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**A STUDY OF THE USE OF CORRELATIONS BETWEEN
COMPUTATIONAL ABILITY, READING COMPREHENSION,
AND ACHIEVEMENT IN ALGEBRA AS A METHOD
OF GROUPING STUDENTS IN ALGEBRA ONE**

**AN ABSTRACT OF
A THESIS
PRESENTED TO THE GRADUATE FACULTY
OF
WESTERN CONNECTICUT STATE COLLEGE**

**IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF SCIENCE**

**by
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In this thesis the author has taken the correlations between computational ability and reading comprehension and used them as an aid to predicting the success of a student in Algebra One. These correlations were made using the scores from the Iowa Tests of Educational Development, published by Science Research Associates, Inc. The algebraic achievement of this sample of fifty students was measured by the Algebra One Mid-Year Examination they had all taken. For purposes of comparison all scores were converted into local percentiles and then grouped into high, middle and low categories.

From the battery of Iowa Tests of Educational Development, two tests were selected. The test entitled Ability To Do Quantitative Thinking was used as an indicator of computational ability and the one called Ability To Interpret Reading Materials in the Natural Sciences was used as the best indicator of the type of reading comprehension necessary for success in algebra. Comparisons were also made using a reading average score but the results were not as conclusive as with the reading comprehension test dealing with the natural sciences.

First the scores from the test of computational ability were compared with those from the Algebra One Mid-Year Exam-

ination. In this comparison it was noted that computational ability is a better predictor of failure or poor scoring in algebra. In other words, a student scoring low in computational ability will generally score low in algebra, but one scoring high in computation will not necessarily score high in algebra.

Next the scores from the tests of reading comprehension were compared with those of the Algebra One Mid-Year Examination. In this comparison, the reading comprehension seemed to be a better indicator of success in algebra. A student scoring high in reading comprehension would generally score high in algebra, and one scoring in the middle in reading comprehension would generally score in the middle in algebra, but one scoring low in reading comprehension would not necessarily score low in algebra.

Once the author had determined just how each test correlated with the Algebra One Mid-Year Examination, he then used the Double-Entry Expectancy Tables to compare all three simultaneously. The use of the double-entry tables showed even more clearly the correlations between reading comprehension and success in algebra in the middle and high groups, and the correlations between computational ability and success in algebra in the low group.

The next step was to devise a method of predicting the success of a student in Algebra One before he started the course. This was done by using the Science Research Associates

Tests of Educational Development which are very similar to the Iowa Tests of Educational Development but are given in grades six through eight. Scores from these tests were obtained for as many of the students in the sample as possible and correlated with their scores from the Iowa Tests. Then, using the Science Research Associates Tests as predictors of success in Algebra One, the author set up his criteria for grouping prospective algebra students into one of three categories.