Self-referencing

Why Is This Strategy Useful?

Personalizing mathematics word problems, for instance, by incorporating personal information into the problem text, can lead to improvements in performance. Students are more motivated and learn faster when personalized problems or examples are used in mathematics instruction. An easy way to achieve this is by including self-referencing in the problem, simply by adding the word “you” into word problem text. Research shows self-referencing clearly facilitates student’s performance in solving math word problems. This strategy is appropriate for students of all grade levels and abilities.

Description of Strategy

Teachers can alter pre-existing word problems to include self-referencing by replacing one of the characters in the problem with the word “you”. The following is an example of a normal compare unknown problem:

John has 5 marbles. Peter has 2 marbles more than John. How many marbles does Peter have?

By replacing John with “you”, it becomes the following self-referencing problem:

You have 5 marbles. Peter has 2 more marbles than you. How many marbles does Peter have?

Instruction is not altered in any other way.

Research Evidence

At least one quasi-experimental study supports this strategy. This study included 100 students in grades 3-5. The students were tested on two types of word problems: Compare Unknown problems and Referent Unknown problems. Within those categories, the questions were broken into two self-referencing groups (you-known and you-unknown) and a control group. The study found that self-referencing, in general, had a significant facilitative effect on students encoding processes in solving these problems.

Sample Studies Supporting this Strategy


This study examined the cognitive effects of self-referencing in math word problems in 100 3rd, 4th, and 5th graders. Two types of compare problems were used: compare unknown (CU) and referent unknown (RU). The word you was placed in the problems either as the known or the unknown term. For the CU problems, self-referencing facilitated students' performance regardless of the position of the you term. When self-referencing was applied, students asked for fewer repeats and solved these CU problems faster and with greater accuracy. For the RU problems, however, students benefited from self-referencing only when the self term was placed as the compare (known) term. When the you term was placed as the referent term, the facilitative effect of self-referencing disappeared. The position of the you term in a RU problem apparently has an impact on the translation procedure required in solving the problem. Further
research on the cognitive processing issues raised by these data is suggested and the educational implications of the findings are discussed.

**Additional Resources**