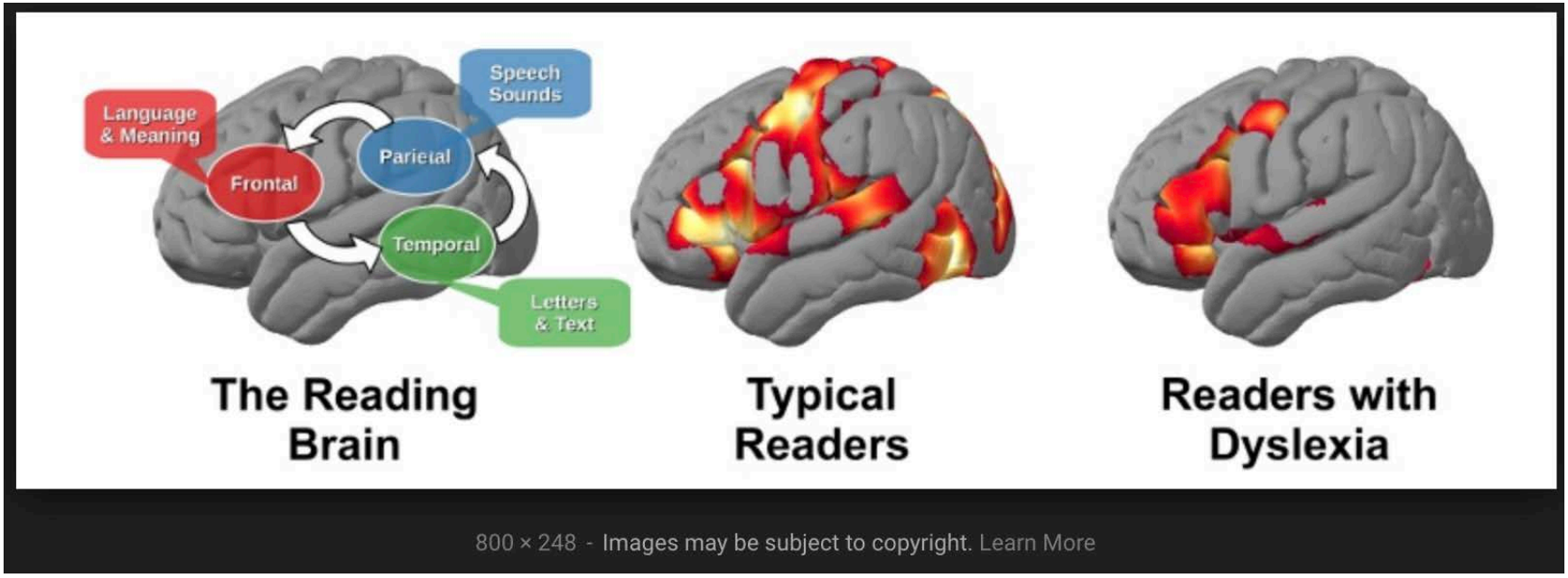
Dyslexia is a brain-based disorder with impairments in the regions of the brain associated with speech sounds. Dyslexia is not a vision problem.

How dyslexia likely works: The current working hypothesis

Children with dyslexia:

- have differences in brain structure and functioning in the left hemisphere of the brain, specifically in areas involved in oral language and written language
- may recruit areas in the right hemisphere to compensate for these structure and functioning differences
- typically show core phonological processing deficits, which leads to difficulties associating sounds with letters, and with learning how to read

Images of brain engagement during reading



Video: Dyslexia and the Brain

https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/dyslexia/video-dyslexia-and-the-brain

What Causes Dyslexia?

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These **difficulties typically result from a deficit in the phonological component of language** that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

Myth

People with dyslexia could read if they tried harder.

Fact

Reading is a difficult process that our brains were not developed for. This means that learning to read is difficult!

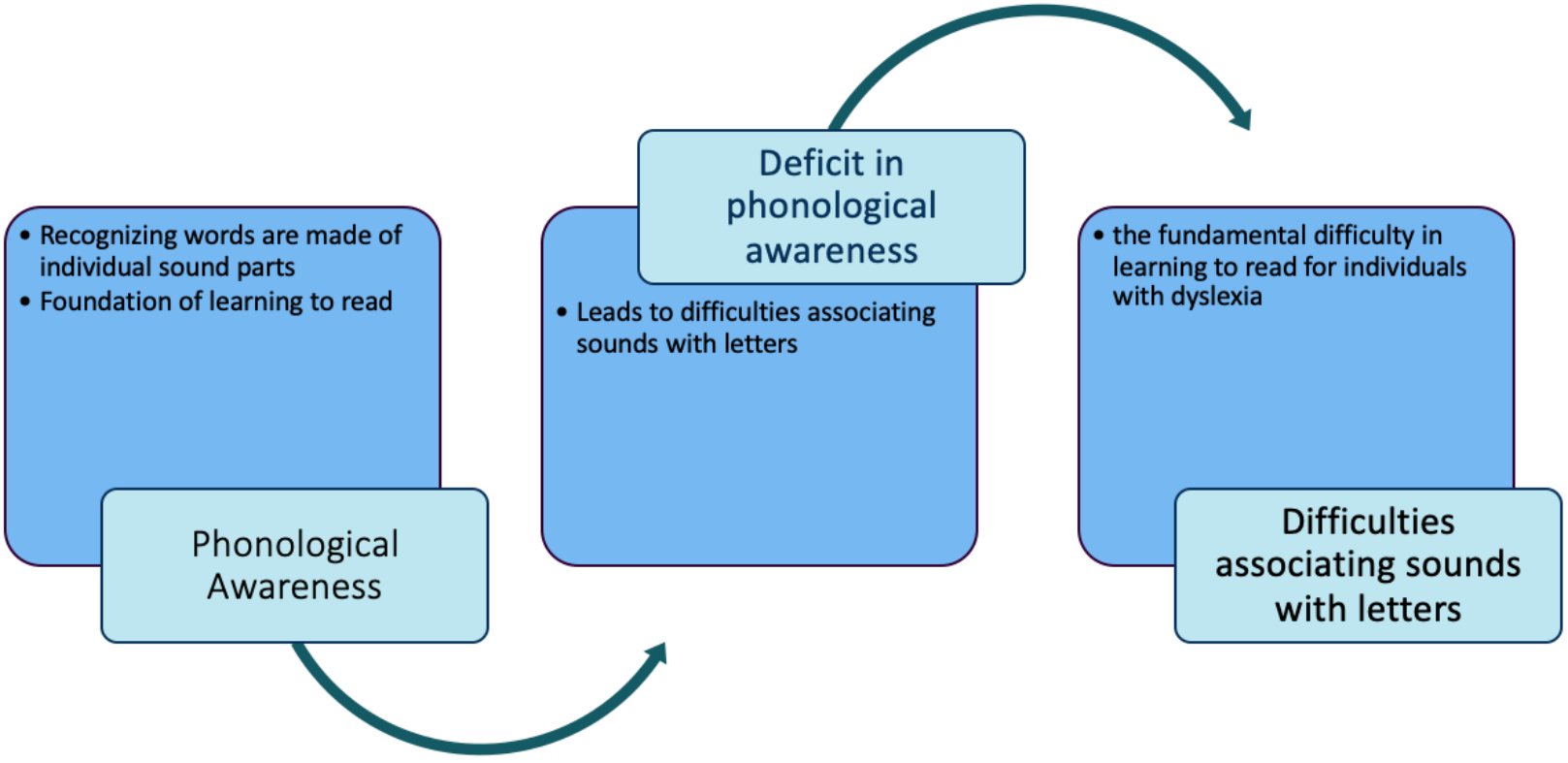
Unlike speech, reading does not occur naturally

Our brains are wired for *spoken* language, not to read . . . Learning to read does not occur naturally or with minimal exposure.

In fact . . .

“Learning to read is one of the most complex examples of human learning, the demands of which are evident from its lengthy and explicit instruction throughout childhood and into adulthood. There is no other human behavior that approaches reading’s demands for coordinating multimodal perceptual representations and cognitive processes.”

Key linkages in dyslexia



What are the characteristics of dyslexia?

Dyslexia is a specific learning disability that is neurobiological in origin. It is **characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities.** These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. **Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.**

Characteristics of dyslexia

- Individuals with dyslexia typically read at levels significantly lower than expected despite having normal intelligence
- The disorder varies from person to person
- Common characteristics are difficulty with **phonological processing** (the manipulation of sounds), spelling, and/or rapid visual-verbal responding

Typical Subtyping of Reading Problems

Decoding Skill	Comprehension Skill: Poor	Comprehension Skill: Good
Poor	General Poor Reading	Dyslexia
Good	Specific Comprehension Deficits	Typical Reading

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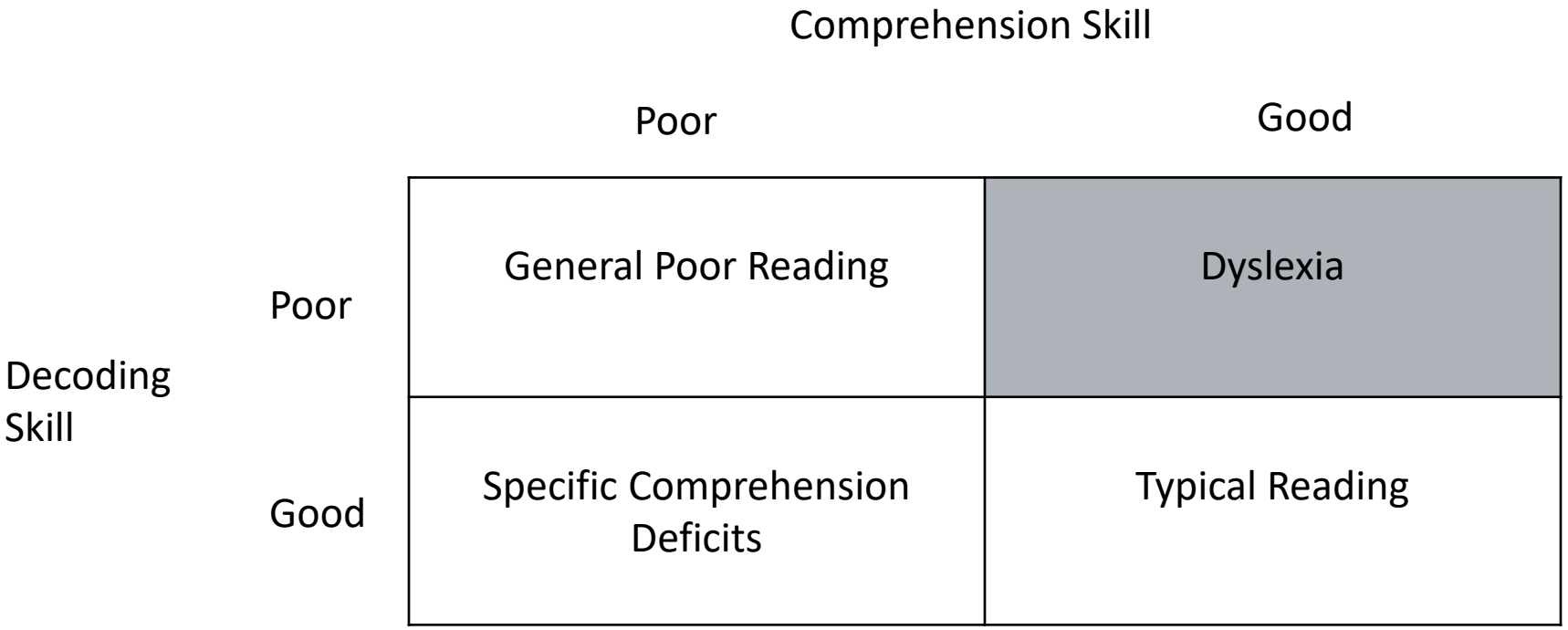
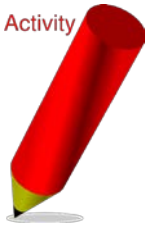


Simulations



- https://www.understood.org/en/tools/through-your-childs-eyes
- http://webaim.org/simulations/dyslexia-sim.html
- http://www.iflscience.com/brain/font-simulates-dyslexia-make-words-harder-read/
- http://danielbritton.info/dyslexia
- http://geon.github.io/programming/2016/03/03/dsxyliea

Dyslexia prevalence

- Dyslexia is thought to be the most common language-based Learning Disability
  - Of students with reading difficulties, 70-80% are likely to have some form of dyslexia
  - It is estimated that between 5-10% of the US population has dyslexia
  - Prevalence varies across countries, possibly due in part to differences in languages

Dyslexia and common co-morbid exceptionalities

- Dyslexia is commonly comorbid with other specific developmental disorders
  - Reading comprehension difficulties
  - Specific speech and language impairment
  - Developmental coordination disorder
- Also comorbid with psychiatric conditions
  - Conduct disorder
  - Attention-deficit hyperactivity disorder
  - Anxiety
- Associated problems
  - The Matthew effect (‘the rich get richer while the poor get poorer’)
  - Poor self-esteem

Adapted from Thambirajah (2010)

Key differences between typical readers and readers with dyslexia

- Significant impairment in reading attainment
- Poor spelling
- Slow, labored reading
- 'Unexpectedness' in light of other abilities
- Family history of dyslexia
- Poor phonemic awareness
- Poor decoding skills

Adapted from Thambirajah (2010)

Indicators of Dyslexia by Age and Grade
According to the Yale Center for Dyslexia and Creativity

- Preschool :
  - Trouble learning common nursery rhymes, such as “Jack and Jill”
  - Difficulty learning (and remembering) the names of letters in the alphabet
  - Seems to be unable to recognize letters in his/her own name
  - Mispronounces familiar words
  - Persistent “baby talk”
  - Doesn’t recognize rhyming patterns like *cat*, *bat*, *rat*
  - A family history of reading and/or spelling difficulties

Adapted from Thambirajah (2010)

Indicators of Dyslexia by Age and Grade
According to the Yale Center for Dyslexia and Creativity

- K–1:
  - Reading errors that show no connection to the sounds of the letters on the page–will say “puppy” instead of the written word “dog” on an illustrated page with a dog shown
  - Does not understand that words come apart
  - Complains about how hard reading is, or “disappearing” when it is time to read
  - A history of reading problems in parents or siblings.
  - Speaking
  - Cannot sound out even simple words like *cat*, *map*, *nap*
  - Does not associate letters with sounds, such as the letter b with the “b” sound

Indicators of Dyslexia by Age and Grade
According to the Yale Center for Dyslexia and Creativity

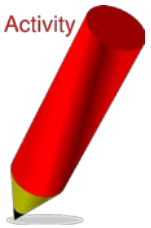
- Grades 2 and above
  - **Reading**
    - Very slow in acquiring reading skills. Reading is slow and awkward
    - Trouble reading unfamiliar words, often making wild guesses because cannot sound out the word
    - Doesn't seem to have a strategy for reading new words
    - Avoids reading out loud
  - **Speaking**
    - Searches for a specific word and ends up using vague language, such as "stuff" or "thing" a lot, without naming the object
    - Pauses, hesitates, and/or uses lots of "umm's" when speaking
    - Confuses words that sound alike, such as saying "tornado" for "volcano," substituting "lotion" for "ocean"
    - Mispronunciation of long, unfamiliar, or complicated words
    - Seems to need extra time to respond to questions

Indicators of Dyslexia by Age and Grade
According to the Yale Center for Dyslexia and Creativity

- Grades 2 and above (continued)
  - **School and Life**
    - Trouble with remembering dates, names, telephone numbers, random lists
    - Has trouble finishing tests on time
    - Extreme difficulty learning a foreign language
    - Messy handwriting
    - Low self-esteem that may not be immediately visible

Part 1: Reflect and Discuss

1. Review your Part 1 notes.
2. Highlight 3-5 items that were new to you (or a good reminder of past knowledge).
3. Discuss at your table the items you have highlighted.
4. How can this knowledge be used or shared at your school?



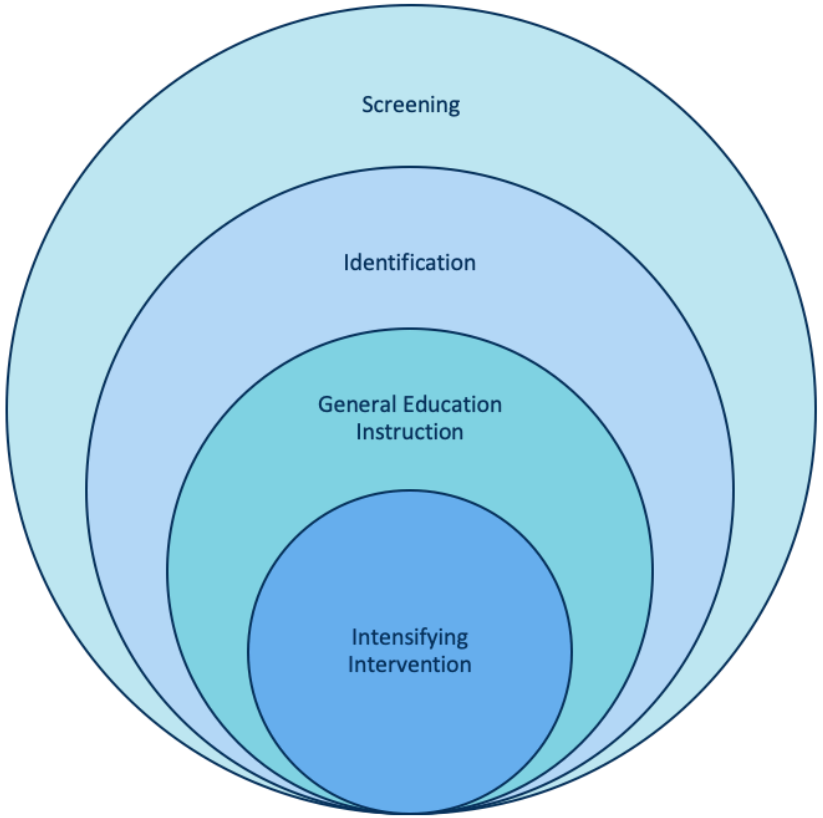
Part 2:
The Science of Reading

What can schools do to support students with dyslexia?

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and **the provision of effective classroom instruction.** Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

What can schools do to support students with dyslexia?

An effective system of instruction, intervention and support



Disconnect Between Research and Practice

- Despite strong evidence for the use of particular instructional practices, those ***practices are not regularly used in classrooms*** (Cook & Cook, 2011; Kent et al. 2012; Nelson-Walker et al., 2013).
- In her testimony to Congress, Shaywitz (2014, 2015) observed that ***we did not have a "knowledge gap"*** when it comes to understanding how to solve the epidemic of reading failure across the US, including reading problems caused by dyslexia.
- Shaywitz asserted that ***we had an "action gap"*** such that this robust and definitive scientific knowledge base is not finding its way effectively into policy and practice.

Why Is This a Problem?

2017 National Assessment of Education Progress (NAEP) Reading

37% 4th graders scored at or above "proficient" level

12% of 4th graders with disabilities scored at or above "proficient"

2019 National Assessment of Education Progress (NAEP) Reading

35% 4th graders scored at or above "proficient" level

12% of 4th graders with disabilities scored at or above "proficient"

This means nearly two-thirds of fourth-grade students, and almost **90% of fourth grade students with disabilities** are not meeting expectations for reading performance, and **performance is not improving**!

Instructional Perspective on Teaching and Learning

Two Very Different Questions:

1. "What is it about this ***student*** that makes it difficult for them to learn?"

2. "What is it about this ***instruction*** that makes it difficult for them to learn?"

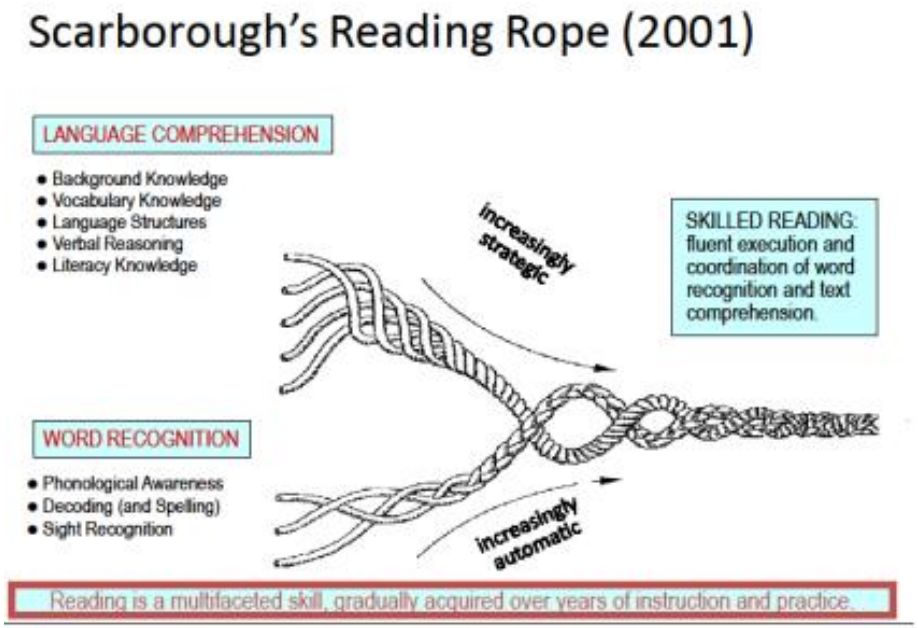
How Do We Get There?

- **Know** and **implement** the science of reading.
- Use **data** to guide instruction.
  - Screening and progress monitoring data
  - Instructional implementation data
- Select and implement **evidence-based programs and practices**.
  - Other things *may* work, but the consequences of students not learning to read isn't work the risk.
- **Commit** to improving student reading outcomes, even if it means changing practice in ways that are uncomfortable at first.
  - Learning new things isn't easy! If it were, many more students might be able to read.

The Science of Reading (simplified)

- Research is **crystal clear** that students need to be explicitly and systematically taught phonics
  - National Reading Panel (2000); Snow, Burns, & Griffin (1998); a plethora of publications since these seminal pieces were released
- Phonics is not taught at a ***cost*** to vocabulary and comprehension; it is taught in conjunction with other reading skills to support overall reading achievement
- Curriculum maps (not publisher-specific) work as a supplement to state standards to match instruction to the science behind reading development.

Simple View of Reading

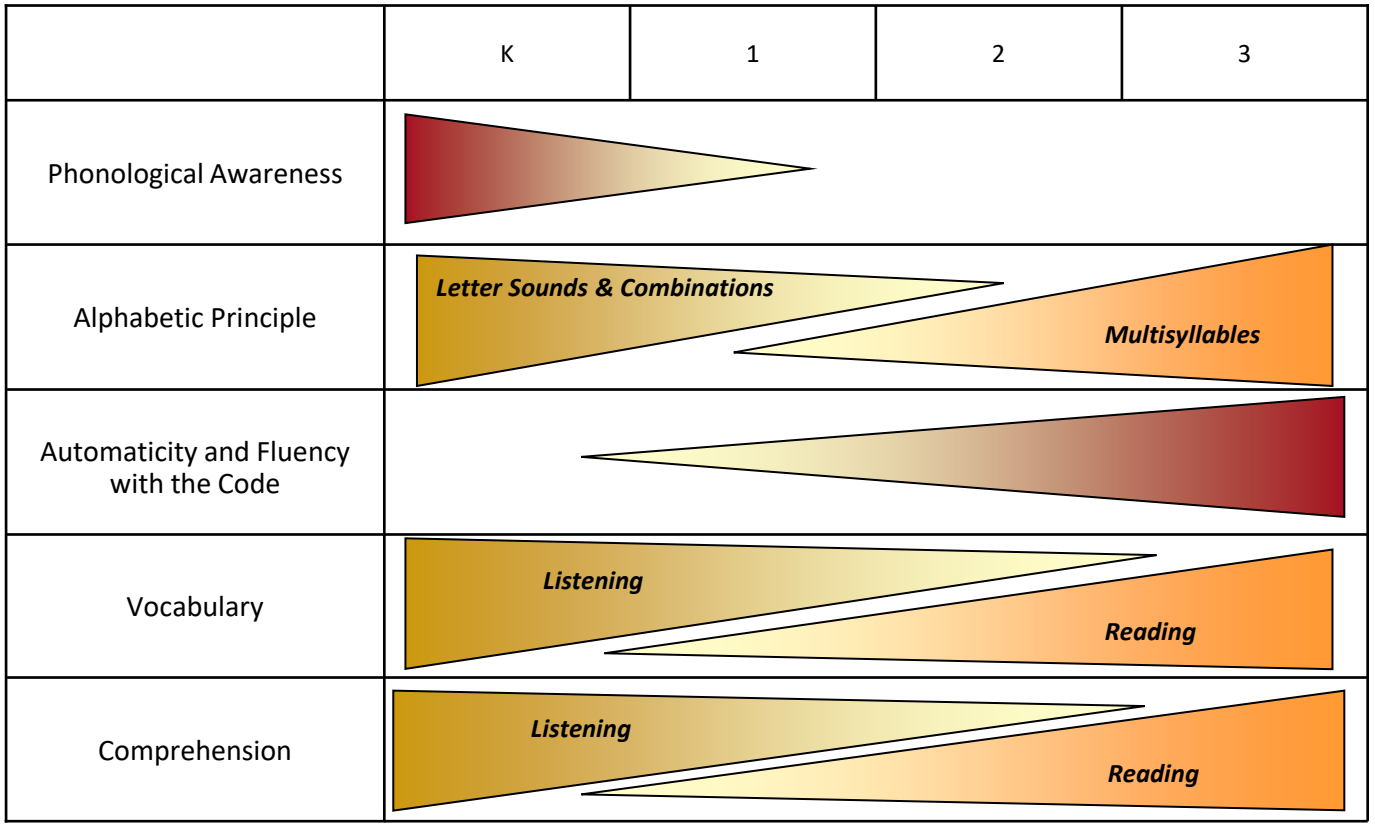


The Simple View formula presented by Gough and Tunmer (1986 is):

Decoding (D) x Language Comprehension (LC) = Reading Comprehension (RC)

The Simple View allows partial independence between decoding and comprehension skills

Changing Emphasis of Big Ideas



Reading Words & Sentences

- Phonemic Awareness
- Alphabetic Principal (Phonics)
- Reading Fluency

Understanding What is Read

- Vocabulary
- Comprehension

Components of Effective Instruction for Students with Dyslexia

General Education Instruction	Effective Intensive Intervention
Explicit and Systematic Instruction	Explicit and systematic instruction in up to 3 foundational reading skills
Focus on Foundational Reading Skills (Phonemic Awareness, Alphabetic Principle, Fluency, Vocabulary, Comprehension)	
Differentiation of instruction-mix of whole group and small group	Small group instruction with homogenous groupings
	Monitoring of student progress

Big Ideas: **WHAT** to Teach

Rationale

- For students that are behind, there is insufficient time to teach all of the content knowledge the student is missing AND all of the content knowledge the student needs to learn to meet grade level objectives.
- Thus, ”big ideas” focus on the most important content students need to learn

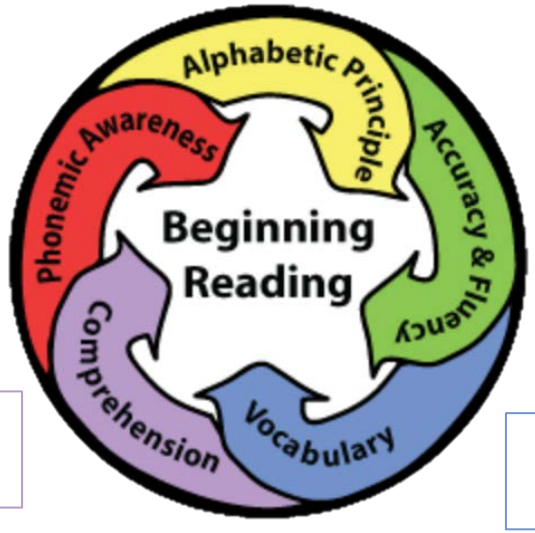
Research evidence in support of focus

- The National Reading Panel (2000) screened more than 116,000 research articles published prior to 1998 and summarized research evidence for the five “big ideas” of reading.
- Gersten et al. (2009) summarized rigorous research evidence for focusing on the five major components of reading during small group interventions, and classified the evidence as “strong.”

Big 5 of Reading

The ability to connect letters with their sounds to read and write

The ability to hear and manipulate sounds in spoken words; understand words are made of speech sounds



Accuracy is reading words correctly. Fluency is reading words with no noticeable cognitive or mental effort.

Comprehension is the active and intentional thinking in which meaning is constructed between the text and the reader.

Learning, as a language-based activity, is fundamentally and profoundly dependent on vocabulary knowledge.

HOW to Teach: Explicit and Systematic Instruction

Components of Explicit Instruction	Components of Systematic Instruction

• Teacher explanation (learning target)
• Teacher model
• Practice opportunities for all
  ◦ Use of signal
  ◦ Judicious review
• Appropriate pacing
• Immediate corrective feedback
• Checks for understanding
	• Break activities into small steps
	• Steps are sequential
	• Steps progress from simple to more complex
	• Students have prior knowledge and prerequisite skills required for new skill development

(The Meadows Center for Preventing Educational Risk, 2010

Part 2: Reflect and Discuss

1. Review your Part 2 notes.
2. Highlight 3-5 items that were new to you (or a good reminder of past knowledge).
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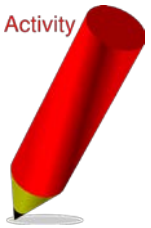
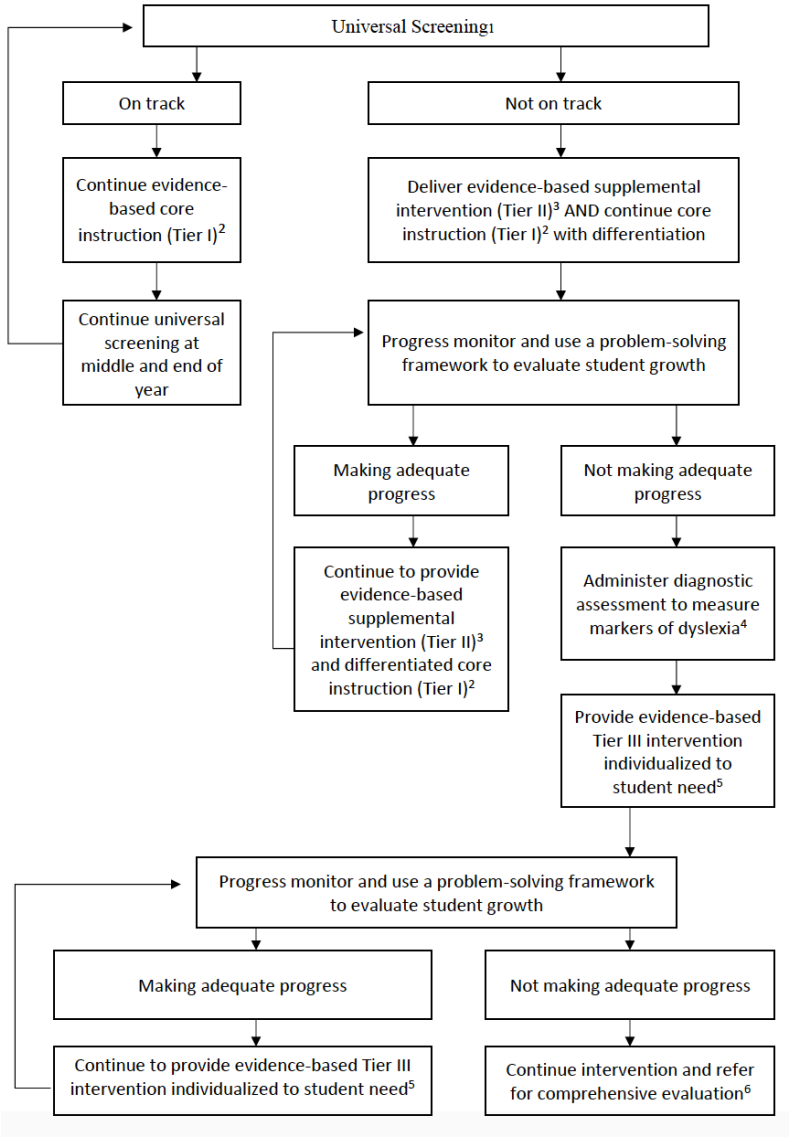


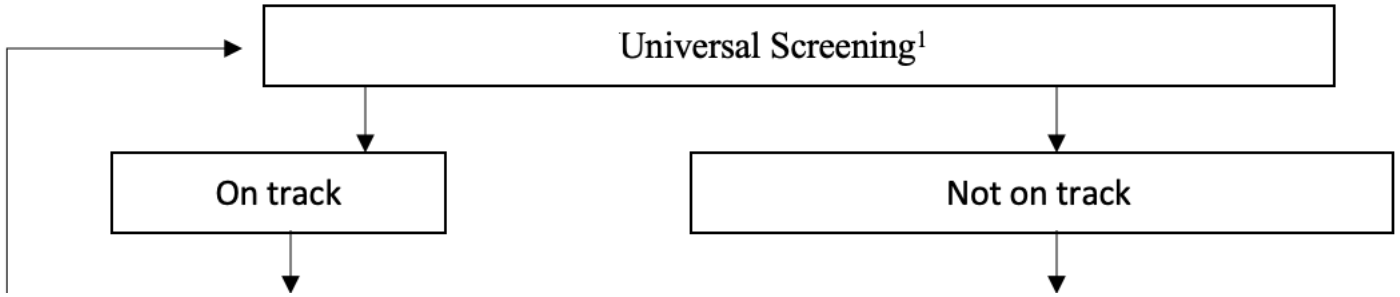
Part 3:
Implementing the Dyslexia Protocol

What is the Dyslexia Protocol?

- Screening and identification processes and intervention strategies for early identification of and support for students enrolled in kindergarten through third grade who may have dyslexia


Universal Screening1
On track
Not on track
Continue evidence-based core instruction (Tier I)2
Deliver evidence-based supplemental intervention (Tier II)3 AND continue core instruction (Tier I)2 with differentiation
Continue universal screening at middle and end of year
Progress monitor and use a problem-solving framework to evaluate student growth
Making adequate progress
Not making adequate progress
Continue to provide evidence-based supplemental intervention (Tier II)3 and differentiated core instruction (Tier I)2
Administer diagnostic assessment to measure markers of dyslexia4
Provide evidence-based Tier III intervention individualized to student need5
Progress monitor and use a problem-solving framework to evaluate student growth
Making adequate progress
Not making adequate progress
Continue to provide evidence-based Tier III intervention individualized to student need5
Continue intervention and refer for comprehensive evaluation6

Step 1: Universal Screening



Step 1: Universal Screening

- Provided to all students within first two weeks of school in K–3 (and one or two other times during the school year)
- Use screening assessment from approved list that also meets these criteria:
  - Assesses through at least one subtest:
    - Phonological awareness
    - Letter naming (early in K as a robust predictor of risk; later as a proxy for RAN)
    - Phonics, including alphabetic understanding, alphabetic recoding, and reading fluency:
      - Letter-sound correspondence knowledge
      - Nonsense word decoding fluency
      - Real word decoding (regular and irregular words) fluency

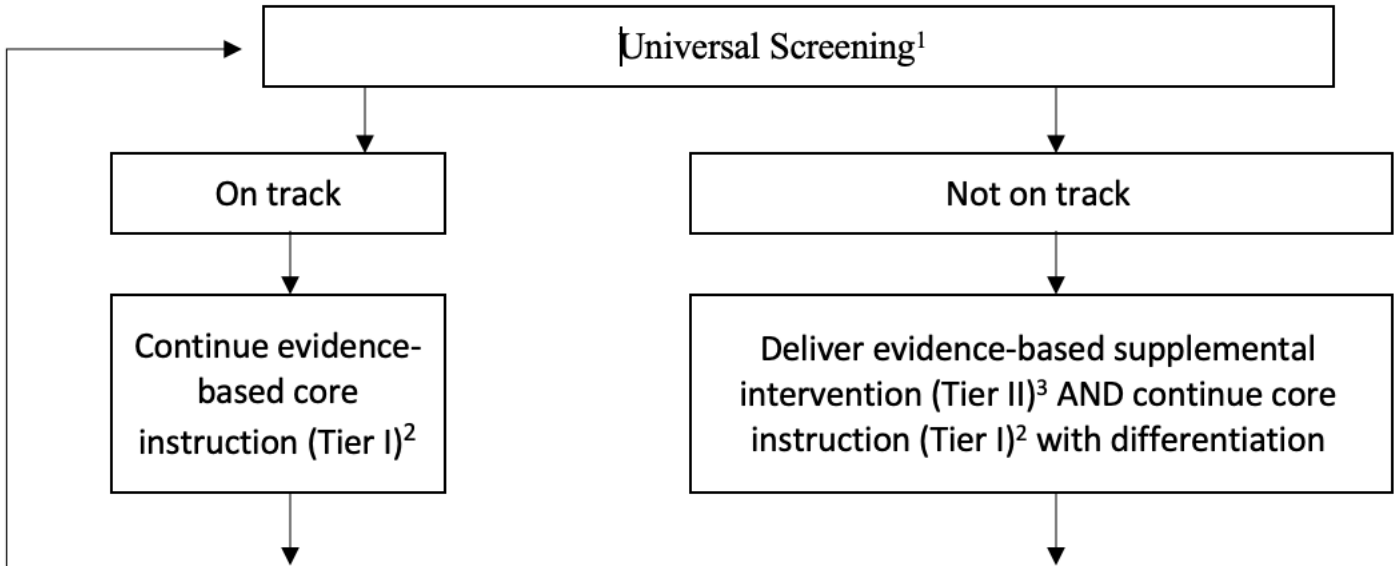
Step 1: Universal Screening

- Consider assessing other important measures of reading proficiency at relevant grade levels (e.g., oral reading fluency, vocabulary, spelling, comprehension):
  - Oral reading fluency in grade 1 and beyond
  - Spelling in grade 1 and beyond
  - Comprehension and/or vocabulary in grades 2 and 3
- Assessment format requires students to produce responses (not select them; exceptions may be vocabulary and comprehension)

Step 1: Universal Screening

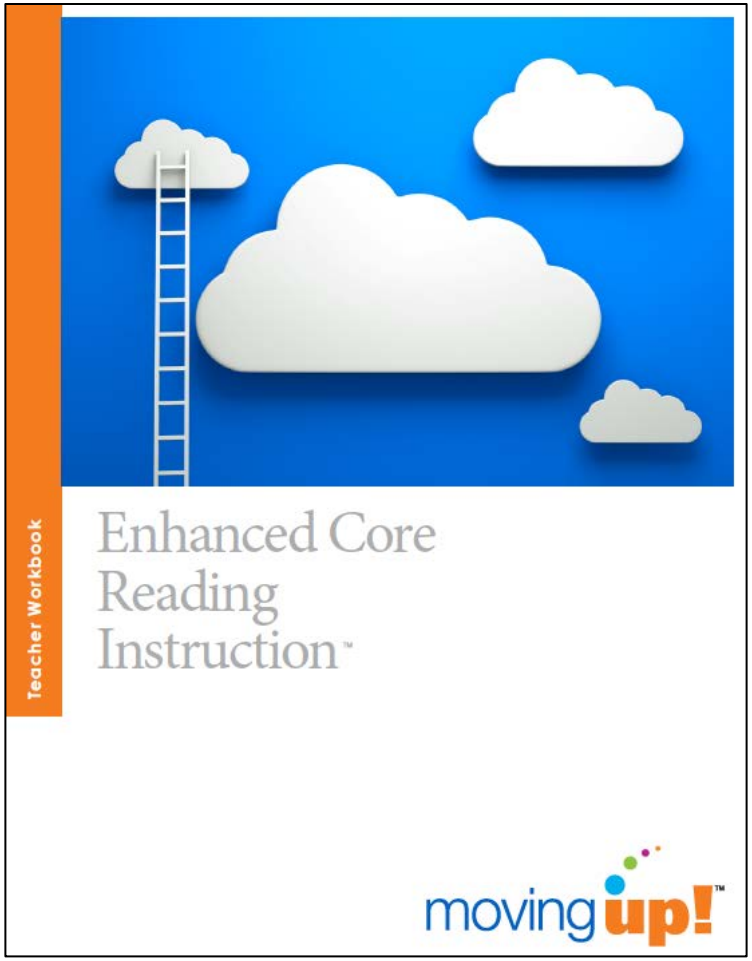
- Purpose is to assess overall reading risk and determine who needs additional support, recognizing early reading skills have a high degree of overlap with word-level reading skills that are impacted by dyslexia
- Risk is determined using "benchmarks" (i.e., cut scores) that are built into the screening assessment or selected by the state
  - Student are determined to be at risk based on a composite score below the developer-established benchmark score in grades K-3, *or*
  - Performance on an individual subtest assessing the content identified above (i.1-3) below the 25th %ile
- Communication goes home to parents (Level 1 communication); most likely students who are determined to be at risk and will receive extra support (i.e., supplemental intervention or more intense intervention)
- Address additional considerations for English Learners, as appropriate

Step 2: Core Instruction

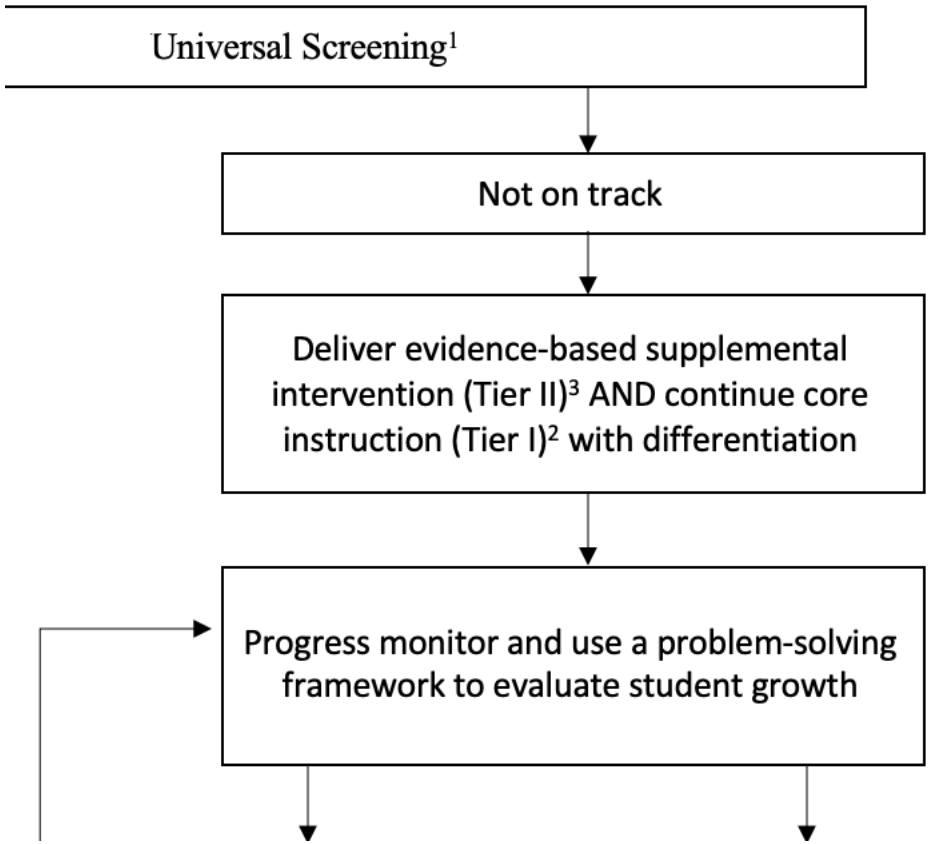


Step 2: Core Instruction

- Provided to all students
- Use evidence-based program from approved list or that CO and UO agree to implement
  - For the pilot study this will be Enhanced Core Reading Instruction matched to your district's adopted core program.



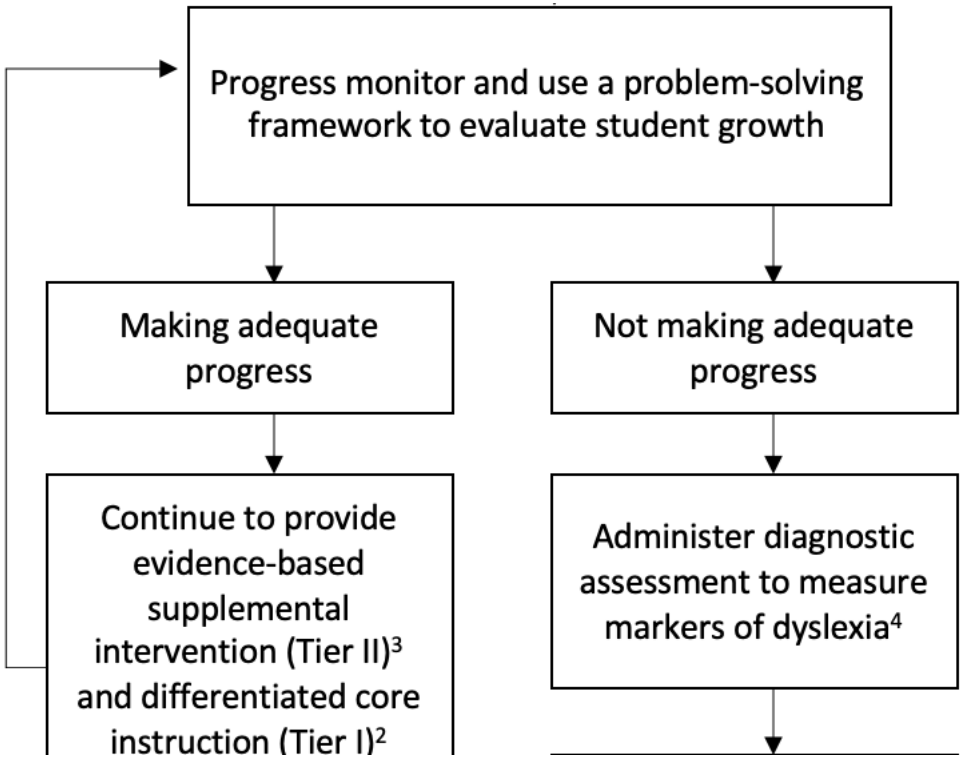
Step 3: Supplemental Instruction



Step 3: Supplemental Instruction

- Provided to all students who are “not on track” (i.e., are at risk)
- Use evidence-based supplemental program from approved list or that CO and UO agree to implement
  - For the pilot study this will be Enhanced Core Reading Instruction.
- Progress monitoring assessments administered monthly to all students at risk, and analyzed and interpreted using a data-based decision-making process

Step 4: Diagnostic Assessment



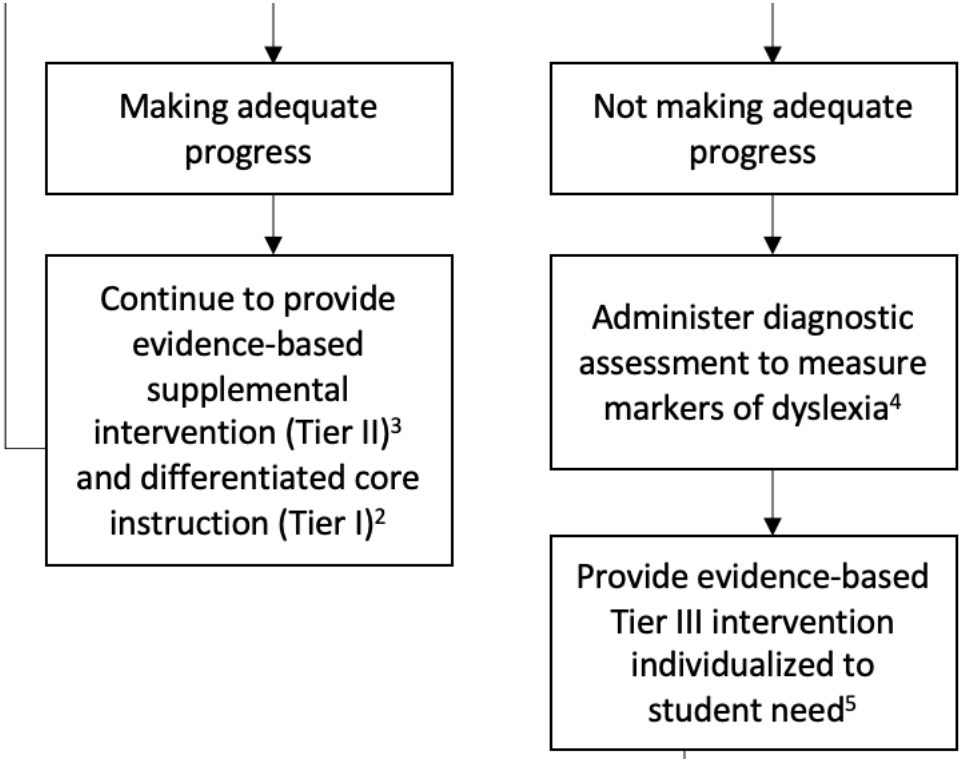
Step 4: Diagnostic Assessment

- Used to help determine student performance in relation to potential "Markers of Dyslexia"
- Takes place within 60 calendar days of universal screening
- Provided to students who are "not making adequate progress" in Tier II, based on:
  - Inadequate progress based on benchmark criteria chosen *or*
  - Demonstration of specified reading behaviors during Tier II indicative of difficulty mastering content
- These are not necessarily students who are "failing" Tier II; it may include students who need sustained Tier II in order to achieve reading goals.

Step 4: Diagnostic Assessment

- Includes measures of:
  - Markers of dyslexia, including:
    - Phonological memory
    - Rapid automatized naming
    - Additional phonological awareness measures, as needed
    - Spelling, if not included in universal screening
  - Family history
  - Teacher perceptions of reading, broad academic, and behavioral skills
- Communication goes home to parents (Level 2 communication) indicating student demonstrates "Markers of Dyslexia"

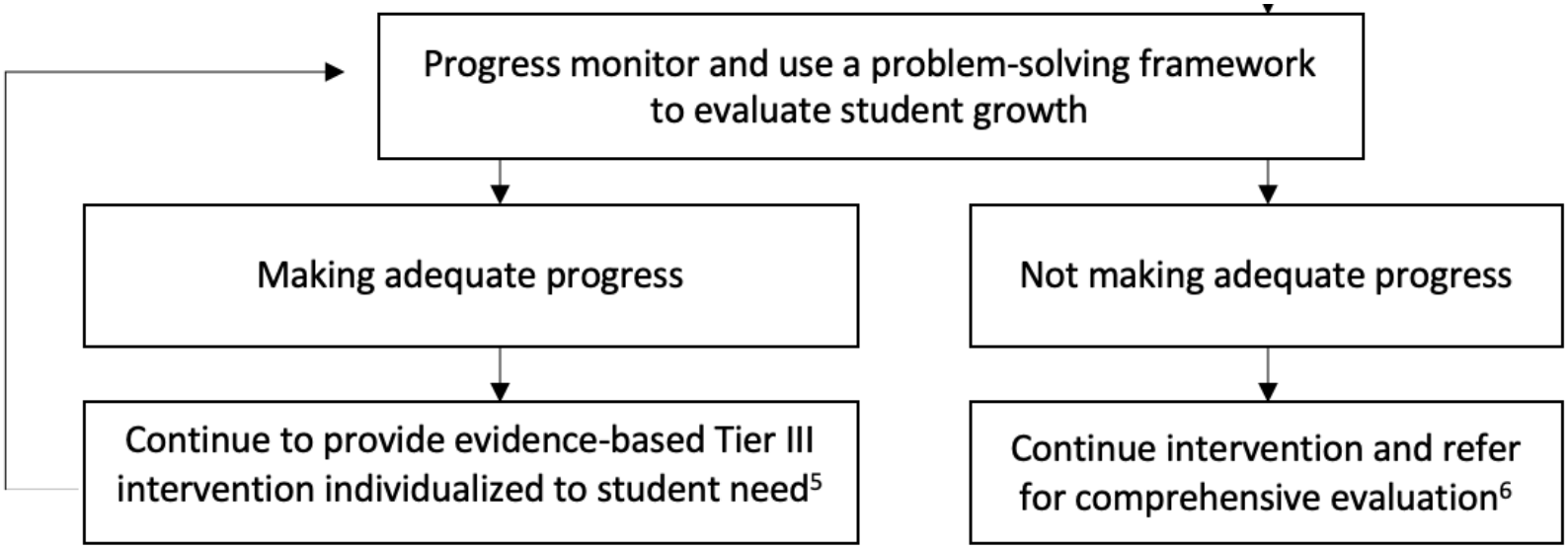
Step 5: Intervention



Step 5: Intervention

- Results of diagnostic assessment are used to help refine interventions for students based on their individual needs
- Progress monitoring data collected and analyzed using a data-based decision-making process
- 504 plan invoked when students demonstrate "Markers of Dyslexia" and need this level of support (or beyond) to learn to read

Step 6: Comprehensive Evaluation



Step 6: Comprehensive Evaluation

- Provided to students who are “not making adequate progress” in Intervention
- Includes a referral to multidisciplinary team for additional comprehensive assessment (i.e., developmental history; standardized, norm-referenced assessments, additional diagnostic assessments; performance in other areas; student observations in multiple settings); and team eligibility decision making consistent with ECEA and IDEA
- Students ineligible for special education who demonstrate “Markers of Dyslexia” provided 504 plan

Wrap Up and Next Steps

- Questions
- Review schedule for upcoming trainings
- Team planning time