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READING ACHIEVEMENT AND VERBAL PROBLEM SOLVING
IN ARITHMETIC

AN ABSTRACT OF
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To a great extent, America depends on its scientists and mathematicians to continue high level thinking in order to maintain international status as a technical giant. Computers play an increasingly greater part in the perpetuation of our system of technical prowess and progress. Computers, however, are not "thinkers." Even though the computer can calculate much more quickly and accurately than man, it relies upon man's thinking ability for its success.

Solving problems has always been a difficult task. School children seem to have their greatest difficulty with the solution of problems. The so-called "verbal problems" of arithmetic are by far the most difficult for children to master. In order to solve these, the child must first read, then analyze, and finally solve the problems. This investigation will try to determine how great a role reading plays in the solution of these problems.

If poor reading ability has something to do with the child's lack of success in solving problems, perhaps re-emphasis in this part of the curriculum will help our future scientists and mathematicians become better problem solvers and thinkers.

The problem of this investigation was to determine the relationship between reading achievement and the ability to solve verbal problems in arithmetic. With a sample

population of 100 eighth grade students, a descriptive survey was conducted to accept or reject the hypothesis: There is a high positive correlation between reading achievement and the ability to solve verbal problems in arithmetic, and this high correlation will imply that a student's success or failure in the solution of verbal problems is predictable depending upon his corresponding success or failure in reading. The measuring instrument was the Iowa Tests of Basic Skills, prepared at the State University of Iowa under the direction of E. F. Lindquist and A. N. Hieronymus and published by the Houghton Mifflin Company.

The results of the testing were analyzed by the Spearman rank difference correlation method, yielding a coefficient of .76, which led to the investigator's conjecture that this high correlation implied a predictability of success or failure in verbal problem solving depending upon a corresponding success or failure in reading comprehension.

As a check on predictability, twenty-five additional raw scores were selected at random from the remaining 292 scores. Success or failure was predictable in eighteen out of twenty-five cases for a percentage of 72.

Three additional groups of twenty-five were analyzed to see whether or not the per cent of predictability is itself predictable knowing the coefficient of rank correlation. The average per cent of predictability for these three

groups was .70 which is extremely close to the coefficient of rank correlation.

These results implied that general reading ability does have an effect on problem solving ability, and that something must be done to change the curriculum in order to insure success in reading and problem solving in arithmetic.

If our complex culture is to perpetuate itself, then the teaching of arithmetic must keep pace with the times. The basic concepts learned in the first eight years of arithmetic must enable the student to gain greater skill with mathematics. If this is to be accomplished, a critical change in arithmetic workbooks and other materials related to arithmetic is necessary. Teachers who spend a great deal of time in helping children learn new vocabulary which is presented in reading textbooks should spend a comparable amount of time on new words and terms which occur in arithmetic. Mathematics teachers might get considerably better results if they taught reading instead of mathematics when such teaching seems warranted.