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ABSTRACT

This annotated bibliography lists research related to mathematics teaching and learning published in the United States in 1972. Each annotation gives major results and grade level of the study. The first section lists research summaries which review groups of research studies. The second section contains research reports which appeared in major journals during 1972. The final section covers dissertations announced in DISSERTATION ABSTRACTS INTERNATIONAL. (Editor/DT)

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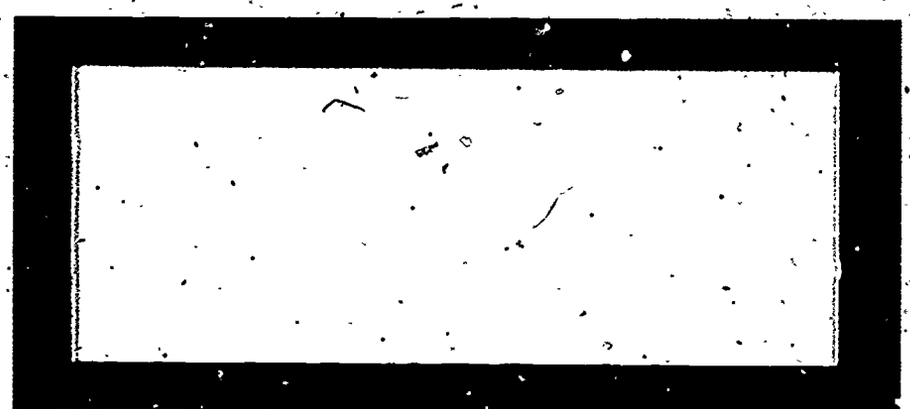

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MATHEMATICS EDUCATION REPORTS

Research on Mathematics Education (K-12) Reported in 1972

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Preface

This annotated bibliography lists research related to mathematics teaching and learning which was published in the United States during 1972. The listing covers kindergarten through grade twelve levels and is divided into three major sections. The first section lists research summaries which review groups of research studies or basic research techniques. The second section contains research reports which appeared in major journals during 1972. The final section (Dissertation Abstracts) contains brief annotations of dissertations announced in Dissertation Abstracts International. (To conserve space, this reference is referred to as DAI in the listings.)

The ERIC Information Analysis Center for Science, Mathematics, and Environmental Education is pleased to make this annotated bibliography available as a Mathematics Education Report.

Jon L. Higgins
Associate Director for
Mathematics Education

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Research Summaries

Articles which summarize research findings or list research reports are included in this section.

Aiken, Lewis R., Jr. Research on Attitudes Toward Mathematics. Arithmetic Teacher 19: 229-234; March 1972.

Research on attitude measures, achievement and personality in relation to attitudes, parent and teacher attitude, and improving attitudes is discussed.

Aiken, Lewis R., Jr. Language Factors in Learning Mathematics. Review of Educational Research 42: 359-385; Summer 1972.

Reading, intelligence, vocabulary, verbal interaction, and the language of mathematics are among the factors considered in this research review.

Austin, Gilbert R.; Rogers, Bruce G.; and Walbesser, Henry H., Jr. The Effectiveness of Summer Compensatory Education: A Review of the Research. Review of Educational Research 42: 171-181; Spring 1972.

Summer compensatory programs in elementary mathematics, reading, and language have generally shown modest achievement gains.

Fennema, Elizabeth H. Models and Mathematics. Arithmetic Teacher 19: 635-640; December 1972.

Research appears to indicate that the ratio of concrete to symbolic models used to convey mathematical ideas should reflect the developmental level of the learner. It is suggested that alternative models be available so the learner can select the most meaningful one for him.

Lovell, Kenneth R. Intellectual Growth and Understanding Mathematics. Journal for Research in Mathematics Education 3: 164-182; May 1972.

Piagetian research is reviewed and implications for teachers are cited.

Mangrum, Charles T., II and Knight, Carlton W., II. Doctoral Dissertation Research in Science and Mathematics Reported for Volume 30 of Dissertation Abstracts. School Science and Mathematics 72: 505-534; June 1972.

Listed are 45 dissertations on elementary school mathematics, 23 for junior high school, 18 for secondary school, 38 for college and adults, and 26 for teacher education.

McGannon, Thomas. Creativity and Mathematics Education. School Science and Mathematics 72: 7-12; January 1972.

Attempts by researchers to define and identify creativity are discussed.

Reys, Robert E. Mathematics, Multiple Embodiment, and Elementary Teachers. Arithmetic Teacher 19: 489-493; October 1972.

The rationale for using a variety of concrete materials to develop a mathematical idea is discussed, and activities for the classroom are presented.

Roberge, James J. Recent Research on the Development of Children's Comprehension of Deductive Reasoning Schemes. School Science and Mathematics 72: 197-200; March 1972.

Research findings suggest that it is feasible to include the common schemes of inference in elementary school instruction.

Rosskopf, Myron F. Piagetian Research and the School Mathematics Program. Arithmetic Teacher 19: 309-314; April 1972.

Some activities derived from Piagetian research are presented.

Suydam, Marilyn N. and Weaver, J. Fred. Research on Mathematics Education (K-12) Reported in 1971. Journal for Research in Mathematics Education 3: 196-232; November 1972.

Ten research summaries, 94 journal-published reports, and 322 dissertations are listed and annotated.

Vinsonhaler, John F. and Boss, Ronald K. A Summary of Ten Major Studies on CAI Drill and Practice. Educational Technology 12: 29-32; July 1972.

Results of the seven mathematics studies indicate a substantial advantage (using standardized achievement tests) for CAI augmentation of traditional classroom instruction.

Williford, Harold. What Does Research Say About Geometry in the Elementary School? Arithmetic Teacher 19: 97-104; February 1972.

Research on geometric capabilities, variables related to geometry achievement, transfer effects, feasibility studies, and teacher achievement in geometry is discussed.

Journal-Published Reports

Seventy-one articles which were published in 14 journals are listed.

Aiken, Lewis R., Jr. Biodata Correlates of Attitudes Toward Mathematics in Three Age and Two Sex Groups. School Science and Mathematics 72: 386-395; May 1972.

Mathematics attitude was found to be related to a wide range of biodata variables; many correlations varied with age and sex. For college freshmen, but not for eighth graders or graduate students, significant differences in attitude were found between sexes. (grade 8, college)

Armstrong, Jenny R. Representational Modes as They Interact with Cognitive Development and Mathematical Concept Acquisition of the Retarded to Promote New Mathematical Learning. Journal for Research in Mathematics Education 3: 43-50; January 1972.

Trainable mentally retarded children exhibited greater mathematical learning when using manipulative materials than when using drawings. For educable mentally retarded children no significant differences were found between the two types of material except for learning which required representative thought, where those using manipulative materials scored higher. (MA 2-4, 5-12)

Austin, Gilbert R. and Prevost, Fernand. Longitudinal Evaluation of Mathematical Computational Abilities of New Hampshire's Eighth and Tenth Graders, 1963-1967. Journal for Research in Mathematics Education 3: 59-64; January 1972.

Scores for eighth graders were lower in 1967 than in 1965 or 1963; different tests were used, however. In grade 10, those students who had used "modern" or "transitional" textbooks in earlier grades scored higher on some subtests than did those who had used "traditional" textbooks. (grades 8, 10)

Austin, Gilbert R. and Prevost, Fernand. The Results of a Longitudinal Study in Mathematics in New Hampshire. Mathematics Teacher 65: 746-747; December 1972.

A decrease in computation scores (using different tests) was found between 1963 and 1967 for grade 8. In grade 10, it appeared that groups which had had "modern" or "transitional" programs achieved better on several subtests than those having a "traditional" program. (grades 8, 10)

Baker, Eva L. Parents, Teachers, and Students as Data Sources for the Selection of Instructional Goals. American Educational Research Journal 9: 403-411; Summer 1972.

Parents, teachers, and students rated different objectives as most important. Teachers predicted student achievement of the objectives much better than did parents or students. (teachers in grade 7, parents)

Bausell, R. Barker and Moody, William B. The Effect of Programed Review on 4th and 5th Grade Arithmetic Retention. School Science and Mathematics 72: 148-150; February 1972.

Pupils using programed review lessons retained significantly more than pupils not having review. (grades 4, 5)

Bausell, R. Barker; Moody, William B.; and Walzl, F. Neil. A Factorial Study of Tutoring Versus Classroom Instruction. American Educational Research Journal 9: 591-597; Fall 1972.

Pupils achieved higher after one 30-minute individual tutoring session than from one 30-minute classroom lesson. (grades 4, 5)

Brainerd, Charles J. and Brainerd, Susan H. Order and Acquisition of Number and Quantity Conservation. Child Development 43: 1401-1406; December 1972.

Number conservation was found to develop prior to liquid-quantity conservation. (kindergarten-grade 2)

Branca, Nicholas A. and Kilpatrick, Jeremy. The Consistency of Strategies in the Learning of Mathematical Structures. Journal for Research in Mathematics Education 3: 132-140; May 1972.

Students' retrospective evaluations of Klein-group tasks conformed to the relative frequencies and hierarchical order found by Dienes and Jeeves, but evaluations were not related to strategy scores. Evaluations and performance showed some consistency, but strategies tended not to be consistent. (ages 12-14, 16-18)

Callahan, LeRoy and Passi, Sneh Lata. Textbooks, Transitions, and Transplants. Arithmetic Teacher 19: 381-385; May 1972.

More than half of the cognitive activities found in three textbook series were classified at the manipulative level (Level 3); few activities were classified as translation (Level 2). Newer series had more knowledge items (lowest level) than did the older series. Little was done at the three high cognitive levels. (grades 3-6)

Caruso, John L. and Resnick, Lauren B. Task Structure and Transfer in Children's Learning of Double Classification Skills. Child Development 43: 1297-2308; December 1972.

More pupils learned a double classification task, in fewer trials, when it was presented in simple-to-complex sequence than in reverse sequence. (kindergarten)

Cech, Joseph P. The Effect of the Use of Desk Calculators on Attitude and Achievement with Low-Achieving Ninth Graders. Mathematics Teacher 65: 183-186; February 1972.

No significant differences were found between classes which used or did not use calculators to check computation. Students scored significantly higher when tested using a calculator than when tested without one. (grade 9)

Ciborowski, Tom and Cole, Michael. A Cross-Cultural Study of Conjunctive and Disjunctive Concept Learning. Child Development 43: 774-789; September 1972.

Conjunctive concepts were easier than disjunctive concepts in a wide variety of measures. The performance of both cultural groups was strikingly similar. (ages 8-24)

Cicirelli, Victor G. The Effect of Sibling Relationship on Concept Learning of Young Children Taught by Child-Teachers. Child Development 43: 282-287; March 1972.

Boys had higher attainment of a trapezoid concept than did girls. Sisters were more effective teachers than other girls or brothers when teaching younger children. Teaching techniques were also cited. (grades 1, 3)

Clarke, H. Harrison and Drowatzky, John N. Mental, Social, and Physical Characteristics of Boys Underaged and Modal-Aged in Elementary School. Elementary School Journal 73: 26-35; October 1972.

Modal-aged boys scored significantly higher than underaged boys on comprehension and reasoning tests in grade 4 and on the comprehension test in grade 5. (ages 7-12)

Clifford, Margaret M. and Cleary, T. Anne. The Relationship Between Children's Academic Performance and Achievement Accountability. Child Development 43: 647-655; June 1972.

Scores on a measure of "belief in internal control" were generally correlated lower with scores on a mathematics test than were IQ scores. (grade 4-6)

Collier, C. Patrick: Prospective Elementary Teachers' Intensity and Ambivalence of Beliefs about Mathematics and Mathematics Instruction. Journal for Research in Mathematics Education 3: 155-163; May 1972.

Students who have completed the mathematics education program had more informal views of mathematics and mathematics instruction; and their beliefs were less ambivalent, than students beginning their programs. High and low achievers differed similarly. (elementary pre-service)

Cooney, Thomas J. and Henderson, Kenneth B.. Ways Mathematics Teachers Help Students Organize Knowledge. Journal for Research in Mathematics Education 3: 21-31; January 1972.

From audiotapes of 44 instances of classroom teaching of mathematics, nine organizing relations were identified and discussed. (teachers in grades 7-12)

Daehler, Marvin W. Spontaneous Measurement in Young Children: A Re-examination. Journal of Genetic Psychology 120: 27-38; March 1972.

Older children were more likely to use "independent" measures (rods) and in more advanced ways than were younger children. Little use of "dependent" measures (body or hands) was found. (nursery school-grade 2)

Denney, Nancy Wadsworth. A Developmental Study of Free Classification in Children. Child Development 43: 221-232; March 1972.

A larger variety of responses were made under a free-grouping direction than with a verbal-labeling direction in classifying geometric shapes. No developmental stages could be determined. (ages 2, 4, 6, 8, 12, 16)

Dunkley, M. E. Mathematics and the Disadvantaged. Elementary School Journal 73: 44-49; October 1972.

Data from an SMSG study reported by Leiderman et al. (1966) were presented to indicate the low attainment level of many disadvantaged pupils. (kindergarten, grade 1)

Feldman, S. Shirley. Children's Understanding of Negation as a Logical Operation. Genetic Psychological Monographs 85: 3-49; February 1972.

Among the conclusions from this series of six studies were: (1) understanding of negation as a logical operation develops slowly; (2) negation involves a cognitive operation and is not merely a problem of semantics; and (3) class inclusion did not precede negation. (ages 3-8)

Fennema, Elizabeth H. The Relative Effectiveness of a Symbolic and a Concrete Model in Learning a Selected Mathematical Principle. Journal for Research in Mathematics Education 3: 233-238; November 1972.

Children who had learned a principle with a symbolic model were able to transfer better than children who had learned with a concrete model. (grade 2)

Figurelli, Jennifer C. and Keller, Harold R. The Effects of Training and Socioeconomic Class upon the Acquisition of Conservation Concepts. Child Development 43: 293-298; March 1972.

Middle-class black children scored significantly higher than lower-class black children on pretest and transfer tests of conservation of number. Training resulted in significantly higher posttest scores at both levels, though lower-class children required significantly more repetitions. (ages 6-8)

Flora, Ben V., Jr. Diagnosing Selected Behavior Characteristics of Teachers of Secondary School Mathematics. Journal for Research in Mathematics Education 3: 7-20; January 1972.

An instrument to assess teacher characteristics through multiple-choice questions about a teaching situation is discussed. Results from five samples indicated that it can be used to provide profiles which discriminate between highly and minimally effective teachers, and for diagnostic purposes. (secondary pre- and in-service)

Gabor, Georgia M. Teaching Methods and Incentives in Relation to Junior High Mathematics Achievement. California Journal of Educational Research 23: 56-70; March 1972.

Classes taught by either a "discovery" or a "practice" procedure scored significantly higher on a set of reasoning problems than a class which was merely told the correct answer. On another test, pupils who were complimented before their peers scored significantly lower than they had on the pretest. (grades 7, 8)

Gawronski, Jane Donnelly. Inductive and Deductive Learning Styles in Junior High School Mathematics: An Exploratory Study. Journal for Research in Mathematics Education, 3: 239-247; November 1972.

No significant difference between deductive and inductive learners who used inductively or deductively developed programs was found. (grade 8)

Gelman, Rochel. Logical Capacity of Very Young Children: Number Invariance Rules. Child Development 43: 75-90; March 1972.

Young children, when given an identification task where number was redundant to length or density, solved the task on the basis of number. They were able to explain changes and indicate how to reverse the effect. (ages 3-6)

Gelman, Rochel and Weinberg, Denise Hootstein. The Relationship Between Liquid Conservation and Compensation. Child Development 43: 371-383; June 1972.

Modifying the criterion for compensation affected the nature of the observed relationship between compensation and conservation. Individual compensation tasks were harder than the conservation one. The ability to explain compensation developed after the ability to explain conservation. (grades 1, 2, 3, 6)

Grouws, Douglas A. Open Sentences: Some Instructional Considerations From Research. Arithmetic Teacher 19: 595-599; November 1972.

The order of difficulty for the sentences was: a + N = b (65% correct); a - N = b (62%); N + a = b (60%); N - a = b (37%). More correct answers were given to sentences with basic facts (78%) than to those involving two digits (34%). Performance on examples in verbal-symbolic and symbolic form did not differ. (grade 3)

Hatfield, Larry L. and Kieren, Thomas E. Computer-Assisted Problem Solving in School Mathematics. Journal for Research in Mathematics Education 3: 99-112; March 1972.

Use of computer programming as a problem-solving tool was found to be especially helpful for average and above-average students in grade 7; in grade 11, it appeared best for average achievers. (grades 7, 11)

Higgins, James E. An Investigation of the Effects of Non-Decimal Numeration Instruction on Mathematical Understanding. School Science and Mathematics 72: 293-297; April 1972.

No significant differences were found on a test of arithmetic principles between groups taught using base five, base ten, or no specific numeration instruction. (grade 5)

Hunkler, Richard and Quast, W. G. Improving the Mathematics Attitudes of Prospective Elementary School Teachers. School Science and Mathematics 72: 709-714; November 1972.

Attitudes toward mathematics were higher at the end of a method-content course than at the beginning, and were higher than for students who had no mathematics course. (elementary pre-service)

Karplus, Robert and Karplus, Elizabeth F. Intellectual Development Beyond Elementary School III -- Ratio: A Longitudinal Study. School Science and Mathematics 72: 735-742; November 1972.

Data from students who had also been tested two years previously are reported; changes in reasoning category were found for two-thirds of the students. (grades 6, 8, 11)

Katz, Martin and Norris, Lila. The Contribution of Academic Interest Measures to the Differential Prediction of Marks. Journal of Educational Measurement 9: 1-11; Spring 1972.

Correlations of mathematics marks in grade 12 with predictors in grade 11 ranged from .22 to .49; in grade 13, correlations were from .09 to .37. (grades 11-13)

Kaufman, Alan S. and Kaufman, Nadeen L. Tests Built from Piaget's and Gesell's Tasks as Predictors of First-Grade Achievement. Child Development 43: 521-535; June 1972.

The Piaget and Gesell test batteries each correlated .64 with the Stanford Achievement Test composite; the Lorge-Thorndike MA correlated .58. Mathematics test correlations with each were .60 to .61. (kindergarten, grade 1)

Keats, John B. and Hansen, Duncan N. Definitions and Examples as Feedback in a CAI Stimulus-Centered Mathematics Program. Journal for Research in Mathematics Education 3: 113-122; March 1972.

Giving correct feedback in the form of verbal definitions was found to be better than the use of numerical examples. (grade 9)

Kuhn, Deanna. Mechanisms of Change in the Development of Cognitive Structures. Child Development 43: 833-844; September 1972.

When children watched models classify using a structure having differing degrees of relationship to each child's structure, it was found that change appeared to occur in terms of an invariant sequence of stages. (ages 3-8)

Lackner, L. M. Teaching of Limit and Derivative Concepts in Beginning Calculus by Combinations of Inductive and Deductive Methods. Journal of Experimental Education 40: 51-56; Spring 1972.

Students taught the derivative concept deductively scored higher than those taught inductively. No differences were found between the two methods of teaching the limit concept. (grades 11, 12)

Leake, Lowell, Jr. What Every Mathematics Teacher Ought to Read (Seventeen Opinions). Mathematics Teacher 65: 637-641; November 1972.

Books recommended by 17 mathematics educators were listed. (secondary in-service)

Levine, George. Attitudes of Elementary School Pupils and Their Parents Toward Mathematics and Other Subjects of Instruction. Journal for Research in Mathematics Education 3: 51-58; January 1972.

Pupils ranked mathematics highest, compared to English, science, and social studies, with respect to importance, enjoyment, best subject, and subject teacher taught best. Parents indicated that English was as important as mathematics. (grades 3, 4, 6, parents)

Lewy, Arieh. Opportunity to Learn and Achievement in Three Subject Matter Areas. Journal of Experimental Education 41: 68-73; Fall 1972.

Achievement in arithmetic was highly related to whether the topic had been presented in class. (grade 4)

Little, Audrey. A Longitudinal Study of Cognitive Development in Young Children. Child Development 43: 1024-1035; September 1972.

Comparison of "average" with "superior" IQ groups revealed many qualitative differences at ages 4-1/2 to 5, and both qualitative and "stage" differences at ages 6-1/2 to 7. (ages 4-7)

Maertens, Norbert and Johnston, James. Effects of Arithmetic Homework Upon the Attitudes and Achievement of Fourth, Fifth and Sixth Grade Pupils. School Science and Mathematics 72: 117-126; February 1972.

Means on computation and problem-solving tests were higher for pupils having homework, but there was little consistent variation between pupils having per-problem or end-of-assignment knowledge of results, given by parents. (grades 4-6)

Merz, William R. and Rutherford, Brent M. Differential Teacher Regard for Creative Students and Achieving Students. California Journal of Educational Research 23: 83-90; March 1972.

Low correlations were found between academic achievement, creativity, and teacher judgment. (grade 5)

Messer, Stanley B. The Relation of Internal-External Control to Academic Performance. Child Development 43: 1456-1462; December 1972.

No significant differences were found on a standardized achievement test between children who perceived performance as contingent on their own effort and those who viewed it as luck. (grade 4)

Mogull, Robert G. and Rosengarten, William, Jr. Predicting Student Success in Elementary Algebra. California Journal of Educational Research 23: 104-107; May 1972.

The best single predictor of algebra grades was found to be eighth grade mathematics averages. Only marginal advantage was gained by also using the aptitude tests studied. (grade 9)

O'Bryan, Kenneth G. and Boersma, Frederic J. Movie Presentation of Piagetian Tasks: A Procedure for the Assessment of Conservation Attainment. Journal of Genetic Psychology 121: 295-302; December 1972.

Movie presentation of Piagetian tasks did not produce significantly different results from those obtained through a clinical presentation. (grade 1)

Owens, Douglas T. and Steffe, Leslie P. Performance of Kindergarten Children on Transitivity of Three Matching Relations. Journal for Research in Mathematics Education 3: 141-154; May 1972.

No significant difference in the performance of low and high conservers on transitivity of the order relations "more than" and "fewer than" was found; high conservers performed better only on "as many as". Stimulus condition was also significant. (kindergarten)

Plant, Walter T. and Southern, Mara L. The Intellectual and Achievement Effects of Preschool Cognitive Stimulation of Poverty Mexican American Children. Genetic Psychological Monographs 86: 141-173; August 1972.

The two-year preschool program resulted in significantly higher scores on a number test (as well as on other measures) at the time of kindergarten entrance, but differences were not significant by the end of grade 1. (ages 3-7)

Price, Eleanor and Rosemeier, Robert. Some Cognitive and Affective Outcomes of Same-sex Versus Coeducational Grouping in First Grade. Journal of Experimental Education 40: 70-77; Summer 1972.

Girls showed significantly greater gains on the arithmetic subtest than did boys, regardless of the type of grouping. (grade 1)

Ramayya, D. P. Achievement Skills, Personality Variables, and Classroom Climate in Graded and Nongraded Elementary Schools. Psychology in the Schools 9: 88-92; January 1972.

Girls in nongraded schools scored significantly higher only on the mathematics problem solving test than girls in graded schools. No significant differences were found for boys. (grade 6)

Rea, Robert E. and French, James. Payoff in Increased Instructional Time and Enrichment Activities. Arithmetic Teacher 19: 663-668; December 1972.

The majority of students using either mental computation exercises or enrichment activities gained "dramatically" in achievement scores. (grade 6)

Romberg, Thomas A. and Gilbert, Lynn E. The Effect of Training on Length on the Performance of Kindergarten Children on Nonstandard But Related Tasks. Journal for Research in Mathematics Education 3: 69-75; March 1972.

Telling children what is meant by length by describing its characteristics and explaining how to compare and represent lengths was found to be effective on tests with related tasks. (kindergarten)

Schnall, Melvyn; Alter, Ellen; Swanlund, Terry; and Schweitzer, Thomas. A Sensory-Motor Context Affecting Performance in a Conservation Task: A Closer Analogue of Reversibility than Empirical Return. Child Development 43: 1012-1023; September 1972.

Use of an elastic strip (in which reversibility is inherent) with a conservation of quantity task led to a significant induction of conservation judgments; mere empirical return was inferior. (ages 5-7)

Schultz, Edward W. The Influence of Teacher Behavior and Dyad Compatibility on Clinical Gains in Arithmetic Tutoring. Journal for Research in Mathematics Education. 3: 33-41; January 1972.

Students assigned to tutors with whom they appeared to be compatible or non-compatible did not evidence significant differences in achievement or self-concept measures. When compatibility was present, students rated their relationships with tutors as more facilitative. (grades 5-7)

Stafford, Richard E. Hereditary and Environmental Components of Quantitative Reasoning. Review of Educational Research 42: 183-201; Spring 1972.

An underlying hereditary component for proficiency in quantitative reasoning was identified in twins; but interaction effects with environment should not be discounted. (ages 12-18)

Steffe, Leslie P. and Carey, Russell L. Equivalence and Order Relations as Interrelated by Four- and Five-Year-Old Children. Journal for Research in Mathematics Education 3: 77-88; March 1972.

No four-year-olds could use the transitive property of length relations. For five-year-olds, ability to use the reflexive and non-reflexive properties was not a necessary or sufficient condition for ability to use the transitivity of length relations. (ages 4, 5)

Stodolsky, Susan A. and Karlson, Alfred L. Differential Outcomes of a Montessori Curriculum. Elementary School Journal 72: 419-433; May 1972.

Middle-class children made significant gains on arithmetic subtests during the first year of Montessori schooling, while lower-class children made significant gains in years 2 to 3. (nursery school)

Trent, John H.; Ray, Fenton; and Zimmerman, Donald. Effectiveness of University of Illinois Committee on School Mathematics (UICSM) "Stretchers and Shrinkers" and "Motion Geometry" Materials in Improving Arithmetic Ability. School Science and Mathematics 72: 822-827; December 1972.

No significant differences were found between classes using "Stretchers and Shrinkers" or the regular textbook in grade 7. In grade 8, the class using "Motion Geometry" achieved significantly more on applications and total test than a class using the regular textbook. Attitude of the UICSM groups was positive. (grades 7, 8)

Turkett, A. Keith and Purser, Jimmy V. Is Grouping for Mathematics Instruction Practicable in Departmentalized Mathematics Classes? Arithmetic Teacher 19: 61-64; January 1972.

It was concluded: "Mere observation of student motivation and achievement encouraged the researchers to conclude that within-class ability grouping was effective." No data were reported. (grades 4-6)

Usiskin, Zalman P. The Effects of Teaching Euclidean Geometry via Transformations on Student Achievement and Attitudes in Tenth-Grade Geometry. Journal for Research in Mathematics Education 3: 249-259; November 1972.

Students who used the transformational geometry materials did not achieve as well on a test of standard geometry content as did students who used traditional materials. Attitudes of both groups were less positive in June than in September. (grade 10)

Vance, James H., and Kieren, Thomas E. Mathematics Laboratories -- More than Fun? School Science and Mathematics 72: 617-123; October 1972.

No significant differences in achievement of work covered in the regular program were found, although one-fourth of mathematics class time was spent in informal exploration. Students strongly preferred the laboratory method. Both laboratory and class discovery groups scored higher than students in the regular program on cumulative achievement, transfer, and divergent thinking tests. (grades 7, 8)

Wardrop, R. F. The Effect of Geometric Enrichment Exercises on the Attitudes Toward Mathematics of Prospective Elementary Teachers. School Science and Mathematics 72: 794-800; December 1972.

Geometric enrichment exercises did not significantly affect attitude toward mathematics or achievement. (elementary, pre-service)

Weaver, J. F. The Ability of First-, Second-, and Third-Grade Pupils to Identify Open Addition and Subtraction Sentences for Which No Solution Exists Within the Set of Whole Numbers. School Science and Mathematics 72: 679-691; November 1972.

Although pupils had had little (if any) explicit instruction pertaining to "no solution" situations, mean correct responses increased progressively from 40 per cent (grade 1) to 61 per cent (grade 3) for addition sentences; for subtraction sentences, the mean correct response was 41 per cent at each grade level. (grades 1-3)

Wiersma, William. A Cross-National Comparison of Academic and Affective Characteristics of Prospective Secondary School Teachers. Journal of Educational Measurement 9: 57-66; Spring 1972.

Few differences were found between prospective teachers in England and the United States. English men were high in mathematics performance. (secondary pre-service)

Williford, Harold J. A Study of Transformational Geometry Instruction in the Primary Grades. Journal for Research in Mathematics Education 3: 260-271; November 1972.

Pupils who had a unit on transformational geometry performed significantly better than a group who had only one day of instruction, on a geometry test but not on a test of spatial ability. (grades 2, 3)

Willson, George H. Decimal-Common Fraction Sequence Versus Conventional Sequence. School Science and Mathematics 72: 589-592; October 1972.

The usual textbook sequence of teaching common fractions followed by decimal fractions, or a reordered sequence using the same textbook, was studied. No significant differences were found between groups on achievement, concept, computation, and problem solving tests. Greater raw-score gains were made by those using the decimal-common fraction sequence. (grade 5)

Wolfe, Richard Edgar. Strategies of Justification Used in the Classroom by Teachers of Secondary School Mathematics. School Science and Mathematics 72: 334-338; April 1972.

Eight strategies used by teachers are listed, plus criteria for identifying justification ventures and "moves" in such ventures. (teachers in grades 9, 10)

Youssef, Zakhour I. and Guardo, Carol J. The Additive Composition of Classes: The Role of Perceptual Clues. Journal of Genetic Psychology 121: 197-205; December 1972.

Pupils responded to the perceptual lack of equality but not to the lack of conceptual equivalence in class-inclusion problems. (kindergarten, grade 1)

Zimmerman, Barry J. and Rosenthal, Ted L. Observation, Repetition, and Ethnic Background in Concept Attainment and Generalization. Child Development 43: 605-613; June 1972.

Both "modeling" (rule-giving) and repetition improved performance on a form-selection task in which mathematical terms were (incidentally) used. Anglo-American children outperformed Mexican-American children. (grade 5)

Dissertation Abstracts

The 335 dissertations listed in the following section were completed at 96 institutions.

Ackerman, Judy Ellen Lipton. Individual Learning Variability in Mathematics: Conceptual Tempo and Strategy. (University of North Carolina at Chapel Hill, 1972.) DAI 33A: 1501; October 1972.

Whether low-achieving boys were reflective or impulsive did not affect mathematics achievement, strategy of solution, or success on group-structure games. (grades 4, 6)

Adamson, David Phillips. Differentiated Multi-Track Grouping vs. Uni-Track Educational Grouping in Mathematics. (Brigham Young University, 1971.) DAI 32A: 3771; January 1972.

No significant differences in achievement were found between students taught in ability or heterogeneous groups. (grades 7, 8)

Al-Nasser, Bhani Visissobha. The Relationship Between the Cultural Background of Disadvantaged Children and Their Performance on an Arithmetic Test. (The Ohio State University, 1971.) DAI 32A: 6281; May 1972.

Mathematics achievement was found to be related to cultural background. Educational deficiency appeared to be cumulative among students of low socioeconomic status, white and nonwhite alike. (grades 4, 6)

Ames, John H. An Evaluation of Mathematics Concepts of Prospective Elementary Teachers at California State College Long Beach. (University of California, Los Angeles, 1971.) DAI 32A: 3830; January 1972.

Achievement was significantly higher after a methods course, but did not increase significantly during student teaching. Students with more than six hours of mathematics credits scored significantly higher than those with less than six hours. (elementary pre-service)

Andrejczak, Eugene Raymond. The Development of the Concept of Volume. (The Catholic University of America, 1972.) DAI 33B: 1262-1263; September 1972.

The sequence of 11 tasks was not as Piaget hypothesized, but the observed order allowed for a grouping which generally conformed to the concrete and formal operational stages. (grades 4, 6, 8, 10)

Armstrong, Prince Winston. The Ability of Fifth and Sixth Graders to Learn Selected Topics in Probability. (The University of Oklahoma, 1972.) DAI 33B: 810; August 1972.

Sixth graders made significant gains after instruction on five probability topics; fifth graders gained on all but one topic. (grades 5, 6)

Banning, Margaret Neoma Botkin. The Preparation of Prospective Teachers in the Geometry Content of Elementary School Mathematics Texts. (Montana State University, 1971.) DAI 32B: 5300; March 1972.

A third geometry course following the regular sequence significantly increased scores on a test on geometry concepts used in elementary school textbooks. (elementary pre-service)

Barnes, Paul Thomas. The Effects of Verbal Incentives Upon the Performance of Seventh Grade, Low Ability Pupils Utilizing a Simulated Academic Task. (The University of Iowa, 1971.) DAI 32A: 5031; March 1972.

Praise facilitated performance on an arithmetic task more than blame did, but blame was better than no incentive, especially for satisfactory achievers. (grade 7)

Batker, Kenneth Edward. Some Multiple Channel Audiovisual Materials in Mathematics and a Comparison of Their Use as Study Aids With Conventional Textbook Assignments. (University of Colorado, 1971.) DAI 32A: 6774-6775; June 1972.

Slide-tape materials appeared to teach some concepts better than the textbook did. Use of both text and materials had a favorable effect on highly prepared students, but had adverse effects on low-preparation students. (elementary pre-service)

Bellamy, Edward Ellsworth. A Study of Productive Thinking in Mentally Retarded Children. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4411; February 1972.

On achievement tests, arithmetic appeared to be a better predictor of creativity for mentally retarded children than did reading. (ages 11-19, MR's)

Beman, Alma Theresa. Piagetian Theory Examined Cross-Culturally: A Tri-Ethnic Study of Children's Responses to Piagetian Tasks of Conservation and Combinations. (Rice University, 1972.) DAI 33B: 1759; October 1972.

No findings are presented from this study of the influence of cultural differences among three ethnic groups on achievement in conservation. (ages 10, 11)

Bessant, Helen Pearl. The Effects of Semantic Familiarity and Information Load on the Arithmetic Verbal Problem Solving Performance of Children in Special Classes for the Educable Mentally Retarded. (The University of Connecticut, 1972.) DAI 33A: 2787; December 1972.

Pupils were able to name the process to be used for problem solution better on each successive task. Older pupils did significantly better on problems with high semantic familiarity; problems with no extra information were easier for all pupils. (ages 11-16, EMR's)

Biegen, David Allan. The Effects of Irrelevant and Immaterial Data on Problem Difficulty. (University of Cincinnati, 1971.) DAI 32A: 3774; January 1972.

Problems which contained immaterial data were most difficult, followed by those with irrelevant data, at each of three ability levels. (grade 8)

Bodden, R. Virginia. The Relationship of Certain Thinking Operations and Academic Achievement. (Yeshiva University, 1972.) DAI 33A: 1071; September 1972.

No significant difference in arithmetic reasoning was found between groups given or not given lessons on thinking operations. (grade 4)

Bogart, Charles Bunner and Waian, Warren Henry. The Effect of a Pontoon Transitional Design on the Performance of Seventh and Eighth Grade Students in a Non-Public Secondary School. (Both authors received degrees at University of Southern California, 1971.) DAI 32A: 4479; February 1972.

Students in the pontoon (team teaching) structure had significantly higher mathematics achievement than did students in the traditional structure. (grades 7, 8)

Boland, Sandra Kay. Assessment of Conservation of Two-Dimensional Space, Substance, Continuous Quantity, and Weight With Retarded and Average Children. (University of Northern Colorado, 1972.) DAI 33A: 1040-1041; September 1972.

Conservation appeared to be related to intellectual maturity, though no one best predictor was found for all conservation tasks. Conservation of weight was the most difficult to achieve. (kindergarten-grade 2)

Bolliver, David Edward. Objectives in Mathematics for the Non-College-Bound Secondary School Student, Utilizing Multidimensional Scaling. (Rutgers University The State University of New Jersey, 1971.) DAI 32A: 5994; May 1972.

Mathematicians preferred objectives closely related to traditional algebra and geometry courses, while teachers had stronger preferences for objectives related to teaching computational skills and social arithmetic. (teachers in grades 9, 10; mathematicians)

Bowers, Robert Garth. Toward a Theory of Sequencing: Study 1-4: An Exploration of the Effect of Congruent Triangle-Pair Configuration Variation on Achievement of Selected Classes of Instructional Objectives in Plane Geometry. (The Pennsylvania State University, 1971.) DAI 32A: 6181-6182; May 1972.

Attributes of both a single-configurational and a multi-configurational treatment were found to be highly transferable, without instruction, to like and different objectives in a given class of objectives. (grade 10)

Bring, Curtis Ray. Effects of Varying Concrete Activities on the Achievement of Objectives in Metric and Non-Metric Geometry by Students of Grades Five and Six. (University of Northern Colorado, 1971.) DAI 32A: 3775; January 1972.

Students using concrete materials achieved better than students not using them. Predictors of achievement were noted. (grades 5, 6)

Brod, Rodney Lynn. The Computer as an Authority Figure: Some Effects of CAI on Student Perception of Teacher Authority. (Stanford University, 1972.) DAI 33A: 139; July 1972.

Students were found to form authority relationships for goal attainment with the computer (when using a drill-and-practice program as remedial instruction in mathematics), thus reducing students' perception of the teacher's task-specific authority. (grades 7-9)

Broomes, Desmond Rodwell. Psychological and Sociological Correlates of Mathematical Achievement and Ability Among Grade 9 Students. (University of Toronto (Canada), 1971.) DAI 33B: 1183-1184; September 1972.

Ten factors were identified; factor structures among boys and girls, and among high and low socioeconomic status students, appeared similar. (grade 9)

Brown, Donald Eugene. A Comparison of Certification and Degree Requirements with Secondary School Mathematics Curriculum. (Texas A & M University, 1971.) DAI 32A: 5529; April 1972.

It was concluded that the secondary school mathematics teacher preparation program is in keeping with recommendations of study groups, and the teacher is being adequately prepared. (secondary pre-service)

Brunner, Regina Baron. The Construction and Construct Validation of a Reading Comprehension Tests of Mathematical Exposition. (Syracuse University, 1971.) DAI 32A: 4235-4236; February 1972.

The test, including topology and algebra, was found to have satisfactory reliability. (grade 7-graduate level)

Brust, Joseph Vincent. The Relationship of Individualized Instruction in Learning Skills to Self-Esteem and Achievement. (Columbia University, 1972.) DAI 33A: 97; July 1972.

Classes not using Project PLAN scored significantly higher in computation, while there were no differences between PLAN and non-PLAN classes in concepts and applications. (grade 5)

Bryson, James Robert. The Design and Evaluation of a Program for Low Achievers in Ninth Grade General Mathematics. (The University of Mississippi, 1972.) DAI 33A: 69; July 1972.

No significant difference in achievement was found between groups who had a specially-designed program or a traditional program, though both groups made a significant gain. (grade 9)

Buchanan, Aaron Dean. An Experimental Study of Relationships Between Mastery of a Superordinate Mathematical Task and Prior Experience with a Special Case. (University of Washington, 1971.) DAI 32A: 6091; May 1972.

The amount of prior experience with subordinate tasks negatively affected mastery of the superordinate task. (grades 5, 6)

Buchman, Aaron L. Some Relationships Between Length of Courses in Elementary Algebra and Student Characteristics. (State University of New York at Albany, 1972.) DAI 33A: 2812; December 1972.

No significant differences in achievement were found between low achievers who took two-, three-, or four-semester algebra courses, or in a subsequent geometry course some students took. Some affective aspects were better in the lengthened algebra courses. (grade 9)

Buechele, Walter Eugene, Jr. An Investigation of Selected Personal Factors as Related to Success in Arithmetic Achievement Utilizing a CAI Mode of Presentation. (Temple University, 1972.). DAI 33A: 2066-2067; November 1972.

The correlation between attitude toward arithmetic and amount of success on a CAI drill-and-practice program was found to be .31; no other predictors of success were significantly correlated. (grades 4, 5)

Burns, Barbara Jean. The Effect of Self-Directed Verbal Commands on Arithmetic Performance and Activity Level of Urban Hyperactive Children. (Boston College, 1972.) DAI 33B: 1782-1783; October 1972.

Two verbal training sessions did not have a significant effect on arithmetic computation or problems scores, or on motor activity. (ages 5-7)

Burron, Douglas Stuart. The Ability of Selected Sixth Grade Pupils to Function at a Variety of Cognitive Levels on Selected Mathematical Tasks. (University of Northern Colorado, 1971.) DAI 32A: 3775-3776; January 1972.

Significant differences were found between high- and low-success-potential pupils on exercises designed to elicit responses at five cognitive levels. A marked difference in behavior appeared related to self-confidence. (grade 6)

Campbell, Byron Lee. Prediction of Elementary Pupils' Scores on a Test of Cognitive Skills in Geometry Achievement. (The Pennsylvania State University, 1971.) DAI 33A: 69; July 1972.

Three to six variables were identified at each grade level accounting for 38-60 per cent of the variance when predicting geometry achievement. (grades 3-6)

Cangelosi, James S. The Construction and Refinement of a Test for Analytical Cognition of Mathematical Content. (The Louisiana State University and Agricultural and Mechanical College, 1972.) DAI 33A: 2233; November 1972.

A 40-item test of analytical cognition was found to be reliable and valid. (grade 11)

Caraher, Rita Catherine. The Development of the Concept of Congruence for Triangles. (Columbia University, 1972.) DAI 33A: 1017; September 1972.

The acquisition of congruence was found to occur later than Piaget noted. Concepts involved in the tasks were not necessarily sequential. (grades 3-6)

Carlson, Roger David. Non-Conservation of Distance: Composition Error, Class Inclusion Error, and Task Ambiguity. (University of Oregon, 1972.) DAI 33B: 2314-2315; November 1972.

No significant differences in ability to conserve distance were found on tasks which involved variations in positions of objects. (grade 1)

Carpenter, Thomas Phelps. The Role of Equivalence and Order Relations in the Development and Coordination of the Concepts of Unit Size and Number of Units in Selected Conservation Type Measurement Problems. (The University of Wisconsin, 1971.) DAI 32A: 4482; February 1972.

No significant difference in difficulty was found between conservation and measurement problems due to different combinations of equivalence and nonequivalence relations. Most errors resulted from children concentrating on an immediate dominant dimension. (kindergarten-grade 2)

Carr, Dan Baker. An Investigation of an Inservice Education Program for Teachers of Secondary School Mathematics in Selected Parishes of North Louisiana. (The University of Mississippi, 1971.) DAI 32A: 3832; January 1972.

No significant differences in achievement or attitude were found between students whose teachers had an inservice program and those whose teachers did not have inservice work. (secondary)

Carson, Joan Carol. The Status of School-Preparatory Activities by Parents of Children from Disadvantaged Homes and the Development of a Series of Booklets of Suggested Preschool Activities for these Children. (The University of Mississippi, 1971.) DAI 32A: 3552; January 1972.

One booklet on quantitative development dealt with recognition of pennies and nickels, days of the week, counting, and geometric shapes. (pre-school)

Carter, Helen Randolph. How Mental Operations Are Reflected in Children's Language Through Use of the Lavatelli Early Childhood Curriculum. (The University of Oklahoma, 1972.) DAI 33A: 612; August 1972.

No findings are reported for this study in which pupils were given structural lessons with or without elicited responses on classification, number, measurement, space, seriation, or Piagetian tasks. (ages 5, 6)

Catanzano, Robert Joseph. A Comparison of the Effects of Two Methods of Testing on Student Achievement in Intermediate Algebra. (University of Georgia, 1971.) DAI 32A: 3833; January 1972.

Two types of formative evaluation tests, using problems previously assigned or not assigned, did not differentially affect end-of-course achievement. (grade 11)

Chaing, George Chi-Yung. An Evaluation of Seventh and Eighth Grade Mathematics Curriculum in Taiwan, Republic of China. (University of Pittsburgh, 1971.) DAI 32A: 4322-4323; February 1972.

Data on the analyzed textbooks are presented and recommendations for improvement made. (grades 7, 8)

Chandler, Arnold Marvin. The Effect of Mathematics Curriculum Materials on the Perceived Behavior of Urban Junior High School Teachers of Low Achievers. (The University of Wisconsin, 1971.) DAI 32A: 4440; February 1972.

Students perceived some differences in classroom climate during use of NCTM's Experiences in Mathematical Ideas. Teachers did not change their opinions of their teaching practices. (junior high)

Chandler, Russell Lafayette. A Study of the Effects of an Inservice Workshop Experience on the Beliefs and Understandings of Teachers Toward Performance Objectives. (Auburn University, 1972.) DAI 33A: 2633; December 1972.

The workshop resulted in significant achievement gains and more positive beliefs about performance objectives, with no differential effects across curriculum areas. (secondary in-service)

Clausen, Thomas Greenwood. A Developmental Study of Children's Responses to Multi-Sensory Approach in Mathematics. (University of Southern Mississippi, 1971.) DAI 32A: 4830; March 1972.

Pupils exposed to a multi-sensory approach achieved higher than pupils using a worksheet-text approach. (kindergarten-grade 1)

Clover, Michael E. Study of the Feasibility of Computer Assisted Pupil Progress Reporting in 4th Grade Mathematics. (The University of Iowa, 1972.) DAI 33A: 1312-1313; October 1972.

Patterns of teacher-use of a system for reporting pupil status on 99 behavioral objectives are reported. Teachers tended either to use it consistently or only once or twice; they either reported on all students an equal number of times or on a select few. (grade 4)

Cotton, Timothy S. An Empirical Test of the Binomial Error Model Applied to Criterion-Referenced Tests. (University of Pittsburgh, 1971.) DAI 32A: 6186; May 1972.

The binomial model was found to be used in developing tests for addition and subtraction. (grade 3)

Creswell, Doris E. An Exploratory Study to Determine Techniques for Evaluating the Application of an Information System to Curriculum Decision-Making in Elementary School Mathematics. (The Pennsylvania State University, 1971.) DAI 33A: 140; July 1972.

The PRIMES information system was found to be reliable and useful. Teachers did not gain in mathematical knowledge from applying PRIMES to curriculum decision-making. (elementary in-service)

Cromie, Robert George. The Ontogeny of Linear Patterns Among Young Normal Children in an Economically-Disadvantaged Area. (The University of Connecticut, 1971.) DAI 33A: 2688-2689; December 1972.

The order of the processes was reproduction, identification, extension. Pupils responded equally well in all modes. (ages 4-7)

Crooks, Forrest Corydon. The Differential Effects of Pre-Prepared and Teacher-Prepared Instructional Objectives on the Learning of Educable Mentally Retarded Children. (The University of Iowa, 1971.) DAI 32A: 5067; March 1972.

The use of materials on three time concepts with pre-prepared objectives resulted in higher achievement than was attained by conventional means, and was significantly better than having teachers prepare objectives themselves for the materials. (ages 9-11, EMR's)

Davies, Thomas Peter. An Evaluation of Computer-Assisted Instruction Using a Drill-and-Practice Program in Mathematics. (United States International University, 1972.) DAI 32B: 6970; June 1972.

Students using the computer program achieved significantly better on measures of computational skills than those not using the program. (grades 2-6)

Davis, John Chester. Time Conservation: A Comparison of Performance of Piagetian Tasks by Selected Students. (East Texas State University, 1972.) DAI 33A: 1055; September 1972.

Since the children were non-conservers of time, they could not perform the tasks, and therefore no relationships among age groups were found. (ages 7, 9, 11)

Davis, Peter Henry. The Effectiveness of Several Widely Used Sixth Grade New Mathematics Publications in Teaching Initial Concepts. (University of Southern California, 1972.) DAI 33A: 1412; October 1972.

The group taught by conventional teacher-led instruction achieved higher than groups taught by the textbook alone. (grade 6)

Dearborn, Donald Edward. An Investigation of Changes in Elementary School Organization and Selected Curriculum Areas in the Public School Systems of Virginia, 1960-1970. (The George Washington University, 1972.) DAI 33A: 74; July 1972.

New topics and earlier points of introducing some topics in mathematics were noted, as well as problems in implementing change. (kindergarten-grade 6)

Dellinger, Harry Vaughn. A Study of the Effectiveness of a Summer Head Start Program on the Achievement of First Grade Children. (University of Southern Mississippi, 1971.) DAI 32A: 4832; March 1972.

No significant difference in readiness scores was found between pupils who had or did not have a summer Head Start program. Near the end of grade 1, pupils who had not had Head Start achieved significantly higher in arithmetic computation and concepts. (grade 1)

Demars, Richard Joseph. A Comparative Study of Seventh Grade Low Achievers' Attitudes and Achievement in Mathematics under Two Approaches, UICSM and Traditional. (University of Alabama, 1971.) DAI 32A: 4832-4833; March 1972.

No significant differences in achievement and attitude were found between groups using "Stretchers and Shrinkers" or traditional materials. (grade 7)

Devlin, Robert Joseph. An Attempt to Determine the Reinforcing Effect of KCR for Subjects with Different IQ and Socio-Economic Levels. (The Pennsylvania State University, 1971.) DAI 33A: 1509; October 1972.

No significant differences were found among treatments involving knowledge of results with cues, money, or alone for an equivalence task. (grade 4)

Dittmer, Karen Ann. Guidelines for Developing a Mathematics Laboratory. (University of Alabama, 1971.) DAI 32A: 5083-5084; March 1972.

Responses to specific questions from state supervisors and from teachers using a mathematics laboratory are presented. (secondary teachers)

Divers, Benjamin Peyton, Jr. The Ability of Kindergarten and First Grade Children to Use the Transitive Property of Three Length Relations in Three Perceptual Situations. (University of Georgia, 1971.) DAI 32A: 3814; January 1972.

Mean performance was not significantly different for any of the three length relations, but differences were found for age, level of conservation, and type of situation. (kindergarten, grade 1)

Doggett, John Nelson. The Effect of the Ford Community School Program on the Achievement of Its Elementary Students. (St. Louis University, 1971.) DAI 32A: 4485; February 1972.

Students in the 1970 community program achieved significantly better than students in the 1967 traditional program. (grade 8)

Donnelly, Mona Mary. A Study of Elementary Teachers' Personality Traits and Attitudes Toward Teaching Selected Content Areas in the Elementary School. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5648-5649; April 1972.

Student teachers had more favorable attitudes toward mathematics than toward teaching mathematics; no significant differences were noted for teachers. (elementary pre- and in-service)

Durall, Edwin Phillip. A Feasibility Study: Remediation by Computer Within a Computer-Managed Instruction Course in Junior High School Mathematics. (The Florida State University, 1972.) DAI 33A: 2611-2612; December 1972.

Students who received remedial help from computer programs achieved as well as students aided by a teacher. Teacher remediation appeared to be more supportive for low-ability students. (grade 7)

Dweck, Carol Susan. The Role of Expectations and Attributions in the Alleviation of Learned Helplessness in a Problem-Solving Situation. (Yale University, 1972.) DAI 33B: 2317-2318; November 1972.

"Helpless" children improved more in their reaction to failure after training in which they met some failure than after training in which they were always successful in solving arithmetic problems. (ages 8-13)

Eggleston, Valeria Hirschler. Single-Array Conservation: A Study of Number Concepts of the Preoperational Child. (University of Oregon, 1972.) DAI 33B: 2318-2319; November 1972.

It was concluded that conservation of number name can be regarded as a prerequisite to conservation of number. (ages 3, 4)

Elfner, Elinor Ann. The Effect of Learning Different Levels of Subordinate Skills on Performance of a Matrix Task. (The Florida State University, 1971.) DAI 32A: 6191; May 1972.

Attainment of subordinate skills was found to facilitate learning of a classification task. (grades 1, 2)

Ellis, Leslie Clyde. A Diagnostic Study of Whole Number Computations of Certain Elementary Students. (The Louisiana State University and Agricultural and Mechanical College, 1972.) DAI 33A: 2234; November 1972.

A screening test on the four operations was followed by a diagnostic test used to tabulate errors and plan instruction. Division was most difficult, followed by subtraction, with addition least difficult. (grade 6)

Embrey, James Edwin. A Study of the Effects of Mild Hearing Loss on Educational Achievement. (The University of Tulsa, 1971.) DAI 32A: 3820; January 1972.

Pupils with mild hearing losses did not achieve as well on a standardized mathematics test as pupils with normal hearing did. (grades 5, 6)

Englert, Thomas James. A Comparative Study of the Effects on Achievement and Changes in Attitude of Senior High School Students Enrolled in First Year Algebra Under Two Different Teaching Approaches. (Cornell University, 1972.) DAI 33A: 1076-1077; September 1972.

No significant differences in achievement or attitude were found between classes taught by an individualized approach or a group-oriented approach. (grade 9)

Erb, Clinton Allen. A Formative Evaluation of an Experimental Teacher Education Project for Juniors in Mathematics Education at The Ohio State University. (The Ohio State University, 1971.) DAI 32A: 4464; February 1972.

It was concluded that the project experiences provided a realistic point of reference from which to apply theoretical course work. Tutoring appeared to help students in gaining confidence. (secondary pre-service, grade 8)

Everett, Douglas Lavelle. The Effects of Tutoring on Achievement in and Attitude Toward Plane Geometry by Second Semester Tenth Grade Students. (University of Southern Mississippi, 1972.) DAI 33A: 1352; October 1972.

No significant differences in achievement or attitude were found for students tutored or not tutored. Ability and achievement appeared to be positively related. (grade 10)

Faist, Clara Rose. Achievement, Attitudes, and Resource Usage in a Mathematics Program in High School: Traditional Versus Flexible. (Northwestern University, 1972.) DAI 33A: 2813; December 1972.

Students in math skills classes performed equally well under the two scheduling systems; differences in other mathematics classes tended to favor traditional scheduling. (grades 9, 11)

Fernandez, Patricia Peysar. A Presentation and Evaluation of an Individualized Instruction Course in First Year Algebra. (University of Utah, 1972.) DAI 33B: 1187; September 1972.

Students using an individualized program achieved satisfactorily when judged by national norms, and had a more favorable attitude than students in a nearby school. (grade 9)

Ferre, Alvin Victor. Effects of Repeated Performance Objectives Upon Student Achievement and Attitude. (New Mexico State University, 1972.) DAI 33A: 919; September 1972.

Presenting objectives daily resulted in greater gains than presenting them only at the beginning of a unit or not at all. (elementary)

Fetzer, Margaret Keenen. The Development of Syllogistic Reasoning. (University of Delaware, 1972.) DAI 33A: 1018; September 1972.

Conflict syllogisms were significantly more difficult than corresponding agreement and neutral forms; invalid syllogisms were more difficult than valid ones. Even at age 15, some were unable to solve some tasks. (ages 8-15)

Fielder, Robert Earl. The Comparative Effect of Two Years of Individually Prescribed Instruction on Student Achievement in Mathematics. (East Texas State University, 1971.) DAI 32A: 5103; March 1972.

The non-IPI group generally achieved better than the IPI group. (grades 3-6)

Finch, John Melvin. Teaching-Learning Units in PLAN: An Analysis of the Utilization of Instructional Materials to Individualize Learning by Computer-Managed Instruction. (The University of Iowa, 1972.) DAI 33A: 1354; October 1972.

The text-only and objective-equipment categories were used most often, accounting for 64 per cent of the assignments of pupils. (grades 4, 5)

Fithian, Ephraim B., Jr. The Effects of a Coordinated Mathematics Content and Methods Sequence on Prospective Elementary Teachers. (Indiana University, 1971.) DAI 32A: 5085; March 1972.

Students in the coordinated sequence achieved significantly higher in mathematics content but not on teaching of mathematics tests than did those who had either a methods or a content course. Attitudies improved for those in the methods course and in the coordinated sequence. (elementary pre-service)

Fitzgerald, David Leon. A Study of the Effect of a Mathematics Laboratory Upon the Performance of Prospective Elementary Teachers Enrolled in a Mathematics Class for Elementary Teachers. (University of Houston, 1971.) DAI 32A: 4465; February 1972.

Students who received one-half or one-third of their instruction using mathematics laboratory procedures did not achieve differently nor have different attitudes from those in a lecture-discussion group. (elementary pre-service)

Fogle, Richard Eugene. Differentiated Programed Learning of Fractions and Facets of Learning Aptitude of Third Graders. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5610-5611; April 1972.

Differential sequence and aptitude effects were noted, but they diminished over the one-month retention period. (grade 3)

Foster, Thomas Robert. An Analysis of Teacher Behavior Under Announced and Unannounced Observation Conditions by the Supervisor. (University of Maryland, 1972.) DAI 33A: 1973-1974; November 1972.

Teachers involved students more, verified and analyzed responses more, and included relevant applications more when observations were announced in advance. (secondary in-service)

Fuller, Susan Rudder. A Study of Problem Solving Methods of Students With and Without the Constraint of a Time Limit. (University of Georgia, 1971.) DAI 32A: 5611; April 1972.

Twenty-one of 64 students changed methods on problem-solving tests with and without time limits. No significant differences in those who changed were identified. (secondary)

Gardner, Thomas Paul. The Efficacy of Teacher Utilization of an Experimental Diagnostic Arithmetic Survey with Selected Educable Mentally Retarded Students. (University of Alabama, 1971.) DAI 32A: 5068; March 1972.

The use of an experimental diagnostic survey instrument did not aid mentally retarded children in achievement. (intermediate-junior high, EMR's)

Gaskill, Lynn Dale. An Investigation of the Effects of Four Middle School Programs Upon Academic Achievement and Personal Adjustment of Eighth Grade Students. (North Texas State University, 1971.) DAI 32A: 3607; January 1972.

Traditional junior high students scored significantly higher than middle school students on arithmetic achievement tests. (grade 8)

Gaslin, William Lee. A Comparison of Achievement and Attitudes of Students Using Conventional or Calculator Based Algorithms for Operations on Positive Rational Numbers in Ninth Grade General Mathematics. (University of Minnesota, 1972.) DAI 33A: 2217; November 1972.

Use of units in which fractional numbers were converted to decimals and examples then solved on a calculator was found to be a "viable alternative" to use of conventional textbooks (including fractions) with or without a calculator, for low-ability or low-achieving students. (grade 9)

Geisert, Paul George. A Study of the Hierarchical Competencies Underlying the Problem Solving Use of Proportion. (The Florida State University, 1971.) DAI 32A: 5103-5104; March 1972.

Lessons developed with a systems approach for a learning hierarchy on problems of proportion resulted in all pupils achieving mastery on verbal and mathematical aspects. (grade 6)

Gipson, Joella Hardeman. Teaching Probability in the Elementary School: An Exploratory Study. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4325-4326; February 1972.

The set of lessons appeared to be successful in teaching concepts of a finite sample space and the probability of a simple event at both grade levels. (grades 3, 6)

Goldner, Lawrence Ronald. A Study of the Effects of Compensatory Instruction in Language Arts and in Arithmetic on Achievement, Study Habits, and Selected Attitudes of Eighth Grade Students in a Depressed-Area School. (New York University, 1972.) DAI 33A: 1414-1415; October 1972.

Students who had compensatory instruction on arithmetic skills did not achieve better than students who had language arts or no compensatory instruction. (grade 8)

Goode, Paul. The Effect of Feedback of Intelligence Test Results Upon Achievement and Self-Estimates of Ability at the Sixth Grade Level. (Temple University, 1972.) DAI 33B: 1762-1763; October 1972.

Feedback on IQ test results did not result in greater arithmetic achievement than no feedback. (grade 6)

Graening, John Jay. An Evaluation of a Secondary Mathematics Teacher Education Program Emphasizing School Experiences in Contrasting Cultural Settings. (The Ohio State University, 1971.) DAI 32A: 3838-3839; January 1972.

More positive views of what should occur in the mathematics classroom were found after pre-student-teaching experiences. However, non-project students had an increased commitment to teaching. (secondary pre-service)

Green, Joseph Walter. The Effect of Reteaching Mathematics on Different Cognitive Levels. (Stanford University, 1972.) DAI 33A: 2236; November 1972.

No findings are reported for this study on the effect of two mastery-learning and two non-mastery strategies for a unit on least common multiples. (grade 5 or 6)

Greenwood, Edward George. Some Relationships Between Developmental Reading Instruction in Grade Eight and Subsequent Academic Improvement. (St. Louis University, 1972.) DAI 33A: 923; September 1972.

No significant difference in GPA gain from grade 7 to 9 was found for students who had or did not have reading instruction in grade 8. (grade 8)

Greer, Rachel Dean. The Effects of a Program of Total Body Movement Upon the Educable Mentally Retarded Child's Ability to Understand Selected Geometric Forms. (Northwestern State University of Louisiana, 1972.) DAI 33A: 605-606; August 1972.

The body movement program did not significantly affect mentally retarded children's ability to understand geometric forms. (ages 8-13, EMR's)

Gregory, John William. The Impact of the Verbal Environment in Mathematics Classrooms on Seventh Grade Students' Logical Abilities. (The Ohio State University, 1972.) DAI 33A: 1585; October 1972.

On a reasoning test, students of teachers who made more conditional logic statements outperformed students of teachers who made fewer such statements. No interaction of mathematical ability and frequency of conditional moves by teachers was found. (grade 7)

Grouws, Douglas Arthur. Differential Performance of Third-Grade Children in Solving Open Sentences of Four Types. (The University of Wisconsin, 1971,) DAI 32A: 3860; January 1972.

Open sentences of the N - a = b type were significantly more difficult than three other types (N + a = b, a + N = b, a - N = b). Open sentences with larger whole numbers were significantly more difficult than those with smaller whole numbers. (grade 3)

Guerriero, Carl Albert, III. Team Learning and Aptitude-Treatment Interaction in Seventh Grade Mathematics. (The Pennsylvania State University, 1971.) DAI 32A: 6198-6199; May 1972.

No significant differences in retention were found between students having team learning experiences or a traditional program, but the traditional group scored higher on immediate learning tests. (grade 7)

Hamburg, Russell Norman. A Study of Attitudinal Differences of Parents and Teachers to Selected Subject Content of the Elementary School Curriculum in Grades One Through Six. (University of Oregon, 1971.) DAI 32A: 4919; March 1972.

The attitude toward arithmetic of teachers was slightly higher than the attitude of parents. (teachers and parents in grades 1-6)

Hamby, Kelly Dean. A Model for Modifying Individualized Instruction. (The University of Texas at Austin, 1971.) DAI 33A: 142; July 1972.

The model for modifying instruction in an on-going program (IPI Mathematics) was found to be feasible; scores for students using the modified program were better than for students using the non-modified program. (grade 2)

Hammond, Ruth Kartchner. A Predictive Study of Mathematical Readiness and Achievement: A Longitudinal Study From First Grade Entrance Through Third Grade. (Purdue University, 1972.) DAI 33A: 637; August 1972.

A perceptual-motor test was found to be a good predictor of readiness for mathematical achievement; a standardized readiness test was found to be a better predictor. (grade 3)

Hammons, Donald Wayne. Student Achievement in Selected Areas of Arithmetic During Transition from Traditional to Modern Mathematics (1960-1969). (The Louisiana State University and Agricultural and Mechanical College, 1971.) DAI 33A: 2217; November 1972.

There was a significant decline in computational skills in the Louisiana schools studied during the period 1960-1969, but a significant change in reasoning was not found. (grade 8)

Hanneman, James Howard. An Experimental Comparison of Independent Study and Conventional Group Instruction in Tenth Grade Geometry. (The University of Florida, 1971.) DAI 32A: 6289; May 1972.

No significant difference in achievement was found between groups using activity packages or conventional instruction. (grade 10)

Hansen, Roger L. The Effects of Social, Symbolic and Material Reinforcers on the Metropolitan Test Performance of Normal Primary II Pupils. (University of Northern Colorado, 1971.) DAI 32A: 3787; January 1972.

Use of various types of reinforcement between two administrations of a test did not result in scores significantly different from the control group. (primary II)

Hanson, Robert Bryant. The Prediction of Achievement in High School Plane Geometry by Spatial Orientation-Visualization-Visual Perception Ability. (University of Maryland, 1971.) DAI 32A: 6063; May 1972.

A relationship was found between spatial-visualization-perception ability and geometry achievement in grade 9 but not in grade 10. (grades 9, 10)

Harder, Richard Earl. A Methodological Comparison of Interview and Behavioral Techniques for Assessment of Conservation of Length. (the University of North Dakota, 1971.) DAI 33B: 462; July 1972.

Non-verbal techniques appeared valid in assessing conservation of length. (grade 1)

Harris, Jasper William. An Analysis of the Effects of Using Quizzes and Modified Teaching Procedures to Increase the Unit Test Scores in Geometry, Algebra, and French Classes in an Inner City Senior High School. (University of Kansas, 1972.) DAI 33A: 2648; December 1972.

Presentation of prescribed content with set daily goals, feedback, and systematic reinforcement increased achievement in each course. (grades 9, 10)

Heatherly, Anna L. Attainment of Piagetian Conservation Tasks in Relation to the Ability to Form Hypotheses as to the Probable Content of Story Material Among First and Second Grade Children. (University of Virginia, 1972.) DAI 33A: 663; August 1972.

Conservation of mass, liquid, and number appeared to be related to reading ability. (grades 1, 2)

Hegedus, Rita Anne. An Application of Overt and Nonovert Correction Responses, and Sequencing to Mathematical Learning Tasks. (Lehigh University, 1971.) DAI 32A: 5037; March 1972.

No significant differences were found between pupils in grades 1-6 given overt or non-overt correction on a two-choice tasks. Third graders using a logical sequence of tasks on distribution achieved better than those using scrambled sequences. (grades 1-6)

Hegstrom, William J. Construction and Clinical Testing of Programmed Instructional Units for Very Low Achievers in Junior High School Mathematics. (University of Miami, 1971.) DAI 32A: 3663-3664; January 1972.

The programmed materials on fractions appeared feasible for low achievers. (junior high)

Heine, Beatrice. An Investigation of the Effect of Teaching Selected Topics in Elementary Mathematical Logic on Problem-Solving Ability of Fifth-Grade Students. (Temple University, 1972.) DAI 33A: 1587; October 1972.

No significant differences were found between groups taught or not taught logic. Girls scored higher than boys. (grade 5)

Henry, Donald Earl. Attentional and Cardinal-Ordinal Factors in the Conservation of Number. (University of Minnesota, 1971.) DAI 32B: 6618-6619; May 1972.

Third graders used number and density but not length more readily than did kindergarteners. (kindergarten, grade 3)

Henry, Loren Lee. Innovation and Membership in the National Council of Teachers of Mathematics in Selected Secondary Schools of Indiana. (Indiana University, 1971.) DAI 32A: 4242; February 1972.

About one-third of the respondees were NCTM members; they tended to be concentrated in the largest schools. NCTM members indicated use of more innovations than non-NCTM members did. (secondary in-service)

Higginbotham, John McKee. Advanced Placement Procedures in Mathematics in American High Schools. (University of Southern California, 1972.) DAI 33A: 497; August 1972.

Both findings and recommendations are specified. (grade 12)

Hilliard, Everett Leslie. A Comparative Study of the Cognitive Development of Disadvantaged First Grade Pupils as Measured by Selected Piagetian Tasks. (University of Southern California, 1972.) DAI 33A: 1416; October 1972.

No significant differences on Piagetian tasks were found between pupils given a program involving activities and manipulation and those using a textbook program. (grade 1)

Hinds, Richard Henry. Accomplishment of a Learning Task for Two Levels of Test Anxiety and Two Degrees of Learner Sequence Control. (University of Miami, 1972.) DAI 33A: 2693-2694; December 1972.

Students for whom both task and subordinate competencies were specified terminated the questioning session significantly less quickly and demonstrated a significantly higher degree of task mastery. (junior high)

Hirschbuhl, John Joseph. Toward a Theory of Sequencing: Study 1-5: An Exploration of Selected Transitivity and Conjunctive Relationships Among the Enactive, Iconic and Symbolic Modes of Representation. (The Pennsylvania State University, 1971.) DAI 32A: 6202; May 1972.

For six of eight clusters of objectives, transfer to related but untaught objectives was not found to occur. (grade 4)

Holste, Donald Ernest. The Effect of Different Prescriptions Used by Teachers in an IPI Mathematics Program. (University of Illinois at Urbana-Champaign, 1972.) DAI 33A: 552; August 1972.

The type of prescription affected achievement. (primary)

Hopkins, Layne Victor. Toward a Theory of Sequencing: Study 3-2: An Exploration of Transitivities Formulated From a Set of Piagetian-Derived Operations and Their Implications in Traversing Learning Hierarchies. (The Pennsylvania State University, 1971.) DAI 32A: 6203; May 1972.

Students were not able to demonstrate mastery on transfer objectives without explicit instruction. (grade 5)

Howell, William Lawrence, III. The Correlates of Change in School Integration with the Academic Achievement of Eighth Grade Students. (University of South Carolina, 1971.) DAI 32B: 7292; June 1972.

White students achieved significantly higher than black students on arithmetic concepts and problem solving. (grade 8)

Igo, Rboert Vincent. Using Risk Taking Behavior to Assign Students to Instructional Treatments in a Computer-Assisted Instruction Program. (The Pennsylvania State University, 1971.) DAI 33A: 1022; September 1972.

Students who were taught deductively made fewer responses and took less time than those taught inductively, regardless of their classification as high or low on risk-taking measures. (grade 9)

Isenberg, Robert Leon. A Comparison of Achievement Scores in Reading, Arithmetic, and Motor Skill Development Among Three Instructional Programs with Different Levels of Supportive Services for Elementary School Compensatory Education Students. (Brigham Young University, 1972.) DAI 33A: 2765; December 1972.

Pupils performed better in arithmetic than in reading after using a sequentially designed, individualized arithmetic program. (grades 1-5)

Jacks, William Rolland. Attitudes, Preferences and Perceptions of Gifted Sixth and Eighth Grade Students. (University of Southern California, 1971.) DAI 32A: 4450-4451; February 1972.

Favorite subjects were mathematics and reading; other reactions to teachers and schools are cited. (grades 6, 8)

Janda, George Dale. A Three Year Evaluation of a Plan for Reducing Failure in the Primary Grades of Selected Public Schools. (The University of Tulsa, 1972.) DAI 33A: 1045; September 1972.

The developmental training program had no significant positive influence on high-risk pupils me d by a standardized test or marks. (grade 1)

Jantz, Richard Kieth. The Identification of Local Pupil Performance Norms in Reading and Arithmetic for Sixth Grade Pupils Which May Be Used as a Component of an Accountability Model for a Local School System. (Ball State University, 1972.) DAI 33A: 2617; December 1972.

Girls had higher mean achievement scores than boys. White students, students with higher SES, and those with higher intelligence also achieved better. (grade 6)

Jeffrey, Jay McLeish. Preference for Two Styles of Mathematics Instruction. (Case Western Reserve University, 1972.) DAI 33A: 1589; October 1972.

No findings are presented for this study of an unspecified number of (presumably) secondary students given a deductive and a "thematic" lesson first or second. (secondary)

Jerman, Max Edward. Problem Solving in Arithmetic as Transfer From a Productive Thinking Program. (Stanford University, 1971.) DAI 32A: 5671; April 1972.

No significant differences were found between groups using a general-problem-solving program, a wanted-given program, or the regular textbook. Some effect on strategies, especially for the wanted-given approach, was noted. (grade 5)

Jhin, Kyo Ryoon. A Statistical Comparison of the Effectiveness of Non-Tutorial Computer-Aided Instruction and Conventional Teaching of Algebra. (Auburn University, 1971.) DAI 32B: 5734; April 1972.

Using non-tutorial CAI was as effective as conventional instruction on achievement and abstract reasoning measures. Use of CAI was more effective for those in the upper one-third of the group. (grade 11)

Johanson, Emma Jane Dixon. A Ninth Grade Piagetian Mathematics Curriculum. (The University of Toledo, 1972.) DAI 33A: 223; July 1972.

The nine-week program, involving active manipulation with experiments and appartus, resulted in higher achievement and attitude scores than those of a control group. (grade 9)

Johnson, Dale Arthur. A Study to Determine the Prediction of Success in Algebra and Geometry Based Upon Reading, Mathematics and Intelligence Scores from Standardized Tests. (Brigham Young University, 1972.) DAI 33A: 2074; November 1972.

Relationships were found between algebra GPA and eighth grade mathematics GPA and some test scores, and between geometry GPA and algebra GPA. (grades 9, 10)

Johnson, David Carl. An Investigation in the Learning of Selected Parts of a Boolean Algebra by Five- and Six-Year-Old Children. (University of Georgia, 1971.) DAI 32A: 5060; March 1972.

The ability to form selected classes and to make "pre-number" quantitative comparisons of sets of objects was significantly improved by instruction. (kindergarten, grade 1)

Johnson, Geraldine Meador. An Unprecedented Innovation for Dropout Prevention Through Guaranteed Performance Contracting and Accountability at Texarkana, U.S.A. 1969-70. (East Texas State University, 1971.) DAI 32A: 5502-5503; April 1972.

Among other findings, it was noted that achievement increased on early posttests in mathematics (though a later posttest was declared invalid). (elementary)

Johnson, Louise Henrietta. Elementary School Geometry: A Study of Achievement on Selected Objectives of Geometry of Mexican American and Anglo American Second Grade Children. (University of Northern Colorado, 1971.) DAI 32A: 3814-3815; January 1972.

For geometry, no particular significance was found to be attached to ethnic or certain teacher factors. Arithmetic test scores and geometry achievement were related. (grade 2)

Johnson, Martin Leroy. Effects of Selected Experiences on the Classification and Seriation Abilities of Young Children. (University of Georgia, 1971.) DAI 32A: 4922-4923; March 1972.

Experiences in sorting and ordering linear objects were found to be effective, but no significant relationships were found with classification ability or between abilities. (grades 1, 2)

Jolley, Paul Wiseman. A Method of Evaluating an Objective of an NSF-AYI: The Effect of the 1969-1970 Florida State University Academic Year Institute Upon Its Participant's Ability to Read Pertinent Mathematical Materials. (The Florida State University, 1971.) DAI 32A: 6270; May 1972.

Ability to read mathematical materials improved during the institute. (secondary in-service)

Jones, Douglas Jerry. A Study of Variables Related to the Achievement of Underachieving Boys in an Open Education Environment. (Duke University, 1972.) DAI 33A: 2617-2618; December 1972.

Mean posttest score in mathematics was lower than mean pretest score. The best single predictor of mathematics score was low attitude toward school. (grade 6)

Jones, June Vreeland. A Predictive Assessment of Overt Classroom Behavior and the Academic Achievement of Mentally Retarded Students. (University of Oregon, 1971.) DAI 32A: 5070-5071; March 1972.

Observable behavior of mentally retarded children contributed 29 per cent to the prediction of arithmetic achievement. (grades 7-12, EMR's)

Jones, Richard John. Comparative Career Orientations of Beginning Male Mathematics, Science, Social Studies, and English Teachers. (The Pennsylvania State University, 1971.) DAI 32A: 6042-6043; May 1972.

Mathematics and science teachers were found to be more subject-oriented than other teachers. (secondary in-service)

Jones, Rowen Cox. A Diagnostic-Manipulative Instructional Program for Teaching Addition and Subtraction to Six Emotionally Disturbed Children: A Case Study Approach. (University of Oregon, 1971.) DAI 32A: 5071; March 1972.

Children profited from individualized instruction following diagnosis. A hierarchical procedure enabled pupils to complete tasks more quickly than when order was random; use of materials appeared helpful. (ages 7-11)

Julian, Arthur Francis Quarry. A Comparative Study of Scores Measuring Achievement of Goals of the Cognitive Domain Between a Newly Devised Elementary Geometry Test and Some Commonly Administered Standardized Tests of the Elementary School. (The Pennsylvania State University, 1971.) DAI 32A: 4838-4839; March 1972.

The developed test appeared to be more accurate in measuring geometry achievement in grades 6-8 than in grades 4-6. (grades 3-8)

Jurick, Robert Rudolph. Computer-Oriented Instructional System for Teaching Analytic Geometry. (The Ohio State University, 1972.) DAI 33B: 1667-1668; October 1972.

An analytic geometry course incorporating tutorial, non-tutorial, and management components of CAI was tested; limitations and suggestions for modification are noted. (grade 10)

Kamara, Allieu Ibrahim. Cognitive Development Among School Age Themne Children of Sierra Leone. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4422; February 1972.

Both schooled and unschooled children were found to be conservers at the ages Piaget found; conservation responses were based on identity, reversibility, and compensation. (ages 6-12)

Karlin, Marvin William. The Development and Utilization of a Card Game for Teaching Prime Factorization in the Fifth Grade. (University of Colorado, 1971.) DAI 33A: 80; July 1972.

Use of a card game was as effective as a textbook-oriented approach in fostering recognition of the Fundamental Theorem of Arithmetic. (grade 5)

Keese, Earl Eugene. A Study of the Creative Thinking Ability and Student Achievement in Mathematics Using Discovery and Expository Methods of Teaching. (George Peabody College for Teachers, 1972.) DAI 33A: 1589-1590; October 1972.

Achievement and attitude of students taught a unit on sequences and series by a discovery method was significantly greater than that of students taught by an expository method. No significant differences in achievement or attitude were found between low- and high-creative students, though differential effects were noted. (grade 8)

Key, Priscilla Foster. Embeddedness-Disembeddedness and School Achievement. (New York University, 1971.) DAI 32B: 6051; April 1972.

No significant negative relationship was found between embeddedness scores and arithmetic achievement scores. (grade 6)

Kidd, Alice Reese. The Development of an Instructional Package for High School Geometry Teachers and a Study of the Effectiveness of Its Use in In-Service Training. (The University of Texas at Austin, 1970.) DAI 32A: 3561; January 1972.

The developed in-service materials appeared to be effective in preparing teachers to teach a new geometry course. (secondary in-service)

Killough, Charles Kyle. An Analysis of the Longitudinal Effects That a Nongraded Elementary Program, Conducted in an Open-Space School, Had on the Cognitive Achievement of Pupils. (University of Houston, 1971.) DAI 32A: 3614; January 1972.

Girls in nongraded programs achieved at a faster rate in arithmetic computation than did boys. In general, the open-space program was found to have more favorable achievement outcomes. (elementary)

Kim, Jung Soon. Comparative Study of Secondary School Mathematics Programs of the Selected Mathematics Study Groups in the United States with the Mathematics Program of the Ministry of Education in the Republic of Korea. (Temple University, 1972.) DAI 33A: 81-82; July 1972.

Similarities and differences in mathematics curriculum projects in the two countries were described. (secondary)

Kindle, E. Glenn. Evaluation of the 1969 Colorado Department of Education In-Service Program for Elementary School Mathematics Teachers. (University of Denver, 1971.) DAI 32B: 7172; June 1972.

Teachers gained in content achievement and implemented materials, concepts, and techniques from the in-service program. (elementary in-service)

King, Donald Thomas. An Instructional System for the Low-Achiever in Mathematics: A Formative Study. (The University of Wisconsin, 1972.) DAI 32A: 6743; June 1972.

Groups using one of three constructed units on elementary number theory scored higher than groups using only the textbook. The mastery-learning unit including flow-chart use resulted in significantly higher scores than when flow-charting was not used or when computer access was included. (grade 9)

Klein, Melvin Philip. The Group of Isometries in Tenth Year Mathematics: A Comparison of the Relative Effectiveness of Two Approaches to Selected Topics in Geometry with Respect to Achievement in Geometry and Interest in Mathematics. (New York University, 1972.) DAI 33A: 2076; November 1972.

No significant differences were found between classes having a transformational approach or the regular plane geometry course. (grade 10)

Knifong, James Dan. The Representation of Cognitive Structures of Four and a Half Year Old Children. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4424; February 1972.

A procedure for establishing "formal framework representations" from videotaped interviews was found to be feasible. Piaget's characterization of four-year-olds was supported by analysis of children's thinking while using a balance beam. (age 4-1/2)

Knight, Lewis Emerson. An Investigation of Teacher Preparation for Variable Use of Mathematical Instructional Modes. (Stanford University, 1971.) DAI 32A: 4469-4470; February 1972.

Training on the use of varied instructional modes did not result in significant changes in teaching behavior. (secondary pre-service)

Koch, Dale Roy. Concept of Self and Mathematics Achievement. (Auburn University, 1972.) DAI 33A: 1081; September 1972.

A significant relationship was found between student self-concept and achievement. No significant effect of teacher self-concept level on student achievement was found, and teacher content-competence had little effect on student achievement. (grade 6)

Kosanovich, Robert Joseph. A Study of the Cognitive Development of Length and Area Measurement. (Michigan State University, 1971.) DAI 32A: 6293; May 1972.

The cognitive development and understanding of length and area measurement appeared to be simultaneous. (ages 7-11)

Kosky, Elizabeth Mary. Relationship of Selected Variables to Academic Achievement for Fifth and Sixth Grade Students: Verbal IQ, Perception of Self in School, Race, Fate Control, Socio-Economic Status, and Six. (University of Miami, 1972.) DAI 33A: 2767; December 1972.

Verbal IQ accounted for most of the variance in mathematics scores in each grade; SES was the second best predictor of achievement. Perception of self in school, race, and sex were negligible prediction factors. (grades 5, 6)

Kraemer, Ruth Ahsmuhs. The Effects of the Cluster Plan on Mathematics and Science Students' Achievement Scores in the Oklahoma City Public Schools, 1970-1971. (The University of Oklahoma, 1972.) DAI 33A: 499; August 1972.

Students in the cluster (busing) plan gained more than students not involved. (secondary)

Kratzer, Richard Oren. A Comparison of Initially Teaching Division Employing the Distributive and Greenwood Algorithm with the Aid of a Manipulative Material. (New York University, 1971.) DAI 32A: 5672; April 1972.

No significant difference was found between methods on a test of familiar problems, but the distributive group scored better on transfer problems. (grade 4)

Krautheim, Joseph James. Development of a Framework for Diagnostic Teaching. (University of Pittsburgh, 1971.) DAI 32A: 4490; February 1972.

Agreement among teachers was high on classifying student responses and on diagnosis, but not on prescribing instruction for a unit on operations with fractions. However, prescriptions were generally successful. (grade 6)

Kristjansdottir, Thuridur Johanna. The Relationship of Preschool Experience to Achievement and Selected Aspects of Adjustment in Grade One. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5612-5613; April 1972.

Pupils having either an academic or a readiness kindergarten program achieved higher in arithmetic at the end of grade 1 than pupils who did not go to kindergarten. (kindergarten, grade 1)

Kuhfittig, Peter Kurt Friedrich. The Effectiveness of Discovery Learning in Relation to Concrete and Abstract Teaching Methods in Mathematics. (George Peabody College for Teachers, 1972.) DAI 33A: 1323; October 1972.

Achievement scores for low-ability students favored those using concrete aids; no differences were found for high-ability students. Intermediate-guidance groups scored higher on transfer tests when using aids; no differences were found for maximal-guidance groups. (grade 7)

Langley, Jan Franks. Classification Behaviors of Mentally Retarded, Lower Socio-Economic Status and Middle Socio-Economic Status Elementary School Children. (The University of Texas at Austin, 1971.) DAI 32A: 6251; May 1972.

Mentally retarded or normal pupils showed similar development but at different rates. Lower-SES pupils achieved less in grade 3, but by grade 6 were at least equivalent to middle-SES pupils on classification behaviors. (grades 3, 6)

Larson, John Charles. A Developmental Index of Numerical Cognitive Performance. (The University of Michigan, 1971.) DAI 32A: 6208; May 1972.

A 16-item test on classification, seriation, and analogies was developed; correlation with Piagetian tasks was found to be .70. (kindergarten-grade 2)

Laskaris, Jane Buck. Some Effects of the Experimental Manipulation of Teacher Expectations on the Measured Academic Growth of Fifth-Grade Children. (University of Delaware, 1971.) DAI 32A: 6209; May 1972.

Students whose scores were artificially inflated demonstrated greater increases in test scores than did students whose scores were accurately reported to teachers. (grade 5)

Lazar, David I. The Development and Validation of an Instrument to Assess the Understanding of Basic Algebraic Concepts by Prospective Teachers of Secondary School Mathematics. (Temple University, 1972.) DAI 33A: 1517; October 1972.

The developed 35-item test was found to be reliable and valid. (secondary pre-service)

Lazarus, JoAnn Mannise. The Development of a Kindergarten Mathematics Program: Implemented Through In-Service Teacher Education. (Wayne State University, 1972.) DAI 33A: 2220-2221; November 1972.

The developed program appeared to be successful; teachers profited from the in-service workshops to prepare them to teach it. (kindergarten, in-service)

Leary, James William. The Effect of Varying Schedules of Knowledge of Correct Response in Programed Instruction. (University of Southern California, 1972.) DAI 33A: 2078-2079; November 1972.

No significant differences were found on levels of knowledge of result for high-IQ pupils, but knowledge of correct response appeared necessary for low-IQ pupils. (grade 4)

LeDuc, John William. A Measure of Ability to Read Concise Mathematics Language. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5655; April 1972.

The test used strands of questions to ascertain students' understanding of ordinary words with technical meanings, inferences, and various other types of vocabulary. (grade 10)

Lee, Kwi-Yoon. A Study and Analysis of the Effectiveness of Computer Assisted Reporting of Fifth Grade Pupils' Mathematical Progress as Perceived by Parents and Pupils. (The University of Iowa, 1972.) DAI 33A: 1368; October 1972.

The computer was used to produce report sheets containing statements which the teachers selected by code. Parents and pupils had favorable reactions to the reporting system. (grade 5)

Leeb-Lundberg, Kristina A. M. Friedrich Froebel's Mathematics for the Kindergarten: Philosophy, Program, and Implementation in the United States. (New York University, 1972.) DAI 33A: 176; July 1972.

Aspects of Froebel's program are discussed. (kindergarten)

Lenchner, George. A Study of the Effect of the Use of Overhead Projection on Achievement in Presenting Selected Topics of Circular Functions. (Columbia University, 1972.) DAI 33A: 1981-1982; November 1972.

Achievement was better in classes where overhead projectuals were used than in classes where projectuals were not used. (grade 11)

Lesh, Richard Arthur. The Generalization of Piagetian Operations as it Relates to the Hypothesized Functional Interdependence Between Class, Series and Number Concepts. (Indiana University, 1971.) DAI 32B: 4731; February 1972.

Children trained on classification and seriation tasks were able to do transfer tasks on number better than non-trained children. (kindergarten)

Levin, William Jeffrey. The Effectiveness and Generalization of Ability-Oriented and Effort-Oriented Reinforcement for Improving the Academic Performance of Underachievers. (The University of Texas at Austin, 1971.) DAI 32B: 6652; May 1972.

It was found that praise could be selectively effective: ability-oriented praise had a significant effect on spelling achievement but not on arithmetic or language. Ability-oriented praise was superior to effort-oriented praise. (elementary)

Lipson, Stanley Harris. The Effects of Teaching Heuristics to Student Teachers in Mathematics. (Columbia University, 1972.) DAI 33A: 2221-2222; November 1972.

Instruction on heuristics had some effect on problem-solving scores, and appeared to result in more use of heuristics in teaching. (secondary pre-service)

Little, Richard A. A Taxonomic Approach to Measuring Achievement in Mathematics 223 - Geometry for Elementary Teachers. (Kent State University, 1971.) DAI 32A: 6105; May 1972.

Four of six levels of the hierarchy on Bloom's Taxonomy were supported by the test. (elementary pre-service)

Loh, Elwood Lockert. The Effect of Behavioral Objectives on Measures of Learning and Forgetting on High School Algebra. (University of Maryland, 1972.) DAI 33A: 145; July 1972.

Students who were informed of behavioral objectives did not learn or retain better than students not informed of objectives. (grade 9)

Lowerre, George Fitzgerald. Conceptually Based Development of Individualized Materials for Critical Thinking Based on Logical Inference. (University of Pennsylvania, 1972.) DAI 33A: 1418; October 1972.

The group using materials on logic scored significantly higher on the two rules taught than did a group not having instruction on logic. (grades 2-4)

Macready, George Byron. An Investigation into the Nature of Interitem Relations and the Structure of Domain Hierarchies Found Within a Domain Referenced Testing System. (University of Minnesota, 1972.) DAI 33A: 2174; November 1972.

Little variability in item variability was found within the various item domains. Two item-generation procedures produced quite similar hierarchies. It appeared feasible to test students on a sample of items and infer how they would perform on the domain. (elementary)

Mahaffy, Donald Lee. A Comparison of Two Schemes for Sequencing a Methods Course and Student Teaching. (Oklahoma State University, 1971.) DAI 33A: 648-649; August 1972.

No significant differences were found between classes who received 32 hours of methods course-work before student teaching or 17 hours of methods with student teaching. (elementary pre-service)

Mahan, James Maurice. The Effects of Instruction by Teachers and Teacher Aides Upon the Performance of Pupils in a Direct Instruction Program. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 6838; June 1972.

Children taught arithmetic by teacher aides were taught a greater number of lessons than children taught by teachers, but no achievement differences were found. (primary)

Mainville, Waldeck Ernest, Jr. A Study of the Effect of Mathematics Activity Materials Upon Certain Aspects of Creative Thinking Ability of Prospective Elementary School Teachers. (Michigan State University, 1972.) DAI 33A: 2222; November 1972.

The use of materials did not appear to affect the mathematical creativity of students, although use of an informal style of teaching did appear to increase creativity for both groups. (elementary pre-service)

Manning, Gary Lee. Development, Implementation and Evaluation of an In-Service Program in Elementary School Mathematics. (The University of Nebraska, 1972.) DAI 33A: 1568-1569; October 1972.

For pupils of teachers who had an in-service program using mathematics laboratories, achievement and attitude were significantly higher than for pupils of teachers who viewed NCTM films or had no in-service program. No difference in teacher attitudes was found. (teachers in grades 1-4)

Marazzi, Maureen Katherine. Academic Performance and Prediction of Performance of Specially Admitted, Economically Disadvantaged Students and Other Students in an Urban Restricted-Admissions High School. (New York University, 1971.) DAI 33A: 83; July 1972.

Regularly and specially-admitted students scored differently on an algebra test. (secondary)

Mardell, Carol Goldstein. The Prediction of Mathematical Achievement from Measures of Cognitive Processes. (Northwestern University, 1972.) DAI 33A: 2768-2769; December 1972.

Both nonverbal-perceptual and verbal-logical cognitive processes were found to be significantly good predictors for mathematical computation and concepts. (grade 5)

Martin, John Frederick, Jr. Evaluation of Elements of Analysis for Preservice Elementary Teachers. (Columbia University, 1972.) DAI 33A: 1062-1063; September 1972.

The experimental course materials appeared to be effective for students with low SAT scores, and no more effective than regular materials for those with high SAT scores. (elementary pre-service)

Massarotti, Michael Charles. Effect of the Spanish Language as Auditory Stimulation During Test Administration on the Measured Achievement of Fifth Grade Spanish-Surnamed Pupils. (University of Denver, 1971.) DAI 32A: 3865-3866; January 1972.

No significant differences on arithmetic reasoning tests were found between groups tested bilingually or only in one language. (grade 5)

May, Daryle Cline. An Investigation of the Relationship Between Selected Personality Characteristics of Eighth-Grade Students and Their Achievement in Mathematics. (The University of Florida, 1971.) DAI 33A: 555; August 1972.

Intuitive-type students performed significantly better on achievement tests than sensing-type students did. No attitude differences were found. (grade 8)

Maytubby, Willard Dorse. Comparative Prediction of Academic Achievement Among "Disadvantaged" and "Middle-Class" Children. (St. Louis University, 1971.) DAI 32A: 4426; February 1972.

Middle-class children performed better than disadvantaged children in arithmetic. (grade 9)

McClure, Clair Wylie. Effectiveness of Mathematics Laboratories for Eighth Graders. (The Ohio State University, 1971.) DAI 32B: 4078; January 1972.

The effectiveness of pre- and post-lab experiences on achievement differed in the two schools involved. Generally, student attitude was favorable. (grade 8)

McCoy, Ronald Eugene. A Study of the Effects of Three Different Strategies of Proof Instruction and Background Factors of Elementary Education Majors for Success in Constructing Deductive Proof in Mathematics. (The Pennsylvania State University, 1971.) DAI 32A: 5091-5092; March 1972.

Students taught to apply logic to the construction of geometric proofs plus building models of the system and the proof achieved higher scores on a proofs test than those only taught formal or applied logic. (elementary pre-service)

McDaniel, Willie Payton. A Study of Teacher Comments as Recorded on Cumulative Records for the Youngest and Oldest Children in the Sixth Grade of Selected Elementary Schools in the Los Angeles Unified School District. (Brigham Young University, 1972.) DAI 33A: 2661; December 1972.

boys, particularly younger boys, had fewer notations indicating success in arithmetic and reading than did girls. (grade 6)

McKnight, Regis Quay. Predictive Value of Selected Criteria for Success in Student Teaching. (The Pennsylvania State University, 1971.) DAI 32A: 5092-5093; March 1972.

The best predictors of student teaching grades were block course grades and content test scores. (elementary pre-service)

McLaughlin, Lynn Mary James. Age and Observational Learning of a Multiple Classification Task. (St. Louis University, 1972.) DAI 33B: 1271; September 1972.

Pupils in grades 2 and 4 were able to reproduce behavior on a block task which they had seen demonstrated; only sixth graders could transfer the information to a different but structurally similar task. Watching a model demonstrate was more effective than practicing by trial and error. (grades 2, 4, 6).

McMahan, Ian Douglass. Causal Attributions and Expectancy of Success: Age and Sex Differences. (The City University of New York, 1972.) DAI 32B: 6689-6690; May 1972.

Females stated significantly lower expectancies than males on the addition task. Success confirming an expectancy was called ability, while performance against expectation was referred to in terms of luck and effort. (grades 6, 10, college)

Meckes, Richard C. A Study to Ascertain the Instructional Index and Questioning Strategy of Mathematics Teachers in Grade 6, and to Determine Their Relationship to Professional Characteristics and Situational Factors. (Southern Illinois University, 1971.) DAI 32A: 4245-4246; February 1972.

Teachers spent 61.5 per cent of class time talking, with 50.2 per cent of this direct and the remainder largely in narrow questions. Only .5 per cent of the questions were in the synthesis category. (teachers in grade 6)

Merrick, John Paul. An Analysis of Nine Performance Based Model Elementary Teacher Education Programs. (Washington State University, 1972.) DAI 32A: 6840; June 1972.

Analysis of the models revealed differences in what type of program, materials, and evaluation should be used. (elementary pre-service)

Mighęrey, Richard Eugene. An Investigation of a Teaching Method to Develop Arithmetic Competencies in Tenth-Grade General Mathematics Students. (The University of Toledo, 1971.) DAI 32A: 3867-3868; January 1972.

No significant difference was found between students given a course emphasizing work with fractions and those in a regular course, but significant gains were made and self-concept was positive. (grade 10)

Montague, Margariete Ann. Use of Matrix Sampling Procedures with Selected Examinee and Item Populations to Assess Achievement in Mathematics. (The University of Wisconsin, 1971.) DAI 32A: 5475; April 1972.

The feasibility of concurrently and randomly sampling examinees and items to obtain group data generalizable to a universe of each was established. (grades 2, 3)

Moore, Bobbie Dean. The Relationship of Fifth-Grade Students' Self-Concepts and Attitudes Toward Mathematics to Academic Achievement in Arithmetical Computation, Concepts, and Application. (North Texas State University, 1971.) DAI 32A: 4426; February 1972.

Self-concept and attitude were significantly related to achievement. (grade 5)

Moore, Teddy R. A Comparison of Secondary Mathematics Teachers -- Participants and Non-Participants -- in National Science Foundation Mathematics Institutes. (Utah State University, 1971.) DAI 32A: 3843; January 1972.

Institute participants tended to use behavioral objectives more frequently and to choose "modern" courses more than non-participants did. (secondary in-service)

Murphy, John Thomas. Beliefs and Practices: A Study of Modernness in Mathematics Teaching in Selected Michigan Public Elementary School Classrooms. (Michigan State University, 1972.) DAI 33A: 2241-2242; November 1972.

Significant differences were found between (1) beliefs of mathematics educators and teachers as to the consistency of a modern approach and (2) teacher beliefs and practices. (elementary in-service)

Myers, Robert Harold, Jr. The Role of the Axiomatic Method in Secondary School Mathematics. (Harvard University, 1972.) DAI 33A: 665-666; August 1972.

The role which the axiomatic method should play as an objective and in selection, organization, and exposition of mathematical content is discussed. (secondary)

Neel, Thomas Edward. An Evaluation of a Pontoon Transitional Design -- Seventh Grade Average Ability Level Students. (University of Southern California, 1971.) DAI 33A: 959; September 1972.

No significant differences in mathematics achievement or attitude were found for groups having the pontoon (team teaching) or a traditional organization. (grade 7)

Neville, Mary C. A Study of the Major Events That Influenced the Introduction of Modern Mathematics Curricula in Selected Primary Schools in Zambia. (The American University, 1972.) DAI 33A: 2082; November 1972.

Recommendations for continued development in mathematics education in Zambia are made. (primary)

Newberg, Philip Frederick. School Achievement and Perceptual and Behavioral Development in Treated Phenylketonurics and Children with Learning Disabilities. (University of Southern California, 1970.) DAI 33A: 622; August 1972.

PKU children achieved lower in arithmetic than normal children did. (ages 4, 5-10, 18)

Nibbelink, William Henry. The Use of an Anecdotal Style of Content Presentation as a Motivational and Instructional Device for Seventh Grade Under-Achievers in Mathematics. (The Ohio State University, 1971.) DAI 32A: 3815; January 1972.

The experimental booklets on counting and operations were found to be effective with both inner- and outer-city under-achievers. (grade 7)

Nichols, Edith June. A Comparison of Two Methods of Instruction in Multiplication and Division for Third-Grade Pupils. (University of California, Los Angeles, 1971.) DAI 32A: 6011; May 1972.

Use of manipulative materials with a discovery approach was found to be more effective than use of abstract and semi-concrete materials with an expository approach for teaching multiplication and division combinations. (grade 3)

Nichols, Lois K. Language as a Facilitating Factor in the Ability to Achieve Conservation of Number. (State University of New York at Albany, 1972.) DAI 33A: 2822; December 1972.

Children who had to answer three questions about why they answered correctly took fewer trials to reach criterion on the conservation tasks than did children who did not answer questions. (grade 1)

Norton, William Arnold. A Study to Determine the Effects of Loudness and Type of Music on Figural and Verbal Creative, Reading Coding, and Arithmetic Computation Tasks. (University of Georgia, 1971.) DAI 32A: 5044-5045; March 1972.

Pupils tended to do better on arithmetic computation when music was low popular and classical. (grade 6)

Noto, Edward Ronald: A Comparison Between Traditional Teaching and Interdisciplinary Team Teaching at the Seventh Grade Level. (St. Louis University, 1972.) DAI 33A: 905; September 1972.

Students in the traditional school scored higher than those in the school having team teaching. (grade 7)

Nowak, Betty Adams. A Study to Compare the Effects of Mathematics Laboratory Experiences of Intermediate-Grade Students on Achievement and Attitudes. (Brigham Young University, 1972.) DAI 33A: 2697; December 1972.

Pupils in grades 5 and 6 did better in a laboratory program than in a non-laboratory program, while fourth graders did better in a conventional program. An individualized laboratory program was more effective than an individualized non-laboratory program. (grades 4-6)

Nowka, Roberta Faye. An Analysis of Achievement and Self-Concept Scores of the Seventh and Eighth Grade Students at the Concho School 1968-1970. (Oklahoma State University, 1971.) DAI 33A: 574-575; August 1972.

Significant changes in arithmetic scores occurred after a year's work with college consultants. (grades 7, 8)

Oakley, Donald Lilly., An Investigation of the Quantitatively Analytic Cognitive Style of Ninth Grade Students. (Cornell University, 1971.) DAI 32A: 6826; June 1972.

An instrument to discriminate between quantitatively analytic and non-quantitatively analytic students was developed. (grade 9)

O'Connell, Richard H. A Diffusion Model for the COLAMDA Project in Colorado. (University of Denver, 1971.) DAI 32A: 3627; January 1972.

Fifty-seven of 63 alternative diffusion strategies were validated by a panel. (secondary)

Oles, Henry John. Factors Associated with Self-Scoring Behavior in Students Using Individually Prescribed Instruction. (University of Pittsburgh, 1971.) DAI 32A: 3796; January 1972.

Pupils misused the scoring keys, though not in individually consistent ways. (grades 3-5)

Olesini, Jose. The Effect of Bilingual Instruction on the Achievement of Elementary Pupils. (East Texas State University, 1971.) DAI 32A: 4844-4845; March 1972.

Significant differences were found between pupils who had bilingual or no bilingual instruction on tests of arithmetic concepts but not computation. (grade 3)

O'Neil, David Robert. A Study of Sixth Grade Teachers' Perceptions Regarding Selected Mathematical Concepts. The University of Iowa, 1971.) DAI 32A: 4845-4846; March 1972.

Teachers' perceptions of mastery levels, importance of specific content, and time were "strikingly" similar. They placed a greater degree of importance on traditional content than on new content. (teachers in grade 6)

Oner, Necla Palamutlu. Impact of Teacher Behavior and Teaching Technique on Learning by Anxious Children. (University of Minnesota, 1971.) DAI 32A: 6215; May 1972.

Supportive and feedback treatments did not significantly affect pupil achievement, but sex and anxiety were related to achievement. (grade 6)

Opper, Phyllis Sylvia. Intellectual Development in Thai Children. (Cornell University, 1971.) DAI 32A: 4846; March 1972.

In general the same stages of development and types of reasoning were found in both rural and urban Thai groups as Piaget had found in Swiss children, though the pace of rural children was less. (ages 6-16)

Pambou ian, Benjamin. An Investigation of the Development of Creative Behavior and Its Relationship to Achievement in Mathematics. (State University of New York at Buffalo, 1972.) DAI 33A: 1039-1040; September 1972.

Specified figural and verbal factors were found to be related to mathematics achievement. (grades 3-6)

Papalia, Diane Ellen. The Status of Some Conservation Abilities Across the Life-Span. (West Virginia University, 1971.) DAI 32B: 4901; February 1972.

On formal operations tasks, conservation ability increased throughout childhood, but some differences were found among older adult groups. (ages 6 to 65-plus)

Paquette, Gerard Arthur. Toward a Theory of Sequencing: Study 1-3: An In-Depth Exploration of the Role of Iconic Representations in the Study of Congruence of Triangles. (The Pennsylvania State University, 1971.) DAI 32A: 6215-6216; May 1972.

Many of the hypotheses relating to transfer without explicit instruction were supported for both "accelerated" and "normal" students. (grade 10)

Parvand, Mohammad H. A Study of Children's Acquisition of Piagetian Concepts. (The Ohio State University, 1971.) DAI 32A: 3671; January 1972.

Practice on relevant components of conservation of weight and substance aided pupils in attaining conservation, with differences found depending on the type of role children used. (ages 5-7)

Paull, Duane Rodney. The Ability to Estimate in Mathematics. (Columbia University, 1971.) DAI 32A: 3567; January 1972.

Pupils were not consistent across tasks in their ability to estimate answers to problems. Correlations of ability to estimate were determined. (grade 11)

Payne, Nell Moorhead. Perceptions of the Actual and Ideal Role of Mathematics Department Chairmen in Selected Georgia Schools. (University of Georgia, 1971.) DAI 32A: 4926-4927; March 1972.

Principals and department chairmen were in agreement on most of the role factors surveyed. (secondary in-service)

Pedee, Richard Douglas. The Relative Effects of Differentiated Staffing on Elementary School Student Achievement in Beaverton Public Schools. (University of Oregon, 1971.) DAI 32A: 6110-6111; May 1972.

Fifth graders in a conventional school scored significantly higher in arithmetic than those in a differential staff school; no differences were found in grade 6. (grades 5,6)

Penner, Herbert Dwayne. An Analysis of Using an Individual Progress Approach to the Teaching of Trigonometry in the Omaha, Nebraska, Public High Schools. (The University of Nebraska, 1972.) DAI 33A: 1421; October 1972.

No significant difference in achievement was found between students using an individual progress or a traditional approach. (grade 11)

Phillips, Ernest Ray. Validating Learning Hierarchies for Sequencing Mathematical Tasks. (Purdue University, 1971.) DAI 32A: 4249; February 1972.

Sequence seemed to have little effect on immediate achievement and transfer to a similar task, but longer-term retention seemed susceptible to sequence manipulation. (grade 4)

Plummer, Sister Mary Jean. The Effect of Preschool Experience on Spatial Perception, (University of Cincinnati, 1971.) DAI 32A: 4493-4494; February 1972.

No difference on a block-counting task was found between Montessori and non-Montessori pupils. (grade 1)

Podojil, Louis Frances. The Relationship Between Level of Aspiration and Change in Mathematical Interests and Attitudes Among Seventh Grade Students. (Kent State University, 1971.) DAI 32A: 5046; March 1972.

Level-of-aspiration scores were not significantly related to changes in mathematical interest or attitudes during the year. (grade 7)

Polmatier, Richard John. An Investigation of the Relationship of Conceptual Tempo and the Ability to Achieve Conservation. (Auburn University, 1972.) DAI 33A: 1027; September 1972.

The relationship between conceptual tempo and the ability to conserve was not found to be consistent across all types of conservation tasks. Reflective pupils were more successful on liquid and number conservation tasks than impulsive pupils were. (grade 2)

Prindeville, Ann Catherine. A Program for Teaching Selected Mathematics Concepts to First-Grade Children Using Manipulanda, Language Training and the Tutor-Tutee Relationship. (University of California, Los Angeles, 1971.) DAI 32A: 6111; May 1972.

Pupils using manipulative materials and language training scored significantly higher than those using a workbook and drill sheets. Use of sixth-grade tutors did not result in better achievement. (grade 1)

Pro, Frank J., Jr. An Investigation of the Counselor's Role with Diagnostic Testing and a Related Teacher Workshop with Junior High School Mathematics Classes in the Gateway School District. (University of Pittsburgh, 1971.) DAI 32A: 6841; June 1972.

No significant difference in student test scores was found after diagnostic testing and related teacher workshops. (teachers in junior high)

Pullman, Howard Wayne. The Relation of the Structure of Language to Mathematical Ability. (Columbia University, 1972.) DAI 33A: 2179; November 1972.

Both verbal conditionality and cognitive structure were found to be "fruitful" in explaining part of the variance in mathematical ability not explained by intelligence. (grade 10)

Purcell, Joseph E. The Relation of Student Classroom Marks and Regents Examination Marks to Teacher Knowledge of Student Standardized Test Scores. (State University of New York at Albany, 1972.) DAI 33A: 2722; December 1972.

No significant differences in student marks were found when mathematics, English, and history teachers were given standardized test data or only urged to seek it. (grades 9-11)

Putbrese, Larry Max. An Investigation into the Effect of Selected Patterns of Grouping upon Arithmetic Achievement. (University of South Dakota, 1971.) DAI 32A: 5113; March 1972.

No significant differences were found among classes taught by whole-group, multi-group, or individualized patterns. (grade 4)

Raeihle, Sister Mary Jane. The Relation Between Elementary School Teachers' Understanding of Properties of the Real Numbers and Pupil Achievement in Mathematics. (Columbia University, 1972.) DAI 33A: 1987-1988; November 1972.

Fifth grade teachers who exhibited knowledge of properties had students who achieved more. (teachers in grade 5)

Rayger, Betty Ruth Muntz. A Five Year Follow-Up Study Comparing the School Achievement and School Adjustment of Children Retained in Kindergarten and Children Placed in a Transition Class. (University of Minnesota, 1972.) DAI 33A: 1526; October 1972.

At the end of grade 3, pupils who had been retained in kindergarten were doing less well only in arithmetic skills than a randomly selected group who had not been retained. (grades 3, 4)

Reeves, Charles Anderson. The Comparative Effects of Two Methods of Introducing Mathematical Induction and Two Methods of Presenting Succeeding Problems. (The Florida State University, 1972.) DAI 33A: 2622; December 1972.

No differences were found between introducing proofs by an inductive sets approach or a semi-concrete approach nor between presenting the algorithmic statement "traditionally" or by a "guided discovery" method. (senior high)

Rettig, William Leo, Sr. Views of Mathematics Held by a Selected Group of Secondary Mathematics Teachers in Pennsylvania. (The Ohio State University, 1971.) DAI 32A: 3571; January 1972.

Teachers with the most favorable view of mathematics were those with the highest GPA in mathematics and the largest number of credits in mathematics and mathematics education. (secondary in-service)

Rhodes, Jon Glenn. A Comparative Study of Individually and Group Administered Visual Motor Gestalt Test as Related to Academic Achievement. (University of Houston, 1972.) DAI 33A: 2792; December 1972.

Significant differences were found between high and low achievers in arithmetic, spelling, and reading on the Gestalt Test. (grade 1)

Rich, Littleton Waldo. The Effects of a Manipulative Instructional Mode in Teaching Mathematics to Selected 7th Grade Inner-City Students. (Temple University, 1972.) DAI 33B: 330; July 1972.

Use of multi-base blocks and Cuisenhaire rods did not negatively affect achievement. (grade 7)

Richards, Leo. A Study of the Relationships Between Selected Conceptual Abilities and Mathematics Achievement Among First Grade Children. (University of Southern California, 1972.) DAI 33A: 2085; November 1972.

"Error production" was found to be the conceptual variable most highly related to mathematics achievement. The analytical mode was preferred by both boys and girls. (grade 1)

Richman, Marilyn D. The Effects of Individual and Group Competition on Productivity and Interpersonal Relationships in Elementary School Children. (St. John's University, 1972.) DAI 33B: 905; August 1972.

Differences among boys and girls and among low and high producers were found for each type of competition studied. (grade 4)

Richter, Robert Henry. A Comparison of Two Methods of Motivation in Teaching Fractions to Fourth and Sixth Grade Pupils. (The University of Arizona, 1972.) DAI 32A: 5114; March 1972.

Sixth graders scored significantly higher when given monetary rewards than when given only verbal praise, while no difference between the two types of rewards was found for fourth graders. (grades 4, 6)

Robertshaw, Carroll Stuart. An Investigation of Attention to Task Behavior, Arithmetic Performance and Behavior Problems in First Grade Children. (University of Kansas, 1971.) DAI 32A: 5642; April 1972.

Token reinforcement and teacher praise contingent on attention to task were more effective in increasing attention and improving arithmetic rate than when contingent on arithmetic performance; both resulted in increased percentage correct. (grade 1)

Ronshausen, Nina Lorraine. A Comparison of the Effects on Achievement and Attitude of Two Methods of Tutoring First-Grade Mathematics in the Inner-City: Programed vs. Directed. (Indiana University, 1971.) DAI 32A: 4494; February 1972.

"Programed" tutoring along with regular instruction was no more effective in increasing mathematics achievement than was regular instruction alone, but "directed" tutoring was more effective in increasing computational skills. (grade 1)

Rousseau, Leon Antonio. The Relationship Between Selected Mathematical Concepts and Retention and Transfer Skills with Respect to Long Division Algorithms. (Washington State University, 1972.) DAI 32A: 6750; June 1972.

No significant differences were found in the retention of four division algorithms (three meaningful, one rote). The rote algorithm was better for transfer to slightly more difficult problems, but for problems of greater difficulty, the quotitive and distributive algorithms were better than rote and partitive algorithms. (grade 4)

Rudolph, Eleanore L. A Survey of Data Processing and Computer Use in Instruction in Illinois Secondary Schools. (Northern Illinois University, 1972.) DAI 33A: 505-506; August 1972.

One-third of the 647 schools surveyed used computers; 54 per cent of these used computers for both instruction and administration. Use for problem-solving in mathematics and science and for teaching data processing accounted for over 80 per cent of computer use in instruction. (secondary)

Sachdev, Sohindar Singh. Evaluation of the Impact of Summer Institutes for Higher Secondary Mathematics Teachers of Delhi, India, on the School Mathematics Curriculum of Delhi. (Utah State University, 1971.) DAI 32A: 6015-6016; May 1972.

No significant difference on objectives was found between participants and non-participants. Participants favored a guided discovery approach and "modern" courses. (secondary)

Samuels, Joseph Maurice. A Comparison of Projects Representative of Compensatory; Busing; and Non-Compensatory Programs for Inner-City Students. (The University of Connecticut, 1971.) DAI 32A: 6725; June 1972.

It was found that more emphasis should be placed on computational mathematics in the two experimental programs. (grade 2)

Sanders, Walter John. Teaching Statistical Decision Making to Junior High School Students. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4333-4334; February 1972.

The statistical decision unit was found to be feasible. (grade 9)

Saperstein, Paul. An Investigation of Pupil Mobility and Pupil Achievement in Reading and Mathematics in a Public Elementary School. (New York University, 1971.) DAI 32A: 5514-5515; April 1972.

No significant differences in achievement were found between frequent and non-frequent transfer groups. (grade 6)

Sawada, Daiyo. Toward a Theory of Sequencing: Study 3-1: Curriculum Hierarchies and the Structure of Intelligence: A Strategy of Organizing Instructional Objectives into Mathematical Systems Employing Basic Piagetian Constructs. (The Pennsylvania State University, 1971.) DAI 32A: 6221-6222; May 1972.

Performance on an objective (using CAI) had little relationship to performance on the inverse objective; that is, the pupils did not seem aware of reversibility inherent in the materials, nor of composition objectives. (elementary)

Schaefer, William Albert. The Relationship of Teaching Methods to Self-Esteem and Achievement in Mathematics Among Seventh and Eighth Grade Students. (Northern Illinois University, 1972.) DAI 624; August 1972.

Self-esteem did not appear to be affected by the individualized or traditional approaches used. In grade 7, one class taught traditionally achieved significantly better. (grades 7, 8)

Schafer, Larry Eugene. Inducing Stage III Seriation Capabilities in Kindergarten Children Through Cue Fading and Reinforcement. (Michigan State University, 1972.) DAI 33A: 624-625; August 1972.

Children acquired and retained specific seriation capabilities on which they were trained, but failed to transfer to tasks with new materials. (kindergarten)

Schimmel, Solomon. Conditional Discrimination, Number Conception and Response Inhibition in Two and Three Year Old Children. (Wayne State University, 1971.) DAI 32B: 6696-6697; May 1972.

All of the children demonstrated learning, but all were not necessarily reacting to numerical features of the task. (ages 2, 3)

Schmalz, Rosemary. The Effects of Two Types of Feedback in Microteaching on the Development of Mathematics Teachers' Questioning Skills. (The Florida State University, 1972.) DAI 33A: 2807-2808; December 1972.

No significant differences in questioning behaviors were found after students viewed videotapes of their own lessons with positive and negative feedback, or viewed tapes of a model teacher, had good points noted, and then analyzed tapes of their own lessons independently. (elementary pre-service)

Schneck, George Robert. An Investigation of Visitation Experiences in an Education Program for Prospective Elementary Teachers. (Michigan State University, 1972.) DAI 33A: 654; August 1972.

Students having full-day participation had more, and more varied, experiences than those in the half-day program. (elementary pre-service)

Schrag, Judith Ann Rubik. Effects of Three Educational Placements for Children with Learning Disabilities in a Rural Area. (University of Idaho, 1972.) DAI 33A: 2203; November 1972.

The children having individualized tutoring plus regular class achieved significantly greater gains than those in a special or a regular class without tutoring. (elementary)

Schultz, James Edward. Approaches to Teaching Mathematics Content to Prospective Elementary Teachers. (The Ohio State University, 1971.) DAI 32A: 3848; January 1972.

Eight approaches were compared; no significant differences in achievement could be attributed to lecture, recitation, or interaction effects. Some differences between groups were specified. (elementary pre-service)

Schwartz, Frederick J. The Impact on Learning of COLAMDA Project Materials on Low Achievers in Mathematics. (University of Denver, 1971.) DAI 32A: 3576; January 1972.

On all tests for grade 7 and most for grade 8, there were no significant differences between groups using or not using COLAMDA materials. (grades 7, 8)

Seegmiller, Conni Ratnoff. Conservation of Quantity: A Cross-Cultural Investigation into the Development of the Concept of Conservation of Quantity in Mexican and American Children Between Four and Nine Years of Age. (New York University, 1971.) DAI 32B: 4262-4263; January 1972.

Mexican children were slower at attaining conservation than were New York children, though the order of acquisition differed from Piaget's findings. (ages 4-9)

Semilla, Lilia V. Moves and Strategies in a Principle Venture in Secondary School Mathematics. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 4495-4496; February 1972.

Expository and heuristic strategies used in teaching a mathematical principle were identified. Teachers preferred to use preparation, assertion, and interpretation moves more than justification and application moves. (secondary in-service)

Sharpe, Jack E. The Application of Contingency Management to a Remedial School Population. (University of Southern California, 1972.) DAI 33A: 1555; October 1972.

Contingency instruction did not increase arithmetic achievement; contingency students did not differ significantly from non-contingency students although instruction time was one-third less. (elementary)

Sheppard, Allan Noel. Changing Learner Conceptual Behavior Through the Selective Use of Positive and Negative Examples. (Indiana University, 1971.) DAI 32A: 4496; February 1972.

Giving divergent examples was superior to giving convergent examples. Giving matched non-examples was better than giving non-matched non-examples. (grade 5)

Sherman, Deaconess Ann. The Relationship of Teacher Behavior and Child Behavior of Four and Five Year Old Black Disadvantaged Children During Distar and During Non-Distar Sessions. (University of Virginia, 1971.) DAI 32A: 4455-4456; February 1972.

Teachers contacted children more frequently and praised more, and children were more attentive and used numbers more frequently during Distar lessons. (ages 4, 5)

Shilgalis, Thomas Walter. Transformations in High School Geometry: A Critical Analysis. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5478-5479; April 1972.

Background information and pedagogical suggestions are included. (grade 10)

Shoecraft, Paul Joseph. The Effects of Provisions for Imagery Through Materials and Drawings on Translating Algebra Word Problems, Grades Seven and Nine. (The University of Michigan, 1971.) DAI 32A: 3874-3875; January 1972.

Except for low achievers, who seemed to derive particular benefit from representing problems with materials, students taught to translate directly performed as well as those using material or pictorial referents. (grades 7, 9)

Short, Byrl G. A Study of Secondary School Teachers' Knowledge of and Attitudes Toward Educational Research. (The Pennsylvania State University, 1971.) DAI 33A: 87; July 1972.

Mathematics teachers had significantly higher scores on the 40-item knowledge of educational research test than did other teachers. (secondary in-service)

Silbaugh, Charlotte Vance. A Study of the Effectiveness of a Multiple-Activities Laboratory in the Teaching of Seventh Grade Mathematics to Inner-City Students. (The George Washington University, 1972.) DAI 33A: 205; July 1972.

Mathematics laboratories, attended twice a week, appeared to have a favorable effect on achievement scores. (grade 7)

Simmons, Mary Patricia. The Effects of Verbal Language Deficit Associated with Profound Prelingual Hearing Impairment on Children's Representation of Space. (University of California, Los Angeles, 1971.) DAI 32A: 6254; May 1972.

No significant differences among hearing and hearing-impaired children was found on spatial tasks at ages 3-5, but at ages 6-8 hearing children scored better on the most difficult task. (ages 3-8)

Singletary, Richard Edward. A Study Designed to Assess the Relationship of Instruction to the Performance of Eighth Grade Students on Euclidean Sectioning Tasks Involving Certain Selected Solids. (University of Washington, 1972.) DAI 33A: 2089-2090; November 1972.

No significant differences, except for IQ and ability, were found between students taught with or without instruction in solid geometry and perspective drawing. (grade 8)

Singleton, David George. The Impact of an In-Service Training Program in Modern Mathematics on Teachers' Knowledge of Modern Math Concepts, Teachers' Attitude Toward Mathematics, and Pupils' Performance on Standardized Achievement Tests. (Duke University, 1971.) DAI 32A: 5661; April 1972.

The in-service program was effective in improving teachers' understanding of and attitude toward mathematics. Pupils gained in achievement of arithmetic concepts more after teachers had the in-service program. (teachers in grades 1-8)

Skvarcius, Romualdas. Mathematics Performance as a Function of the Discrepancy in Perception of Roles in a Mathematics Classroom. (George Peabody College for Teachers, 1971.) DAI 32A: 3802; January 1972.

Discrepancies in student and teacher perception of mathematics-related roles were related to both achievement and grades. (grade 9)

Smith, Gerald Asa. Contents of Mathematics Curriculum for Seventh Grade: Practices and Recommended Program in Los Angeles. (University of Southern California, 1972.) DAI 33A: 560; August 1972.

Basic operations with whole numbers, fractions, and decimals were considered central in instruction. Individualized, remedial, and applicable materials were viewed as necessary. Other topics were also noted. (teachers in grade 7)

Smith, Ian David. The Effects of Computer-Assisted Instruction on Student Self-Concept, Locus of Control, and Level of Aspiration. (Stanford University, 1971.) DAI 32A: 4432; February 1972.

No significant differences on the affective measures were found between non-CAI and CAI groups (using a mathematics drill-and-practice program). (grades 7-9)

Smith, Robert Francis. A Diagnostic Study of Pupil Performance on a Test of Skills Relevant to the Mastery of Place-Value Tasks. (Fordham University, 1972.) DAI 33A: 87-88; July 1972.

Difficult subordinate skills for place-value mastery were identified for low- and high-achievers. (grade 2)

Soriyan, Moses Adedoyin. Measurement of the Goodness-of-Fit of Rasch's Probabilistic Model of Item Analysis to Objective Achievement Tests of the West African School Certificate Examination. (University of Pittsburgh, 1971.) DAI 32A: 4433; February 1972.

The model of item analysis could fit a mathematics test, as well as other tests. (secondary)

Spencer, Rosemary Yarr. Application of a Learning Hierarchy to Sequence an Instructional Program and Comparison of This Program with Reverse and Random Sequences. (The Florida State University, 1971.) DAI 32A: 6299-6300; May 1972.

No significant differences were found between groups who used an algebra program in forward, reverse, or random sequence, except for low-ability students, for whom the forward program was best. (grade 9)

Spikell, Mark A. A Development of Analytic Methods and Techniques for Sketching the Graphs of Factorable Polynomial and Rational Functions Without the Use of Calculus. (Boston University School of Education, 1972.) DAI 33A: 2698; December 1972.

A pamphlet was developed to provide an in-depth development of analytic curve-stretching techniques, for use as a supplement to the regular secondary school mathematics curriculum. (secondary)

Stainback, William Clarence. Effects of Pupil-To-Pupil Tutoring on Arithmetic Achievement and Personal and Social Adjustment. (University of Virginia, 1971.) DAI 32A: 4456; February 1972.

No significant differences in achievement or other factors were found for groups using tutoring or non-tutoring. (grades 5-7)

Stenger, Donald J. An Experimental Comparison of Two Methods of Teaching the Addition and Subtraction of Common Fractions in Grade Five. (University of Cincinnati, 1971.) DAI 32A: 3676; January 1972.

The group taught with a subset ratio procedure achieved significantly better than the group taught by another (unspecified) procedure on both immediate and retention tests, with high-IQ students scoring higher than low-IQ students. (grade 5)

Stephens, Lillian Sklaire. A Study of Aspects of Individualization in Informal British Primary Schools. (New York University, 1972.) DAI 33A: 1335; October 1972.

The most frequently observed activities were mathematics (26 per cent) and reading (25 per cent). (primary)

Stephenson, Carl Gene. A Comparison of the Postulational Structure of the Synthetic, Transformation and Vector Approaches to Plane Geometry. (The University of Oklahoma, 1972.) DAI 33A: 962; September 1972.

Objectives, methods of proof, and the development of topics in two contrasting textbooks were examined. (grade 10)

Stern, Alfred M. Intraclass Grouping of Low Achievers in Mathematics in the Third and Fourth Grades. (University of California, Los Angeles, 1971.) DAI 32A: 5539; April 1972.

Low achievers who were grouped and used a textbook for low achievers scored higher on achievement tests and had better attitudes than low achievers who were grouped but did not use the special textbook or who were neither grouped nor used the special textbook. (grades 3, 4)

Stiles, Frederick Arthur. An Analysis of Two Approaches to the Teaching of Mathematics Courses for Prospective Teachers. (The University of Texas at Austin, 1971.) DAI 32A: 6113; May 1972.

Arguments for the use of a Socratic approach rather than the current (lecture) approach are presented. (pre-service)

Stilwell, Kenneth James. Attitude Affectation from Video Recording in Secondary Mathematics Methods Class. (University of Northern Colorado, 1971.) DAI 32A: 3850; January 1972.

Critiquing videotapes of their teaching (of role-playing peers) had no significant effect on the attitudes of students. (secondary pre-service).

Stocks, Sister Tina Marie. The Development of an Instructional System Which Incorporates the Use of an Electric Desk Calculator as an Aid to Teaching the Concept of Long Division to Educable Mentally Retarded Adolescents. (Columbia University, 1972.) DAI 33A: 1049-1050; September 1972.

All of the EMR students improved in their division skills after instruction with calculators. (secondary, EMR's)

Stone Gwen Ellen Gibbs. Three Approaches to Assessing the Conservation of Weight Concept. (Iowa State University, 1972.) DAI 33A: 199; July 1972.

No significant differences between levels of understanding when equivalence or identity approach tests were used were found; scores on visual modality tasks were significantly higher than on kinesthetic modality tasks. (ages 5-12)

Studer, Marilyn Rita. The Relationship of Discovery Methods in Mathematics to Creative Thinking and Attitudes Toward Mathematics. (The Ohio State University, 1971.) DAI 32A: 3816; January 1972.

Pupils in expository classes were superior to those in discovery classes on the fluency factor. In grade 6, expository classes were more creative; in grade 4, discovery classes were more creative. Creativity was not directly related to SES. (grades 4, 6)

Sumagaysay, Lourdes Sonza. The Effects of Varying Practice Exercises and Relating Methods of Solution in Mathematics Problem Solving. (University of Toronto, 1970.) DAI 32A: 6751; June 1972.

The moderately varied sequence was more effective than either the stereotyped or highly varied sequence. The relating method appeared to be better than the unrelated method, in which each problem type used a different algorithm. (secondary)

Swize, Lydia Marie. The Relationship Between Performance on Piagetian Conservation Tasks and Intelligence and Achievement in Educable Mentally Retarded Children. (University of Northern Colorado, 1971.) DAI 32A: 3806; January 1972.

Conservation appeared to be highly related to arithmetic achievement for the mentally retarded group studied; correlations with other measures were also cited. (ages 9-14, EMR's)

Swize, Myron Theodore. Prediction of Piagetian Conservation for Second Grade Mexican-American and Anglo-American Childrem. (University of Northern Colorado, 1971.) DAI 32A: 5624; April 1972.

Arithmetic achievement scores correlated significantly with the ability to achieve conservation of continuous quantity; other predictors were cited. (grade 2)

Tack, Robert S. The Effectiveness of the Westinghouse Learning Center Program Involving a Performance Contract on Reading and Mathematics Achievement of Educationally Deprived Children. (Brigham Young University, 1971.) DAI 32A: 4334; February 1972.

No significant difference was found on mathematics subtests between groups using programmed materials developed for a performance contract or the regular textbook. (grades 2-4)

Tanner, Verdelia Jane Lindsey. A Mathematics Program for Primary-Age Children: Concrete-Operational Approaches to Number Concepts. (Brigham Young University, 1972.) DAI 33A: 2674; December 1972.

A workbook developed for the beginning concrete-operation stage of number development (reflecting Piaget's implications) was found to be superior to commercial programs for developing arithmetic concepts; no differences were found for computation skills. (primary)

Taylor, Harold Doyle. A Comparative Study of Compulsory Homework Versus Non-Compulsory Homework in Algebra I and Geometry I at Hillsdale High School. (University of Northern Colorado, 1971.) DAI 32A: 3876; January 1972.

No significant differences in achievement were found between classes having compulsory or non-compulsory homework, although students and parents both preferred compulsory homework. (grades 9, 10)

Taylor, Loretta May. Independent Study Versus Presentation by Lecture and Discussion: A Comparative Study of Attitude and Achievement in Two Algebra I Classes. (University of Northern Colorado, 1971.) DAI 32A: 3877; January 1972.

A lecture-discussion class did not achieve significantly more than an independent-study class. (grade 9)

Temple, Austin Limiel, Jr. The Effectiveness of Semantic Differential Forms in Measuring Attitudes of Prospective Elementary School Teachers. (George Peabody College for Teachers, 1971.) DAI 32B: 4091-4092; January 1972.

The Dutton and the Aiken-Dreger attitude scales were both found to be significant predictors of achievement; the semantic differential instrument was not found to be a good predictor. (elementary pre-service)

Thiessen, Richard Eugene. The Child's Concept of Convexity. (The University of Oklahoma, 1971.) DAI 32A: 3677; January 1972.

Performance increased with age level. Understanding of "inside" as the interior of a simple closed curve seemed clear at all ages, but understanding of points of the curve was less clear. Interpretations of "betweenness" differed. (ages 5, 8, 11)

Thomas, Bonnie Brown. An Evaluation of Individually Prescribed Instruction (IPI) Mathematics in Grades Five and Six of the Urbana Schools. (Illinois State University, 1972.) DAI 33A: 1335; October 1972.

The IPI method did not produce significant achievement gains over the conventional method. In grade 6, attitude was more favorable toward IPI. (grades 5, 6)

Thomas, Buren G. Continuous Progress Advanced Algebra in the Lincoln Public Schools -- A Study of Achievement and Attitude Toward Mathematics. (The University of Nebraska, 1971.) DAI 32A: 6113-6114; May 1972.

Achievement and attitude were not significantly different in continuous progress or traditional algebra II classes. (grade 11)

Tidwell, Eleanor Louise. A Study of Three Methods of Teaching Associated with Certain Characteristics of Advanced High School Mathematics Students. (University of Miami, 1971.) DAI 32A: 5539-5540; April 1972.

No significant differences were found for boys taught by directive or non-directive teachers or by independent study. High-rigid girls achieved better with non-directive teachers. (secondary)

Townsend, James W. A Comparison of Teacher Style and Pupil Attitude and Achievement in Contrasting Schools -- Open Space, Departmentalized, and Self-Contained. (University of Kansas, 1971.) DAI 32A: 5679-5680; April 1972.

Better achievement growth occurred in the self-contained and departmentalized schools than in the open-space school. (grades 2, 6)

Traywick, Laura Ann McClendon Symank. Kindergarten Experience and Achievement of Elementary School Children. (The University of Texas at Austin, 1971.) DAI 32A: 5481; April 1972.

In grades 2-6, no significant differences in arithmetic achievement were found for pupils who attended or did not attend kindergarten. (grades 1-6)

Trenary, Diana Simms. Effects of Grade Level, Sex, Cues and Feedback, Problem Type, and Question Direction on Children's Ability to Solve Verbal Transitivity Problems. (Syracuse University, 1971.) DAI 32B: 6040; April 1972.

Boys gave more correct responses to verbal transitivity problems than did girls. There were more correct answers to logical problems; reverse problems were most difficult. Ability to seriate did not necessarily precede successful transitivity solutions. (grades 2, 4)

Troutman, Anaria Price. Development of a Specific Cognitive Observation System for the Analysis of Mathematics Teaching. (The University of Florida, 1971.) DAI 33A: 668-669; August 1972.

A taxonomy of 41 mathematics-specific cognitive behaviors was developed into an observation system that was found to be feasible. (elementary)

Van Akin, Frank Everett. An Experimental Evaluation of Structure in Proof in High School Geometry. (Volumes I-III). (University of Minnesota, 1972.) DAI 33A: 1425; October 1972.

No significant differences in achievement of geometry facts and relations or ability to reason logically were found between groups using the paragraph style or the two-column format for proofs. (grade 10)

Verheul, Gustav Wilhelm. A Comparison of the Effects of Individually Prescribed Instruction and Conventional Textbook Instruction on Mathematics Learning of Selected Sixth Grade Students. (The Florida State University, 1971.) DAI 32A: 4853-4854; March 1972.

Pupils having conventional textbook instruction achieved higher than those using IPI. (grade 6)

Vitello, Stanley John. The Effect of Three Variables on the Solution of Verbal Problems Requiring Quantitative Class Inclusion Among Educable Mentally Retarded Children. (The University of Connecticut, 1972.) DAI 33A: 2795; December 1972.

Numerically equal subsets resulted in significantly more correct answers. The MA 10 group performed statistically better under the two pictures and iconic presentations; differences at other MA levels were not significant. EMR's understood the inclusion relationship about two mental age years later than normal children. (MA 7-10, EMR's)

Von Kuster, Lee Norman. A Study of Opinions About the Preparation Programs for Secondary School Mathematics Teachers. (University of Montana, 1971.) DAI 32A: 3852-3853; January 1972.

Less than half of the Montana teachers surveyed felt highly prepared to teach content skills; less than one-third felt highly prepared to teach applications. Many felt inadequately prepared on other professional tasks. (secondary pre- and in-service)

Wallender, Arnold Lee. An Experimental Study Comparing Three Strategies for Reducing Prompt and Knowledge of Results Information in a Programed Unit on Addition of Algebraic Fractions. (Southern Illinois University, 1971.) DAI 32A: 5118; March 1972.

No significant difference was found on the repetition problems subtest between groups who had complete or decreasing knowledge of results. On the induction problems subtest, differences were found favoring well-prepared students having gradually rather than abruptly decreased knowledge. (grade 9)

Ward, Ronald Allison. A Comparative Study of the Ability of Fourth Year High School Mathematics Students to Use the Principle of Mathematical Induction and the Well Ordering Principle to Prove Conjectures. (The Florida State University, 1971.) DAI 32B: 5337; March 1972.

Students performed significantly better using mathematical induction than using the indirect inductive technique. The well-ordering technique followed by mathematical induction was better than the reverse order. (grade 12)

Waters, William Meade, Jr. A Study to Test the Effectiveness of a Circular Geoboard as an Instrument for Teaching Selected Arc-Angle Theorems. (The Florida State University, 1971.) DAI 32B: 6530-6531; May 1972.

No significant differences were found between students using a circular geoboard, geosheets, or conventional methods. Spatial perception, aptitude, prior achievement, and attitude scores did not affect achievement. (grade 10)

Webb, Leland Frederick. Interaction Effects Between Selected Cognitive Abilities and Instructional Treatment in Algebra. (The University of Texas at Austin, 1971.) DAI 32A: 5540; April 1972.

No aptitude-treatment interaction was found on transfer or time scores for spatial visualization and general reasoning used as predictors for a lesson on inequalities. (grade 11)

Weddle, Edith George. An Appraisal of Selected Aspects of the Teacher Education Program at East Texas State University Based on a Follow-Up Study of Beginning Elementary Teachers. (East Texas State University, 1971.) DAI 32A: 5097; March 1972.

One mathematics course was considered adequate. (elementary in-service)

Weeden, Robert Edward. A Comparison of the Academic Achievement in Reading and Mathematics of Negro Children Whose Parents Are Interested, Not Interested, or Involved in a Program of Suzuki Violin. (North Texas State University, 1971.) DAI 32A: 3582; January 1972.

The violin program (which includes extensive parental involvement) did not affect mathematics or reading achievement. (grades 1, 2)

Wehner, Susan Lipschitz. On the Development of More and Less. (Columbia University, 1971.) DAI 33B: 476; July 1972.

Addition and subtraction (of objects) did not seem significant cues in development of "more-less" concepts. "More" was developed before "less". (ages 2, 3)

West, Joseph Floyd. A Study of Inservice Education for Secondary Teachers of Mathematics in Alabama. (University of Alabama, 1971.) DAI 32A: 4854; March 1972.

Activities reported to be of significant value were meetings sponsored by mathematical organizations, summer workshops, professional reading, and curriculum experimentation and research. (secondary in-service)

Wheaton, Wilbur Dean. An Evaluation of an Individualized Learning Program in a California Union High School District. (University of Southern California, 1971.) DAI 32A: 5540-5541; April 1972.

Students taught by individualized methods did not differ significantly in mathematics achievement from those taught by traditional methods. Traditionally-taught students gained significantly more in arithmetic applications. (secondary)

Wheeler, Larry Eugene. The Relationship of Multiple Embodiments of the Regrouping Concept to Children's Performance in Solving Multi-digit Addition and Subtraction Examples. (Indiana University, 1971.) DAI 32A: 4260; February 1972.

Pupils proficient in regrouping two-digit addition and subtraction examples on three or more concrete embodiments scored significantly higher on multi-digit tests than those not proficient in using concrete materials. A significant correlation was found between number of embodiments manipulated and achievement on multi-digit examples. (grade 2)

Wheeler, Otis V., Jr. The Relative Effectiveness of Two Different Mathematics and Science Programs Used with Disadvantaged First Grade Children. (University of Missouri-Columbia, 1971.) DAI 32A: 4931; March 1972.

The process-oriented coordinated mathematics-science program was as effective as the content-oriented separate textbook program. (grade 1)

Whipple, Robert M. A Statistical Comparison of the Effectiveness of Teaching Metric Geometry by the Laboratory and Individualized Instruction Approaches. (Northwestern University, 1972.) DAI 33A: 2699-2700: December 1972.

Students who used a laboratory approach with manipulative materials scored higher than students using individualized instruction units. (grade 8)

Whitcomb, Barry Michael. The Effects of Differentially Reinforcing Stimuli on the Learning of Arithmetical Concepts via Computer-Assisted Instruction. (University of Maryland, 1972.) DAI 33A: 509; August 1972.

The schedule of reinforcement made little difference in achievement of square root, per cent, decimal, and fraction ideas presented via CAI. (grades 5, 6)

White, Bobby Joe. An Investigation of Kindergarten Experiences and Environment as Related to Children's Performance on Conservation Tasks of Quantity, Substance, and Number. (East Texas State University, 1971.) DAI 32A: 5053-5054; March 1972.

No significant relationship was found between kindergarten experience and conservation of substance. For conservation of quantity and number, significant differences were found between affluent children who had attended and disadvantaged children who had not attended kindergarten. (ages 5, 6)

White, Virginia Taffinder. An Evaluation Model to Test Teaching-Learning Units for Individualized Instruction in Mathematics. (University of Washington, 1972.) DAI 33A: 2247-2248; November 1972.

Inquiry lessons significantly increased critical thinking, achievement and retention scores for average and high-ability students. Laboratory lessons significantly increased achievement and retention scores for low- and average-ability students. (grade 10)

Whyte, Ronald Alexander. A Quasi-Longitudinal Study of the Relationship of Age of School Entrance to Achievement and Retention. (The University of Michigan, 1971.) DAI 32A: 6077; May 1972.

Early-entering-first-grade students did not achieve as well in arithmetic as late-enterers across grades 3, 6, and 8. (grade 8)

Williamson, Bruce Merle. A Comparison of a Natural Algorithm with the Inversion Algorithm for Teaching the Division of Rational Numbers. (University of Minnesota, 1972.) DAI 33A: 150; July 1972.

No significant difference was found between the two methods for division of fractions. (grade 6)

Womack, Elton Lamar. The Educational and Employment Status of Mathematics Teachers Who Graduated from Louisiana Teacher Education Institutions 1965-1969. (The Louisiana State University and Agricultural and Mechanical College, 1972.) DAI 33A: 2229-2230; November 1972.

Nearly two-thirds of the teachers taught only mathematics. Algebra was more frequently the full-time assignment than any other mathematics course. (secondary in-service)

Woods, Don Paul. A Study of Elementary Student Achievement and In-Service Training to Develop Curriculum in Danville, Illinois. (Illinois State University, 1972.) DAI 33A: 2059; November 1972.

A significant relationship was found between fourth-grade teachers' participation in curriculum development and pupil achievement. (teachers in grades 4, 6)

Wooldridge, Glyn Keith. Formative Evaluation Model and Its Application to a Pre-Calculus Course in Probability and Statistics. (The University of Texas at Austin, 1971.) DAI 32B: 7183-7184; June 1972.

The validation of a preliminary edition of textbook materials was described. (grade 12)

Wozniak, Robert Howard. Level of Verbal Pre-Training, Perceptual Salience of Internal Relation, and Type of Stimulus Display as Determinants of Second-, Fourth-, and Sixth-Grade Children's Judgments of Comparative Fullness. (The University of Michigan, 1971.) DAI 32B: 4272; January 1972.

Children apparently used an "internal subdivision ratio" more than absolute size. Training was found to be effective but had limited transfer. (grades 2, 4, 6)

Yates, Daniel Sherman. The Development and Evaluation of a Text in the Topology of the Plane for Secondary Teachers. (The Florida State University, 1971.) DAI 32A: 6279-6280; May 1972.

In general, the developed text was found to be appropriate in teaching topological concepts. (secondary in-service)

Yonally, James Lewis. Effect of a Preschool Experience on the Academic Achievement and Social Adjustment of Kindergarten and Second-Grade Children. (University of Kansas, 1972.) DAI 33A: 2679-2680; December 1972.

No significant differences in arithmetic computation or concepts scores were found between second graders who had or did not have preschool experience. (kindergarten, grade 2)

Young, Jerry Leroy. Transformations and Isometries: A Unit for Prospective Secondary Mathematics Teachers. (University of Northern Colorado, 1971.) DAI 32B: 4095-4096; January 1972.

The developed unit was found to be successful. Attitudes toward geometry were significantly changed by the unit. (secondary pre-service)

Young, Robert Manning. Perceptions of Selected Groups of Educators with Regard to the Usefulness of a Computer in Education. (Wayne State University, 1972.) DAI 33A: 2059-2060; November 1972.

The computer is viewed as being very useful in mathematics, while its usefulness in other subject areas is viewed with uncertainty. (secondary)

Zeddies, Melvin Louis. The Effectiveness of a National Science Foundation Institute in Mathematics as Reflected in Teacher and Student Attitudes and Student Achievement. (United States International University, 1972.) DAI 33A: 1067-1068; September 1972.

No significant difference was found in the attitudes toward mathematics of teachers who had or had not attended an NSF Institute. Attitudes of students of participating teachers were not significantly different, but achievement increased significantly. (secondary in-service)

Zediker, Phillip Loren. The Application to Above Average Sixth Grade Students of Programmed Instruction for High School Equivalency Test Preparation. (University of Illinois at Urbana-Champaign, 1971.) DAI 32A: 5628-5629; April 1972.

Pupils did not achieve mastery on the program, but they gained more than pupils in a regular program. (grade 6)

Zilisch, Jean Miller. A Developmental Investigation of Classification Behavior of Normal and Retarded Children Under Work and Play Conditions. (University of Minnesota, 1971.) DAI 32A: 4438; February 1972.

Normal and mentally retarded children showed a similar pattern of development of classification skills, related to mental age. (pre-school-grade 1)

Zinn, Bennie Ardist, Jr. Extending the Teaching of Multiplication Facts at the Seventh Grade Level. (Texas A & M University, 1971.) DAI 32A: 4263; February 1972.

Nine lessons on two-digit multiplication appeared to be effective. (grade 7)