REACTION: FACTORS AFFECTING COMPREHENSION OF MATH WORD PROBLEMS

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One of the areas that has caused much debate and discussion among mathematics educators is problem solving. In *An Agenda for Action,* the National Council of Teachers of Mathematics (1980) stated, "Problem solving must be the focus of school mathematics in the 1980s." Mathematics teachers who have had success in teaching many topics often are concerned that their students fail so miserably in problem solving. Often these teachers are at a loss as to what to do to increase problem solving skills of their students.

Cloer's preview of the research contains a wealth of information that should be of use to both mathematics teachers and reading educators. Reading the review, one realizes that there are many factors that possibly affect or relate to problem solving. One of the predictors of problem solving efficiency was that of selection of relevant details or extracting extraneous information. Often a student will simply look for the numbers and use all that appear. If a problem begins with "In 1982 . . .", some students will use those numbers in arriving at an answer. However, a recent study by Glynn (1981), indicated that word problems in today's mathematics books contain no extraneous data. Results of the study suggested that some entire mathematics books contain not *one* problem with extraneous data. So when students run across such information, they simply do not know what to do with it because they have not had the training. Teaching students how to pick out the important information and how to disregard extraneous information should then be of benefit to most students in real life mathematics problems. Also, teacher-made problems on tests may contain extraneous information.

Another factor mentioned by Cloer was that of dealing with unrealistic answers. One study suggested that the student who reflected on the quality of his answers got better scores than the student who did not. While many teachers argue that students should be taught estimating or arriving at logical answers, the student who has a reading problem will have a difficult time arriving at a realistic answer.

Much discussion involved the readability level of the textbook. Again if so many of the books are written above the grade level of the students, it is no wonder that they have trouble solving problems. While research has been cited about the readability level of textbooks, apparently little or no work has been done on the readability level of the problems the teachers give on tests.

If the three perspectives discussed by Cloer are related, it seems that reading comprehension is a common theme. If a child cannot read a problem, how can he be taught to extract extraneous information, arrive at logical answers, note details, reorder information, devise diagrams and do other things mentioned in the Cloer study? Without the reading skills, the student may just pick the numbers out of the problem and do some arithmetic operation with them.

It appears that the next needed work along the lines that Cloer has pursued is a meta-analytic study. Glass (1976) has defined a meta analysis as "the analysis of analyses" (p. 3). In other words, what is needed is a statistical analysis of all of the studies taken together to determine just what the best predictors of problem solving efficiency are. With problem solving receiving so much emphasis, a definite need exists for further research on the topic.

REFERENCES

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