

Reading & Math Areas of Concern Defined

How to use this document...

The interventions list for literacy and math contains a column titled, “Area(s) of Concern.” This document provides the definition and description for each Area(s) of Concern as it relates to the district’s RtII Tiers 1-3 list of intervention products/programs for literacy and math.

Also, in the Online Interventions Module, student intervention plans are created for reading and math. Intervention products/programs are listed in the Online Interventions Module by the Areas of Concern addressed by the product/program. Meaning, not all intervention products/programs address every reading or math area of concern.

Lastly, when determining or selecting the intervention product/program that is best for students, the decision begins with answering the question, “*What is the area(s) of concern that needs to be addressed for our student(s)?*”

Reading Areas of Concern

- Phonemic Awareness
- Phonics
- Fluency
- Comprehension
- Vocabulary

Phonemic Awareness

Teaching phonemic awareness is the basic foundation that helps students learn to read and spell. Phonemic Awareness is the awareness that speech is made up of a sequence of sounds that can be manipulated—changed, added, or subtracted—to form different words (e.g., *sick*, *slick*, *slim*, *slam*.). The ability to hear and manipulate sounds in words and to know that spoken words are made up of smaller parts called phonemes encompasses phonemic awareness. Often, the term phonemic awareness is used interchangeably with the term phonological awareness. To be precise, phonemic awareness refers to an understanding about the smallest units of sound that make up the speech stream: phonemes.

Phonics

Phonics, another term for Word Analysis, refers to the knowledge of letter sounds, syllable patterns, and the rules used to decode words. Although there are many different types of or approaches to phonics instruction (e.g., intensive, explicit, synthetic, analytic, embedded), all phonics instruction focuses the learner’s attention on the relationships between sounds and symbols as an important strategy for word recognition.

Fluency

Fluency is defined as the ability to read a text accurately and quickly. Fluent readers group words quickly to help them gain meaning from what they read. Fluency is important because it provides a bridge between word recognition and comprehension. To read with expression, readers must be able to divide the text into meaningful chunks. These chunks include phrases and clauses. Readers must know to pause appropriately” when reading orally. Fluency is not a stage of development at which readers can read all words quickly and easily. Fluency changes, depending on what readers are reading, their familiarity with the words, and the amount of practice with reading text. It is important to provide students with instruction and practice in fluency as they read connected text. Repeated and monitored oral reading improves reading fluency and overall reading achievement.

Comprehension

Comprehension is the process of making meaning from written text. The reader is intentional and thoughtful while reading, monitoring the words and their meaning as reading progresses. The reader applies reading comprehension strategies as ways to be sure that what is being read matches their expectations and builds on their growing body of knowledge that is being stored for immediate or future reference. Key comprehension strategies include monitoring comprehension, using prior knowledge, making predictions, questioning, recognizing story structure, and summarizing. Students demonstrate comprehension when they:

- Use prior knowledge and personal experiences when discussing a book, or reading passage. Example: I just knew she was going to fall — that's what happened to me and my friends when we were learning how to skateboard.
- Describe similarities and differences among books and/or reading passages. Example: Most kids' books have happy endings. Mystery books always try to trick you.
- Describe characters' moods and motives.
- Visualize and describe scenes and characters in books/reading passages with few illustrations.
- Support their ideas or interpretations by giving examples from the text.
- Identify the main ideas/central theme in a story or nonfiction book/reading passage.

Vocabulary

Vocabulary refers to the words we must know to communicate effectively. In general, vocabulary can be described as oral vocabulary or reading vocabulary. Oral vocabulary refers to words that we use in speaking or recognize in listening. Reading vocabulary refers to words a student recognizes or uses in print. Beginning readers use oral vocabulary to make sense of the words they see in print. Beginning readers have a more difficult time reading words that are not part of their oral vocabulary. Some vocabulary must be taught directly by providing students with specific word instruction and by teaching them word-learning strategies. Direct instruction of vocabulary helps students learn words that are not part of their everyday experiences. Most vocabulary is learned indirectly through everyday experiences with oral and written language. Students learn word meanings indirectly in three ways: They engage daily in oral language; They listen to adults read to them; They read extensively on their own. Overall, vocabulary plays an important part in learning to read and is essential to reading comprehension. Readers must know what most of the words mean before they can comprehend what they are reading.

Math Areas of Concern

- Computational Fluency
- Fact Fluency
- Math Application: Concepts & Procedures
- Algebraic Concepts
- Word Problem Solving
- Vocabulary Development

Computational Fluency

The NCTM Principle and Standards of School Mathematics (2000) define computational fluency as having efficient, flexible and accurate methods for computing. The key thing to note is that it does not say compute using paper and pencil methods. Students need to be fluent in mental math, paper and pencil methods and using technology such as a calculator in computing answers to situations involving numbers (both whole numbers as well as fractions and decimals). In fact one often overlooked or underdeveloped aspect of computational fluency is not only being able to compute in all three ways but also knowing which method is best based on the given task. In addition, students must be able to determine if an exact answer or a close approximation (estimate) is sufficient. Another key idea is that just being able to compute the correct answer or estimate is not enough either. Students must be able to compute accurately in all three methods AND know when to do what operation. In other words that must be able to solve problems that involve numbers.

Fact Fluency

Math fact fluency is the ability to recall the answers to basic math facts automatically and without hesitation. Fact fluency is gained through significant practice, with mastery of basic math facts. It is very important that all students understand the concepts of addition, subtraction, multiplication and division. Students learn the commutative properties of both addition and multiplication.

Math Application: Conceptual & Procedural

Applying involves using one's conceptual and procedural knowledge to solve problems. A concept or procedure is not useful unless students recognize when and where to use it—as well as when and where it does not apply. In school, students are given specific problems to solve, but outside school they encounter situations in which part of the difficulty is figuring out exactly what the problem is. Therefore, students also need to be able to pose problems, devise solution strategies, and choose the most useful strategy for solving problems. They need to know how to picture quantities in their minds or draw them on paper, and they need to know how to distinguish what is known and relevant from what is unknown.

Algebraic Concepts

Algebra is an abstract concept in mathematics. Algebra is concerned with operations on sets of numbers or other elements that are often represented by symbols. Algebra is a generalization of arithmetic and gains much of its power from dealing symbolically with elements and operations (such as addition and multiplication) and relationships (such as equality) connecting the elements. Thus, $a+a=2a$ and $a+b=b+a$ no matter what numbers a and b represent. Students will be able to understand patterns, relations, and functions; represent and analyze mathematical situations and structures using algebraic symbols; use mathematical models to represent and understand quantitative relationships; and analyze change in various contexts.

Word Problem Solving

Word problems commonly include mathematical modeling questions, where data and information about a certain system is given and a student is required to develop a model. For example:

1. Jane has \$5 and she uses \$2 to buy something. How much does she have now?
2. If the water level in a cylinder of radius 2 m is rising at a rate of 3 m per second, what is the rate of increase of the volume of water?

Word problems are a common way to train and test understanding of underlying concepts within a descriptive problem, instead of solely testing the student's capability to perform algebraic manipulation or other "mechanical" skills.

Vocabulary Development

For new terms, descriptions, explanations, or examples are provided along with repeated reinforcement of terms through applications that involve multiple representations such as visuals, symbols, graphics and providing understanding in his/her own words. Misconceptions related to specific terms and where applicable, prefixes, suffixes and root words are addressed. The learner participates in activities that promote deeper knowledge of terms including written documentation in their personal notes and meaningful recreational drill and practice.

Resources

Gibson, Akimi and Judith Gold. *The Tutor*. LEARNS, 2002.

http://www.pbs.org/launchingreaders/readingformeaning/helpfularticles_1.html

Horowitz, Sheldon H. *Reading Comprehension – Reading for Meaning*. New York, NY: National Center for Learning Disabilities, 2014.

International Reading Association. *Phonemic Awareness and the Teaching of Reading A Position Statement from the Board of Directors of the International Reading Association*. Newark, DE: International Reading Association, 1998. www.reading.org

Literacy Information and Communication System. *Childhood – Teaching Approaches – Phonemic Awareness*.

www.incs.ed.gov/childhood/phonemicIns.htm

Marzano, Robert. *Building background knowledge for academic achievement: Research on what works in schools*. Alexandria, VA: ASCD, 2004.

National Institute of Child Health and Human Development. *Put reading first: Helping your child learn to read*. Washington, DC: U.S. Government Printing Office, 2001.

National Research Council. *Helping Children Learn Mathematics*. Washington, DC: The National Academies Press, 2002.

National Council Teachers of Mathematics (NCTM) www.nctm.org