

**WILL COMPETENCY BASED EDUCATION AFFECT
TEACHERS' MATHEMATICAL PERFORMANCE?**

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Evidence of increased teacher knowledge of mathematics has been found by examining data collected in 1983-85 from elementary teachers returning for courses at Bowling Green State University, Eastern Michigan University, and The University of Toledo. It was found that the more experienced elementary teachers tested in the 1980's (those with six or more years of teaching experience) had a greater knowledge of mathematical understandings than did their peers of the 1960's and 1970's.

The same 65 item test, a test designed to measure the extent of teachers' knowledge of basic mathematical concepts and understandings, was used during each of three two-year testing periods, i.e., 1967-69, 1975-77, and 1983-85. Some of the approximately 600 practicing elementary teachers were enrolled in undergraduate mathematics methods courses, but most of them were enrolled in graduate mathematics education courses at the three universities. The test measured basic mathematical understandings in these seven areas: sets, numeration systems, fundamental operations on the whole numbers, number theory, fractional numbers, structural properties of the whole number system, and geometry.

Table 1 displays the mean scores of the three "decades" of teachers categorized by their years of teaching experience. It was found that there were no significant mean differences in the mathematical understandings between the elementary teachers of the 1970's and 1980's, whereas both of these groups showed mean gains from the 1960's. And, as indicated, the elementary teachers tested in the 1980's with six or more years of teaching experience

displayed a higher level of proficiency on the Test of Mathematical Understandings than did similarly experienced teachers who were tested in the 1960's and 1970's.

It is certainly too early to state that this increase in the 1980's is due to the early implementation stages of Ohio's Competency Based Mathematics Instruction. However, it is not too early to speculate that during the next ten years we will have the opportunity to develop and implement a Competency Based Program in mathematics wherein elementary, middle school, and junior high teachers will start teaching topics beyond arithmetic in their mathematics classes. As a result, student learning and interest in mathematics will undoubtedly increase. Additionally, the Competency Based Program will hopefully reduce the number of middle grade students who seemingly drop-out or lose interest in the study of mathematics and will change many junior high mathematics programs from a disaster of wasted time and low expectations to programs of problem solving mathematics beyond arithmetic.

Table 1
Comparison of 1967-69, 1975-77, and 1983-85 Groups
By Years of Teaching Experience

Group of Teachers	<u>1967-69 Data</u>		<u>1975-77 Data</u>		<u>1983-85 Data</u>	
	N	Mean	N	Mean	N	Mean
0-2 Years Experience	101	30.80	92	31.86	58	31.60
3-5 Years Experience	44	30.45	59	35.36	48	34.14
6-10 Years Experience	16	31.38	50	34.12	38	35.03
More Than 10 Years Experience	16	30.06	40	31.55	41	33.56
Total	177	30.70	241	33.13	185	33.40