



## VOCABULARY: THE SOLUTION TO MATH SUCCESS

Research has shown that general vocabulary knowledge is the single best predictor of how well readers can understand text (Honig, Diamond, Gutlohn, 2000), but vocabulary contributes to more than just reading comprehension. Vocabulary also contributes to students' comprehension of concepts across all content areas including mathematics. As vocabulary increases, students' understanding of topics becomes more refined (Stahl, 1999); therefore, when students are given ample opportunity to think and communicate using the specific vocabulary of mathematics, they become more proficient and ultimately more successful in mathematics overall (Riccomini, Smith, Hughes, & Fries, 2015).

Both breadth of vocabulary (knowing many words when in context) and depth of vocabulary (knowing some words very well) are essential contributors to reading comprehension and concept development across content areas like math. For students of all ages to acquire a broad vocabulary, they must listen to teachers, model academic language, be read aloud to, and read independently. This requires teachers to create a language rich environment in which students continually experience incidental word learning. For students to acquire in-depth

knowledge of math-specific vocabulary, teachers must explicitly teach the target words and provide effective practice opportunities until students can accurately use these terms in their speaking and writing (Moats & Tolman, 2019).

Get **Ready** to learn what makes mathematical vocabulary particularly challenging for many learners and how understanding math language leads to understanding math concepts.

- Watch the following video to discover the best practices in mathematics instruction and the importance of correct mathematical language: [Teaching with Mathematical Language || Best Practice || K-12 Math Instruction || Project STAIR](#)
- Explore the [EVIDENCE-BASED SPECIALLY DESIGNED INSTRUCTION IN MATHEMATICS RESOURCE GUIDE](#) that provides an overview of evidence-based instructional strategies educators can utilize to support students with a mathematics disability or difficulty any grade. Section II (pgs. 12-17) addresses formal mathematical language.

Get **Set** to implement effective vocabulary instruction with these tools.

- Visual support for vocabulary instruction can be essential for providing students with picture representations that anchor abstract words to concrete examples. (a) Displaying [vocabulary cards](#) can be a useful tool for students to reference during lessons and classwork. (b) Use word walls of mathematics vocabulary at [Virginia's Mathematics Vocabulary Word Wall Cards](#).
- Using the [FRAYER MODEL](#) or the [word mapping strategy](#) for teaching vocabulary can provide students with a structural format to understand more than just the definition of targeted vocabulary words. These strategies also include spaces for expanding word knowledge by drawing representations, providing synonyms and antonyms of the target word, and a space for using the word in a sentence.

**Go** to the resources below to gain information and support for enhancing vocabulary instruction.

- [Vocabulary words: An evidence-based literacy strategy](#)
- [Five Things Every Teacher Should Know about Vocabulary Instruction](#)
- [Five Research-Based Ways to Teach Vocabulary](#)
- [Explicit Vocabulary Teaching Strategies](#)

- [VDOE \(VIRGINIA DEPARTMENT OF EDUCATION\) Learning Disabilities in Mathematics webpage](#)
- [VDOE Students with Disabilities in Mathematics: Frequently Asked Questions \(PDF\)](#)

## References

Honig, B., Diamond, L., Gutlohn, L., & Consortium on Reading Excellence. (2000). *Teaching reading sourcebook: For kindergarten through eighth grade*. Arena Press.

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Riccomini, P. J., Smith, G. W., Hughes, E. M., & Fries, K. M. (2015). The language of mathematics: The importance of teaching and learning mathematical vocabulary. *Reading and Writing Quarterly*, 31, 235–252.

Stahl, S. A. (1999). *Vocabulary development*. Brookline Books.

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