STAR: Improving Performance on Math Word Problem-Solving

Students can improve their performance on math word problems when they follow STAR, a simple self-guided strategy (Peltier & Vannest, 2016). STAR is easy to recall and prompts the student to apply problem-solving steps in a logical order. It was found to be particularly effective with students with emotional/behavioral disorders.

Preparation

The instructor teaches the student to follow STAR, a 4-step sequence to solve math word problems: (1) Search, (2) Translate, (3) Answer, and (4) Review. These steps are explained in Table 1:

Table 1: STAR Problem-Solving Sequence for Math Word Problems

Step	*Student-Directed Actions*
1. Search	The student reads the problem carefully and engages in activities to promote understanding, such as reading the problem aloud, highlighting key words, crossing out extraneous information, etc.
2. Translate	The student applies techniques to convert the word problem to a number sentence. Strategies in this step might include using counters or other manipulatives to 'set up' the problem; drawing a visual representation of the problem; writing intermediate sentences mixing words, numbers, and math notation; or paraphrasing the problem.
3. Answer	The student answers (solves) the problem. In finding the solution, the student uses any aids from the previous 'Translate' step (e.g., drawings, physical counters). The student is mindful about what math operations to use and the sequence of steps to follow. The student also shows all work.
4. Review	The student reviews the answer to the problem (checks his/her work). The student rechecks calculations and makes sure that digits are clearly written and in correct place-value location. The student also considers the answer to make sure that it (a) answers the question posed in the problem and (b) appears reasonable.

Procedure

When the student has been trained in the STAR problem-solving sequence, the learner is directed to use the strategy on all assigned math word problems.

The student is given copies of the organizer *STAR: Solving Math Word Problems* that appears later in this article—one blank copy for each assigned problem. Students use the mnemonic STAR and the organizer to guide them sequentially through the problem-solving steps. The teacher can then collect completed organizers to evaluate student use of the strategy.

Reference

Peltier, C., & Vannest, K. J. (2016). Utilizing the STAR strategy to improve the mathematical problem-solving abilities of students with emotional and behavioral disorders. *Beyond Behavior, 25*(1), 9-15.

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Student Name: _____

Directions: Use this step-by-step organizer as you solve each math word problem.

Step	*What I Do*	*My Workspace*
Search.	I **search** the problem for important information by: • reading it aloud • highlighting key words • crossing out information that is not important.	
Translate	I **translate** the word problem into a number sentence. I can: • arrange counters/objects to understand the problem • draw the problem • explain the problem in my own words.	
Answer	I **answer** the problem. When doing this, I: • consider the math operations I will use • think about the steps I will follow and their proper order • check my numbers to make sure they are written clearly and are placed correctly • show my work.	
Review	I **review** my answer to make sure it is correct. To do this, I: • recheck my calculations • reread the problem and ask myself whether my answer makes sense.	