

# 1. Acting Out Word Problems for Comprehension

**Summary:** Any teacher has experienced the frustration of students who are able to solve the math in a word problem but struggle to comprehend what the question is asking. In a study from *Scientific Studies of Reading*, a set of professors from The University of Wisconsin – Madison and Arizona State University discuss a promising method to help students process word problems.

## Practical Applications

The authors focused their study on a strategy called *Moved by Reading*, which was originally designed as a way to help students' reading comprehension of text in general. *Moved by Reading* has two main components:

- **Physical Manipulation.** In this stage, students literally move around toys (or movable pictures on a computer) to act out the text. An example given is that if the text is about a farmer moving bales of hay, the students would actually move a toy farmer and toy hay bales on their desks (or move pictures of these objects on the computer screen)
- **Imagined Manipulation.** Once students are comfortable with physical manipulation, they are then taught to undergo the process of simply imagining themselves moving objects around to act out the text.

Because there is so much going on in students' minds when they read – decoding, accessing vocabulary knowledge, etc. – utilizing imagined manipulation provides them a concrete center. In this study, this strategy was applied in a whole-class setting with economically and ethnically diverse 3<sup>rd</sup> and 4<sup>th</sup> graders, while another group of students were a control group. Students has the Physical and Imagined Manipulation strategies modeled for them by their teachers through examples and “think-alouds,” then practiced on the computer. The authors found the following:

- The single biggest impact was that students taught the *Moved by Reading* strategies utilized significantly less irrelevant information from the word problems when they tried to solve them.
- Students taught by the *Moved by Reading* strategies also had significant increases in their ability to both solve word problems correctly and to correctly set up the processes needed to solve the word problems (even if they made an arithmetic error)

## Conclusion and Citation

Whether or not a teacher has access to special software, *Moved by Reading* strategies can be taught with premade physical objects like toys or even self-created ones. Helping students to visualize math word problems in this concrete way helps them understand what the question is asking and also what it's not asking.

Glenberg, A., et. al. “Improving Reading to Improve Math.” *Scientific Studies of Reading*, 0.0 (2011), pp. 1-25. <http://bit.ly/nhYB14> (free).