

Intervention Name: Solve It!

Common Core State Standards Domain Areas: (check all that apply)

Counting and Cardinality (K)	Operations and Algebraic Thinking (K-5)	Numbers and Operations in Base Ten (K-5)	Numbers and Operations – Fractions (3-5)	Measurement and Data (K-5)	Geometry (K-HS)	Ratios and Proportional Relationships (6-7)	The Number System (6-8)	Expressions and Equations (6-8)	Statistics and Probability (6-HS)	Functions (8-HS)	Number and Quantity (HS)	Algebra (HS)	Modeling (HS)
						X	X	X	X	X	X	X	

Setting: (check all that apply)

Whole-class	Small-group	Individual	Acquisition	Fluency	Generalization
	X	X	X		X

Focus Area: (check all that apply)

Function of Intervention: As indicated by Montague (2003), “The purpose of Solve it! Is to teach students to be good problem solvers.” Solve It! is a scripted curriculum designed to teach mathematical problem solving by engaging students in a series of steps that allow them to actively participate in metacognitive processing and demonstrate higher-order problem solving skills.

Brief Description: Solve It! is a scripted mathematical program that explicitly teaches students to effectively solve word problems. Students learn how to understand the task, analyze and solve the problem, and evaluate the conclusion for mathematical problems through a series of guiding steps.

Steps to Solve It!

1. Read (for understanding)
2. Paraphrase (retell in your own words)
3. Visualize (a picture or diagram)
4. Hypothesize (a plan to solve the problem)
5. Estimate (predict the answer)
6. Compute (do the arithmetic)
7. Check (to make sure everything is correct)

Students are monitored for performance improvement and mastery within the series of lessons. A predetermined level of mastery is required for students to move to the next lesson.

Procedures:

- **Duration:** Student are taught the procedures during 3 days of targeted instruction; students then participate in 30 minute lessons once a week.
- **Teacher training:** Teachers should be familiar with the instructional strategy and the scripted lessons in Montague (2003).
- **Instructional practices:** Teachers are encouraged to monitor students’ learning using progress monitoring assessments every 1-2 weeks.
- **Monitoring system:** Students complete the Math Problem Solving Assessment (Montague, 2003) before and after the duration of the intervention; the assessment is reprinted in Krawec, Huang, Montague, Kressler, & de Alba (2013). The lessons alternate practice sessions and progress checks to ensure students meet predetermined criteria for mastery.

Critical Components (i.e., that must be implemented for intervention to be successful): Students are explicitly taught to follow the steps to engage in mathematic problem solving. Students are taught to apply self-regulatory and metacognitive strategies to problem solving.

Critical Assumptions (i.e., with respect to prerequisite skills): Solve It is appropriate for students who have basic, fundamental math skills and who are developmentally ready to participate in higher-order thinking and metacognitive processing.

Materials:

As provided in: *Solve It! A Practical Approach to Teaching Mathematical Problem Solving Skills* (Montague, 2003)

- Math Problem Solving Assessment
- Scripted lessons
- Instructional charts
- Practice problems
- Activities
- Cue cards

References:

Krawec, J., Huang, J., Montague, M., Kressler, B., & de Alba, A. M. (2013). Instruction on knowledge of math problem-solving processes of middle school students with learning disabilities. *Learning Disability Quarterly*, 36(2), 80-92.

Montague, M. (2003). *Solve It! A Practical Approach to Teaching Mathematical Problem Solving Skills*. Reston, VA: Exceptional Innovations.