This is the 13th annual listing of research on mathematics education. Annotated references are organized alphabetically by author within three categories: (1) research summaries; (2) journal-published reports; and (3) dissertation abstracts. An index is also provided to help locate references to designated mathematical topics. Topic areas include: achievement; algebra; arithmetic operations; attitudes/anxiety; calculators and computers; cognitive style; diagnosis and remediation; ethnic and social variables; geometry and measurement; learning; learning disabilities; mathematics materials; number and numeration; organizing for instruction; problem-solving; sequencing; sex differences; and test analysis. Accompanying the author's name in this index is a grade-level designation. In addition, each annotation listed in the three major categories also includes a grade-level (or age-level) designation. Annotations generally indicate one principal finding of a study, although most have additional findings. Therefore, the original report should be checked for other results as well as for limitations affecting the validity of the findings. Several studies in which mathematics education was not the primary focus are also included. Such studies are usually not annotated. (JN)
RESEARCH ON MATHEMATICS EDUCATION REPORTED IN 1982

Marilyn N. Suydam, The Ohio State University

JOURNAL FOR RESEARCH IN MATHEMATICS EDUCATION

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For additional details on the submission of manuscripts, see the statement of information for contributors in the January 1983 (Vol. 14) issue.

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JOURNAL FOR RESEARCH IN
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JULY 1983, VOLUME 14, NUMBER 4

226 . . . EDITORIAL
Jeremy Kilpatrick

227 . . . RESEARCH ON MATHEMATICS EDUCATION
REPORTED IN 1982
Marilyn N. Suydam

228 . . . Research Summaries

230 . . . Articles

258 . . . Dissertations

294 . . . Journals Searched

296 . . . Index
Many mathematics educators in American colleges and universities are housed in a department that carries "curriculum and instruction" in its title. Perhaps it's fitting, then, that these two abstractions cover the lion's share of recent research in mathematics education. The comparison of instructional methods has always been a popular research topic, and the curriculum development efforts of the past two decades managed to elevate the examination of curricula to a higher level on the nation's research agenda. A glance at the titles of the studies surveyed in this issue will confirm that researchers are still largely preoccupied with matters of curriculum and instruction.

The current "crisis" in mathematics education, however, as reported by the media, seems concerned less with what mathematics is being taught or how it is being taught than with who is teaching it. At the May 1982 national convocation on the state of precollege education in mathematics and science, sponsored by the National Academies of Science and Engineering, scarcely a word was uttered about curriculum development or instructional improvement—apart from how these might be affected by technology (meaning the computer). Instead, the focus of attention was on teacher education and re-education, as well as on how teaching might be made a more attractive and rewarding career. A similar focus could be seen at the February 1983 conference of the National Institute of Education on teacher shortages in mathematics and science. Congress may act to fund some research and development concerned with curriculum and instruction, but its attention seems drawn primarily to the cadre of mathematics and science teachers—who they are, how their qualifications might be improved, how they might be encouraged to remain in teaching, and how others might be encouraged to enter.

Although curriculum and instruction still deserve our attention, maybe the time is ripe for more researchers to take a closer look at mathematics teachers and at the settings and circumstances in which they work. We know very little about the teacher's professional life—about how mathematics teaching looks from the inside. Can we paint a picture of the mental life of mathematics teachers? Can we, so to speak, walk a kilometer in their moccasins? Some researchers are attempting such feats, but their work is not yet well represented in these pages.

A changing role for the mathematics teacher appears to be in the offing. In his reaction paper at the NIE conference, Bob Stake argued that we must not depend on tomorrow's teachers to be knowledge givers at the front of a class. Instead, social and epistemological conditions will require teachers to be more oriented to individual learning, to what pupils and teachers are already interested in, to out-of-school learning opportunities, and to pupils' willingness to work. Will the research enterprise contribute to this change, or will it lag behind?
RESEARCH ON MATHEMATICS EDUCATION REPORTED IN 1982

MARILYN N. SUYDAM, The Ohio State University

In this 13th annual listing of mathematics education research to appear in JRME, the references are given alphabetically by author within three categories: research summaries, articles, and dissertations. Some studies in which mathematics education was not the primary focus are included. Such studies are usually not annotated, as are studies focused on mathematics education. Annotations generally indicate one principal finding of a study, although most studies have additional findings. The original report should be checked for other results as well as for limitations affecting the validity of the findings.

Some readers will note a trend: The number of dissertations is decreasing, whereas the number of articles is increasing. For 1980, the listing included 359 dissertations and 195 articles (including summaries); for 1981, 360 dissertations and 219 articles; for 1982, 284 dissertations and 283 articles. The decline in the number of dissertations can probably be attributed to the smaller number of graduate students in mathematics education. The increase in the number of articles may be a result of new journals publishing research reports. Another factor, however, is that two other persons, Karen Fuson and Jeremy Kilpatrick, searched several journals not available to me. I appreciate their help! (If there are others who would like to aid in this search process, please contact me.) Some references are undoubtedly overlooked, but we are trying to be as comprehensive as possible.

I would also like to thank another person who has contributed substantially to this listing for many years: Beverly Brooks Keith, from State College, Pennsylvania. She has searched half the journals; without her help, this listing would not exist. She is also the one who has typed the listing each year (correcting my errors as she does so!). I trust she knows how much I have appreciated her help.

I hope you find the listing useful. If you have changes to suggest, please let me know.

DAI is used to refer to Dissertation Abstracts International. Order numbers are included: orders should be sent to University Microfilms International, P.O. Box 1764, Ann Arbor, MI 48106.

Funds for the preparation of this listing were provided in part by the Clearinghouse for Science, Mathematics and Environmental Education pursuant to contract no. 400-78-0004 with the National Institute of Education, U.S. Department of Education. Opinions expressed in this report do not necessarily reflect the positions or policies of NIE or the U.S. Department of Education.
Research Summaries

One listing of research reports and 22 articles summarizing or discussing research findings were located.


Marilyn N. Suydam


This twelfth annual annotated listing includes 13 research summaries, 206 journal-published reports, and 360 dissertations for kindergarten through post-secondary levels. An index is included. (grades K-12, college)

Suydam, Marilyn N. Update on Research on Problem Solving: Implications for Classroom Teaching. *Arithmetic Teacher* 29: 56-60; February 1982. [elementary]


This section contains 260 articles. The list of journals searched and the number of articles from each source may be found at the end of the total listing.


The self-instruction package resulted in "meaningful increases" in the rate of correctly performed mathematics problems for three of the four pupils.  [ages 11-13 (MRS)]


Anderson, Ronald E.; Welch, Wayne W.; and Harris, Linda J. Methodological Considerations in the Development of Indicators of Achievement in Data from the National Assessment. Journal of Educational Measurement 19: 113-124; Summer 1982.

Mathematics data from NAEP were analyzed to ascertain procedures for developing indicators of achievement.  (age 17)

Anglin, Gary J.; Schwen, Thomas M.; and Anglin, John B. The Interaction of Learner Aptitudes with Instructional Treatment in Quadratic Inequalities. ECTJ 30: 131-160; Fall 1982.

Several significant interactions were found between pictorial or symbolic treatments and aptitudes.  (college)


Archer, Peter and Edwards, John R. Predicting School Achievement from Data on Pupils Obtained from Teachers: Toward a Screening Device for Disadvantage. Journal of Educational Psychology 74: 761-770; October 1982. [age 5]


Armstrong, Jane M. and Price, Richard A. Correlates and Predictors
Most strongly related to participation were positive attitudes, perceived need, and positive influences of others. (grade 12)

Third grade appears to be the transitional age with respect to memory structure for addition, with half the children counting and half retrieving basic addition facts from memory. (grades 3, 4, 6)

Correlations between NLSMA test item difficulty and readability measures were less than 0.3. (grades 7, 8)

Computation, problem interpretation, reading, and integration can each be major causes of problem-solving difficulty. (grade 6)

The study-skills treatment produced significant improvement in mathematics anxiety and achievement on the posttest; after three weeks, cue-controlled relaxation was superior. (college)


Scores on the cardinality task were significantly lower than those on the comparison tasks. (grades K, 4, teachers)

Bar-Tal, Daniel; Raviv, Amiram; Raviv, Alona; and Bar-Tal, Yoram.
Consistency of Pupils' Attributions Regarding Success and Failure. *Journal of Educational Psychology* 74: 104-110; February 1982.


The earth science class given quizzes on a microcomputer scored higher on a computer literacy test than a mathematics class running programs and solving problems on a microcomputer. (elementary preservice)


Both factors correlated significantly with achievement, but cognitive development was superior in accounting for variance. The geometry course improved spatial visualization. (elementary preservice)


Details of children's responses to interview items, as well as conclusions, are given. (ages 8-10)


Boys and girls performed similarly on the verbal SAT, but boys had a significantly higher mean score on the math SAT. (elementary, junior high)


The sex difference favoring males in mathematical reasoning ability was still evident after several years. Males were favored in
participation in mathematics and performance on the SAT-M and other tests. (college)

Berg, Cynthia; Hertzog, Christopher; and Hunt, Earl. Age Differences in the Speed of Mental Rotation. *Developmental Psychology* 18: 95-107; January 1982. [adults]


Children applied rules that were adequate for simple problems but had to be replaced to solve more complex problems. (grades 2-4)


An increment in the number of algorithms underlying the responses on a test affected the dimensionality of the data. (grade 7)


Demonstration and modeling plus feedback were sufficient to increase some students' ability to generalize; others required more interventions. (ages 8-11)


Students' ordering of operations and use of brackets was found to be ambiguous. (forms 2-5)


Breland, Hunter M. and Griswold, Philip A. Use of a Performance Test as a Criterion in a Differential Validity Study. *Journal of Educational Psychology* 74: 713-721; October 1982. [college]

For remedial level courses, the DTMS appeared more valid than SAT-M scores for predicting course grades. For more advanced courses, higher-level DTMS tests were as accurate for prediction as the SAT-M. (college)


Drill tests on addition and multiplication facts improved achievement for retarded, disturbed, and disabled students. (ages 10-16)


Reactions of preservice teachers to mathematics were surveyed. (elementary preservice)

Buriel, Raymond. Mexican- and Anglo American Children's Locus of Control and Achievement in Relation to Teachers' Attitudes. Journal of Genetic Psychology 140: 131-143; March 1982. [grades 4, 5]


Mathematical aptitude exerted most of its effect on college performance directly. (college)

Burnett, Sarah A.; Lane, David M.; and Dratt, Lewis M. Spatial Ability and Handedness. Intelligence 6: 57-68; January-March 1982. [college]


NAEP data on consumer applications are included in the discussion. (adults)


Marilyn N. Suydam


Graduates' responses to a survey asking them to rate the usefulness of courses in the undergraduate program are reported. (secondary in-service)


The psychometric approach yielded results similar to the instructional approach for validating a subtraction hierarchy. (grade 2)


The groups using computers made significant mathematics achievement gains during the first and second eight-week periods, but neither computer nor non-computer groups gained significantly in the third period, and no significant differences were found on October and June test scores. (ages 7-14)


Data on mathematics from the evaluation of Follow Through programs are reported. (elementary)

Carpenter, Thomas P.; Corbitt, Mary Kay; Kepner, Henry S., Jr.; Lindquist, Mary Montgomery; and Reys, Robert E. Student Performance in Algebra: Results from the National Assessment. School Science and Mathematics 82: 514-531; October 1982.

Below-mastery-level performance was found on most items. (ages 13, 17)


Bilingual children outperformed their monolingual peers on one of four subtests of both number and measurement tests, and on the use of reversibility as a justification for conservation. (grades 1-3)
Research Reported in 1982


No significant difference in mathematics attitude was found between preschool, K-3, 4-9, and special education majors. (elementary preservice)


Only 17 per cent of the female teachers and eight per cent of the male teachers were categorized as "math anxious". Most were generally positive about teaching mathematics. (elementary in-service)


Many college students produce reversal errors in formulating algebraic equations. Sources of the errors were identified. (college freshmen)


The proportion of careless errors correlated significantly with measures of arithmetical competence, mathematical language, and mathematical confidence. (grade 6)


Few concrete operational students took science/mathematics courses. (college)


The thinking strategies approach produced greater overall learning growth for multiplication facts than did the factor size approach of a textbook. (grade 3)


Dombrower, Jule; Favero, Jane; King, Margaret; and Dombrower, Edward. The Criterion-Related Validity of Two Tests Hypothesized to Represent Left Brain and Right Brain Function for a Group of Elementary School Children. *Educational and Psychological Measurement* 42: 927-933; Fall 1982. [grades 2-4]

Drew, Barry M.; Evans, Joseph H.; Bostow, Darrel E.; Geiger, Glenn; and Drash, Philip W. Increasing Assignment Completion and Accuracy Using a Daily Report Card Procedure. *Psychology in the Schools* 19: 540-547; October 1982. [grade 3]


Different groups were found to possess different intuitions on the concepts, but these intuitions were independent of the settings and the levels of abstraction. (grades 6-9)


No significant differences were found between groups using multiple or single embodiments for place value with three-digit numbers. (grade 2)

Research Reported in 1982

Eisenberger, Robert; Masterson, Fred A.; and McDermitt, Maureen. Effects of Task Variety on Generalized Effort. *Journal of Educational Psychology* 74: 499-505; August 1982. [college]

Engelhardt, Jon M. Using Computational Errors in Diagnostic Teaching. *Arithmetic Teacher* 29: 16-19; April 1982. Types of numeration and computation errors are described. (grade 4)


Evertson, Carolyn M. Differences in Instructional Activities in Higher- and Lower-Achieving Junior High English and Math Classes. *Elementary School Journal* 82: 329-350; March 1982. It was harder to obtain and maintain the cooperation of students and to keep them engaged on academic tasks in lower-ability classes. Teachers did not tend to differentiate their patterns of instructional activities between high- and low-ability classes. (teachers in grades 7, 8)

Evertson, Carolyn M. and Emmer, Edmund T. Effective Management at the Beginning of the School Year in Junior High Classes. *Journal of Educational Psychology* 74: 485-498; August 1982. The beginning of the year is a crucial time for establishing effective classroom management. (teachers in junior high)

Fendrich-Salowey, Gail; Buchanan, Mary; and Drew, Clifford J. Mathematics, Quantitative and Attitudinal Measures for Elementary School Boys and Girls. *Psychological Reports* 51: 155-162; August 1982. No significant achievement differences were found between boys and girls. (grades 5, 6)


Fogarty, Joan L. and Wang, Margaret C. An Investigation of the Cross-Age Peer Tutoring Process: Some Implications for Instructional Design and Motivation. *Elementary School Journal* 82: 451-469; May 1982. The lessons provided by peer tutors had a positive effect on tutees' mathematics achievement. (grades K-8)

Ford, Marilyn Sue; Walkington, Patricia A.; and Bitter, Gary G. Gifted Education—Enrichment or Acceleration?—Computers Provide Both! *Journal of Computers in Mathematics and Science Teaching* 2: 18-19; Fall 1982. Students gained significantly in computer literacy during a five-week summer session. (grades 5-8)

Scores on the Quantitative Thinking test of the ITED were not affected by the use of calculators. (grades 9, 11)


Students with mathematics goals did significantly poorer on tests than did those without goals. Systematic error patterns were more common than random error patterns, especially for problems with zeros. (ages 8-13)

Freeman, Donald J.; Kuhs, Therese M.; Knappen, Lucy B.; and Porter, Andrew C. A Closer Look at Standardized Tests. *Arithmetic Teacher* 29: 50-54; March 1982.

The content covered by four standardized mathematics tests was examined, with significant differences found. (elementary)


Tutoring and self-instruction resulted in increased ranked preferences for mathematics, while mathematics achievement increased more for the self-instruction group. (grade 7)


Mental arithmetic-related functions were primarily bilateral. (ages 11-13)


Students seemed to apply different mental operations to Roman and Arabic numerals. (college)


Graziano, William G.; Musser, Lynn Mather; Rosen, Sidney; and Shaffer, David R. The Development of Fair-Play Standards in Same-Race and Mixed-Race Situations. *Child Development* 53: 938-947; August 1982. [grades 1, 3, 5]

Grise, Philip; Beattie, Susan; and Algozzine, Bob. Assessment of Minimum Competency in Fifth Grade Learning Disabled Students: Test Modifications Make a Difference. *Journal of Educational Research* 76: 35-40; September/October 1982. [grade 5]


The proportion of teachers teaching each arithmetic topic in grades 1-8 is reported. (teachers in grades 1-8)

Harris, Walter J. and King, Dennis R. Achievement, Sociometric Status, and Personality Characteristics of Children Selected by Their Teachers as Having Learning and/or Behavior Problems. *Psychology in the Schools* 19: 452-457; October 1982. [grades 4, 5]


Types of information obtained from interviews that would not be obtained from paper-and-pencil tests are discussed, with specific illustrations. (secondary)

Hashway, Robert M. Extending Mastery Learning Systems: The
Marilyn N. Suydam


Analysis of placement test data indicated that the sequence of mathematical skills areas should be somewhat altered in order for students to reach optimal achievement levels. (secondary, college)


The position of the unknown set had a "profound" effect on children's modeling behavior, which affected their choice of solution process and the relative difficulty of the problem. (grade 1)


While significant differences in performance were found between developmental groups on some cognitive variables, none was required to solve the addition and subtraction problems or to use a given solution strategy. (grade 1)

Hill, Gayle W. Group Versus Individual Performance: Are n + 1 Heads Better Than One? *Psychological Bulletin* 91: 517-539; May 1982. [grades 5, 6, adults?]


A combination of process and content knowledge factors accounted for more than 70 per cent of the variance in number analogy item difficulty. (grades 4, 5, college)


Internal students achieved higher when taught with an inductive method, while external students achieved higher with a deductive method. (college)


Research Reported in 1982

About 40 per cent of the stories told by London children about good and bad learning experiences were about mathematics. One-third of all good stories and one-half of all bad stories concerned mathematics. (age 14)


Errors on less, and correct choices of more, were often determined by the nonlinguistic strategy of choosing the greater amount. (grade K)

Hurley, Alfred, Jr. Effect of General Attentional and Specific-Relevant Cue Training on Several Piagetian Tasks of Number Development. Journal of Genetic Psychology 141: 67-81; September 1982. (grade K)


Most children could use counting to solve the problems. Success was related to the extent to which manipulative materials were involved and to certain characteristics of the problem itself. (grade K)


Cooperative grouping (in mathematics) promoted more cross-handicapped interaction and higher achievement than did individualistic instruction. (grade 11)


Delayed feedback appeared to benefit pupils of low perceived ability. (grade 4)


Abstractions, proportions, probability, and solution of variables accounted for 51 per cent of the variation in male and female scores. (college)


The LD first graders had a lower level as well as greater variability in their understanding of basic concepts. The greatest discrepancy occurred on concepts of quantity and space. (grade 1)


Symbolic mode retention test scores accounted for 69 per cent of the variability. Spatial visualization was a significant interactive factor. (elementary preservice)

Klausmeier, Herbert J. and Sipple, Thomas S. Factor Structure of the Piagetian Stage of Concrete Operations. *Contemporary Educational Psychology* 7: 161-180; April 1982. [elementary]


The calculator treatment was superior for younger students and women and the traditional treatment was superior for older students and men. (community college)


Field-independent students had higher achievement than field-dependent students in the group-study method; no significant difference was found in the individualized-study method. (grade 5)
Graduate-level students perceived the games as problems and used a variety of problem-solving heuristics, while only half the eighth graders did so. (grade 8, college)

Types of division errors made by junior high students were noted; how the division is presented in eight elementary textbook series was explored. (grades 7-9)


Lancy, David F. and Goldstein, Gayle I. The Use of Nonverbal Piagetian Tasks to Assess the Cognitive Development of Autistic Children. *Child Development* 53: 1233-1241; October 1982. [ages 4-9]


Changes in fear of success were found to be more complex for girls than boys. (grades 7, 10, 11)

Students were able to use heuristics appropriately and, in many cases, effectively, with differences found at two substages of concrete operations. (grade 4)

Pupils using calculators for instruction scored significantly higher on computation and problem solving. No difference was found between students using or not using calculators on the test. (grade 6)

Children applied the ratio rule to their judgments of the area of rectangles. (ages 7-11)

Eight types of estimation strategies were identified. A strong relationship was found between quantitative and computational estimation abilities, but neither the number nor type of strategy was related to success at estimating. (college)


Three items describing mathematics as good mental exercise and valuable mental training were selected by more than 55 per cent in three fields. (college)


Teachers and students differed in their perceptions of students' characteristics and the influence of these characteristics on performance. Abilities and self-concept are important for different reasons. (grade 5)


Within few trials, adults responded as fast and accurately to arrays of up to ten as to arrays of one to three. (adults)


Propositions about relations among variables were harder to
Research Reported in 1982

remember than those that assigned a value to a variable. Recall was better for schema-relevant than schema-irrelevant information. (college)


Meece, Judith L.; Parsons, Jacquelynne; Kaczala, Caroline M.; Goff, Susan B.; and Futterman, Robert. Sex Differences in Math Achievement: Toward a Model of Academic Choice. *Psychological Bulletin* 91: 324-348; March 1982.

Common explanations for the fact that fewer women than men elect to take advanced mathematics courses and enter mathematically oriented careers are summarized. (secondary, college)


Messerer, Jeffrey and Brown, Laurence. The Relationship Between IQ and Piagetian Task Performance During the Preoperational-Concrete-Operational Stage Transition: A Test of a Maturational Hypothesis. *Journal of Genetic Psychology* 141: 145-146; September 1982. [ages 6, 8]


Achievement on a mathematical translation task was more strongly correlated with language proficiency for the bilingual group than for monolingual students. (college)


Moore, DeWayne and Riemer, Barbara S. Relationship Between Achievement Judgments and Cognitive Maturity. *Journal of Genetic Psychology* 141: 197-201; December 1982. [grades 1, 3]


Strategies used to solve addition and subtraction problems are described. (grades 1-3)
Marilyn N. Suydam

Muller, Douglas; Foster, Glenda; and Wooden, Sharon. Academic Achievement of Sixth Graders Matched for Intelligence But Not for Self-Concept. Psychological Reports 51: 273-274; August 1982. [grade 6]


Murphy, R. J. L. Sex Differences in Objective Test Performance. British Journal of Educational Psychology 52: 213-219; June 1982. [secondary]

Murray, Frank B. Pedagogical Adequacy of Children's Conservation Explanations. Journal of Educational Psychology 74: 656-659; October 1982. [grades 1-5, college]


Four pupils attained an algorithm with "fading" of the presentation structure. (age 8)


Results varied, depending on the research method employed, but did not (when taken together) support the hypothesis that girls are more "learned helpless" in mathematics than are boys. (secondary)
Parsons, Jacquelynne Eccles; Adler, Terry F.; and Kaczala, Caroline M. Socialization of Achievement Attitudes and Beliefs: Parental Influences. Child Development 53: 310-321; April 1982.
Differing perceptions and expectations for boys' and girls' mathematics attainment were held by parents, and children's attitudes were influenced more by parents' attitudes than by their own past performances. (grades 5-11, parents)

Parsons, Jacquelynne Eccles; Kaczala, Caroline M.; and Neece, Judith L. Socialization of Achievement Attitudes and Beliefs: Classroom Influences. Child Development 53: 322-339; April 1982.
Few sex differences were found in teacher-student interaction patterns, although teacher behaviors did influence boys and girls differently. (teachers in grades 5-9)

Pennington, Bruce F.; Bender, Bruce; Puck, Mary; Salbenblatt, James; and Robinson, Arthur. Learning Disabilities in Children with Sex Chromosome Anomalies. Child Development 53: 1182-1192; October 1982. [ages 7-16]

Ability and previous mathematics achievement were the most important variables found to affect NLSMA data, although sex differences were found on other factors. (grades 7-12)

Peterson, Penelope L. and Swing, Susan R. Beyond Time on Task: Students' Reports of Their Thought Processes During Classroom Instruction. Elementary School Journal 82: 481-491; May 1982.
Pupils' reported thought processes appear to be better predictors of student achievement than observations of student behavior. (grades 5, 6)

Reported processes used in a two-day unit on probability were significantly related to achievement. (grades 5, 6)


Both groups showed accurate mental arithmetic strategies related to the base-10 structure of their counting systems, with Americans also making use of algorithms. (ages 20-35, college)
Marilyn N. Suydam


Flake, Barbara S.; Ansorge, Charles J.; Parker, Claire S.; and Lowry, Steven R. Effects of Item Arrangement, Knowledge of Arrangement, Test Anxiety and Sex on Test Performance. *Journal of Educational Measurement* 19: 49-57; Spring 1982. [college]


The shortened scale correlated .97 with the full scale, and had a reliability estimate of .98. (college)


A 53 per cent decline in the number of students majoring in mathematics or mathematics education was found. (secondary, college)


Raschke, Donna; Stainback, Susan; and Stainback, William. The Predictive Capabilities of Three Sources for a Promised Consequence. *Behavioral Disorders* 7: 213-218; August 1982. [ages 8-16]


Most students reported low levels of math anxiety, and no large sex differences were found. (college freshmen)


Good estimators used several key processes (compensation, reformulation, and translation) interwoven with a variety of distinct estimation strategies. (grades 7-12, adults)


140: 221-228; June 1982. [grade 4]


Learning improved when incentives were varied within a task according to individual needs. (college)

Rossmiller, Richard A. Use of Resources: Does It Influence Student Achievement? *Educational Perspectives* 21: 23-32; Spring 1982. [grade 3]

Rotenberger, Ken J. Development of Character Constancy of Self and Other. *Child Development* 53: 505-515; April 1982. [grades K-3]


No significant differences in achievement were found between groups who had had graded or non-graded instruction. (grade 7)


Rust, James O.; et al. Predicting Reading and Arithmetic Achievement by Using Bender Gestalt and Visual Memory Technique. *Reading Improvement* 19: 74-83; Spring 1982. [grade 1]


Sawada, Daiyo. Multisensory Information Matching Ability and Mathematics Learning. *Journal for Research In Mathematics Education*
Haptic matching ability was found useful in accounting for mathematics achievement both within and across modalities. (grade 3)


Data from a pilot study on two textbook approaches to algebra are reported. (grade 9)


Evidence that a problem-solving course can produce strong changes in students' problem-solving behavior is provided. (college)


Relationships between attitudes and achievement were significantly stronger for boys than girls, with computation than concepts, and late in the school year than early. (grades 3-6)


Attributional feedback for past achievement led to more rapid progress in mastering subtraction, greater skill development, and higher self-efficacy than did feedback on future achievement or no feedback. (ages 7-10)


Shavelson, Richard J. and Bolus, Roger. Self-Concept: The Interplay of Theory and Methods. *Journal of Educational Psychology* 74: 3-17; February 1982. [grades 7, 8]


Visual-spatial ability and hemisphericity were not good predictors of map-reading ability, whereas the Extended Range Vocabulary and Mathematical Aptitude Tests were significant predictors. [*?*


Characteristics of metric educators and the content of persuasive communications useful in influencing attitudes toward metric conversion were surveyed. (elementary preservice)


Age-related differences in estimation skills were found. Only a "loose" relationship existed between accurate estimates and appropriate solution strategies. (grades 2-8, adults)


Understanding of some division concepts and understanding the division algorithm make different cognitive demands on the child. (grade 6)

Smith, Jeffrey K. Converging on Correct Answers: A Peculiarity of Multiple Choice Items. *Journal of Educational Measurement* 19: 211-220; Fall 1982. [secondary, college]

Marilyn N. Suydam


Spitz, Herman H.; Webster, Nancy A.; and Borys, Suzanne V. Further Studies of the Tower of Hanoi Problem-Solving Performance of Retarded Young Adults and Nonretarded Children. *Developmental Psychology* 18: 922-930; November 1982. [children, adults (MRs)]


Use of calculators was superior to non-use for fourth graders, but the programmed-feedback calculator produced superior retention for third graders. (grades 3, 4)


Mental multiplication resembled simple mental addition. (college)


The model was found to be valid, although no significant improvement was found in the achievement of pupils taught by teachers using materials prepared in the methods class. (preservice teachers in grade 8)


Children from Japan and Taiwan consistently performed at a higher level than did American children. Level of achievement did not appear to be closely related to the content of the curriculum. (grades 1, 5)


Overall, no significant sex differences in achievement were found, but females scored significantly higher in mathematical reasoning and males in geometry, measurement, and probability/statistics. (college)

Gradual algorithmization, in which pupils could acquire a procedure for subtracting fractions without being forced into the final stages, was explored. (grades 4, 5)


The tests can be used to identify students with algebra skills deficiency. (college)


Two factors were identified in the scale--numerical anxiety and mathematics test anxiety: (secondary)


Svenson, Ola and Sjoberg, Kit. Solving Simple Subtractions During the First Three School Years. *Journal of Experimental Education* 50: 91-100; Winter 1981-82.

The development of children's cognitive processes involved a gradual shift from more primitive and less demanding memory strategies to reconstructive memory processes to retrieval processes. (grades 1-3)


Small-group work on division and fractions enhanced the achievement and retention of low- and high-ability pupils but not medium-ability pupils. (grade 5)


Testing with and without calculators produced few differences in the number of problems attempted and the number of correct operations. (grades 3, 5, 6, 7, 8)


Problems in drawn format resulted in better performance than those in the usual verbal format. (grade 5)


EMR teachers rated their students significantly lower on mathematical ability than did first-grade teachers, although they performed comparably on a mathematics readiness test. (teachers in grade 1, EMR)


Asking a question and receiving no answer was detrimental to achievement on a consumer mathematics unit. (grades 7-9)

Receiving no explanation in response to a question or error was negatively related to achievement. Giving and receiving explanations were positively related to achievement. (grades 7, 8)


Background variables accounted for 25 per cent of the variance in NAEP mathematics achievement scores, while exposure to mathematics courses explained an additional 34 per cent. (age 17)


Student performance had a greater effect on teacher attitude than teacher attitude had on student performance. Teacher attitude had a greater effect on student attitude than student attitude had on teacher attitude. (teachers in grade 4)


Enrollment in remedial courses was found to be growing at a much more rapid pace than enrollment in mathematics courses in general. (college)


A significant relationship was found between math anxiety and career inhibition, and between math anxiety and perceived type of mathematics training. (elementary teachers)


No significant differences were found in achievement or attitude toward mathematics for students having the quiz-homework-attendance treatment or when test scores alone determined grades. (college)

Wild, Cheryl L.; Durso, Robin; and Rubin, Donald B. Effect of Increased Test-Taking Time on Test Scores by Ethnic Group, Years Out of School, and Sex. *Journal of Educational Measurement* 19: 19-28; Spring 1982. (college)


A strong relationship was found between mathematical competencies and probable success in beginning computer science courses. (college)

Wilkinson, Alex Cherry. Partial Knowledge and Self-Correction:
Marilyn N. Suydam


Certification and incentives for secondary teachers were surveyed.


Of 106 mathematics concepts identified, only 29 were presented in a majority of the eight kindergarten programs surveyed. (grade K)


This final section of the listing contains 284 dissertations.


No significant interaction was found between the two presentation formats and field dependence or independence. (college)

Agnew, Evelyn Marie. The Relationship Between Elementary School Mate and Student Achievement. (University of San Francisco, 1982.) DAI 43A: 360; August 1982. [DA8215489] [grades 3, 6]


Mexican-American students achieved significantly lower than Anglo students in mathematics, but no significant differences in motivation for school or self-concept were found. (grades 7-9)


A problem-solving heuristic was successfully employed and assessed by tests requiring the reproduction of long-term memory information on related problems. (grade 9)


Annice, Clementina Webster. The Long Term Effects of a Preschool Intervention Program on the Mathematics Achievement of Elementary Students in Rural Appalachia. (West Virginia University, 1982.) DAI 42A: 4340-4341; April 1982. [DA8207503]

Those who had had the preschool program performed significantly better on all mathematics achievement measures except teacher assessment than did non-participants, but the program had little predictive strength. (grades 3, 6)

Students having the Model to Applications method scored significantly higher than students having the Applications to Model method. (secondary)


Low-achieving readers generally evidenced significantly lower arithmetical skills than high achievers. (grades 4, 6)

Ballard, Paula Dean. The Effect of Interdisciplinary Curricular Materials in Science and Mathematics on Student Achievement, Attitude, and Attrition. (The University of Alabama, 1982.) DAI 42A: 4270; April 1982. [DA8205852]

No significant differences in achievement or attrition were found between users and non-users of the interdisciplinary materials; only one attitude difference was noted. (junior college)

Bardouille-Crema, Jeanne Annette. A Study of the Effects Associated with Socioeconomic Status on the Performance of Black Children on Piagetian Tasks. (Purdue University, 1982.) DAI 43A: 1882; December 1982. [DA8225687] [elementary]


Groups using peer teaching achieved significantly more in both General and Applied Mathematics courses than did non-users of the procedure who were given no special treatment, although not significantly different from non-users given the same materials. (secondary)

Barry, Janet Wilson. A Comparative Study of Achievement Gains and Continued Parent Involvement of Fourth Grade Students Who Participated in a Specific Early Intervention Program with Students Not Participating in the Early Intervention Program. (Saint Louis University, 1982.) DAI 43A: 1417; November 1982. [DA8223639] [grade 4]

Barton, Wayne Arthur. The Effects of One-Parenthood on Student Achievement. (The Pennsylvania State University, 1981.) DAI 42A: 2944-2945; January 1982. [8129138] [grades 5, 6]

Beal, Barry Barton. An Examination at the Fifth Grade Level of Test Item Bias in the Comprehensive Tests of Basic Skills. (University of Denver, 1982.) DAI 43A: 769; September 1982. [DA8216688] [grade 5]
Beckerman, Terrill Michael. A Study of the Main and Interactive Effects of Student Types, Sex, and a Treatment Program on the Mathematics Achievement and Attitudes of Fourth Grade Students. (University of Missouri-Columbia, 1981.) DAI 42A: 3862; March 1982. [DA8205365]

Almost all students could be placed into one of five classifications. Particular factors, such as homework, had differential influences on achievement of the five types, and the experimental instructional plan resulted in higher achievement for all five types. (teachers in grade 4)

Bellemore, David S. Educational Paths in High School Programs and Their Effect on Student Achievement. (Columbia University Teachers College, 1982.) DAI 43A: 1358; November 1982. [DA8223103] [grades 9-11]


The spatial visualization and eclectic methods were each successful on one of five hypotheses. (intermediate in-service)

Bhumirat, Kanjit. Supply and Demand Projections for Junior High and High School Mathematics Teachers in Kansas. (University of Kansas, 1981.) DAI 42A: 3047; January 1982. [8128722]

The need for junior high and high school mathematics teachers slightly decreased between 1975 and 1979, while the potential supply decreased at a faster rate. Active teacher ages had increased, indicating a future demand for replacements. (secondary teachers)


No significant differences were found in the difficulty of verbal (word) problems and abstract contexts. Use of concrete materials declined with abstract problems, and guessing increased. (grades K, 1)


Mnemonic verbalizations enhanced problem solving better than a coached no-verbalizations strategy. (grade 11)

Bordeaux, Richard Jesse. Establishment of Predictive Use of the Wechsler Intelligence Scale for Children—Revised on Academic Achievement for a Select Group of South Dakota Indian Students. (University of South Dakota, 1982.) DAI 43A: 1458; November 1982. [DA8216681] [elementary]

Bouldin, Charles Larry. An Investigation of Applications of Cognitive
Mapping to Instructional Strategies for College Courses in Basic Mathematics. (The University of Tennessee, 1982.) DAI 43A: 1866; December 1982. [DA8225326]

No significant differences in basic skills acquisition or attitudes were found between students whose visual or auditory learning styles matched or mis-matched with the instructional treatment. (community college)

Breslow, Leonard Arnold. The Development of Relational Thinking in Children: Transitivity and Seriation. (University of California, Berkeley, 1981.) DAI 42B: 4953; June 1982. [DA8211868] [ages 5-13]

Bridges, Arthur Carl. The Relationship Between Sex-Role Identity and Academic Achievement in Black High School Students. (The American University, 1981.) DAI 42A: 4720; May 1982. [DA8208511] [secondary]

Brink, James Edward. The Effect of Training in Translation of Verbal Mathematical Problems on Problem Solving Achievement. (Brigham Young University, 1982.) DAI 43A: 1866; December 1982. [DA8224776]

Instructing students in how to translate verbal mathematical language improved their problem-solving achievement. (grade 7)

Brubaker, E. Lynn. The Effect of an Instructional Strategy Oriented Toward Mathematical Applications from an Activity Learning Perspective upon Achievement and Attitudes of Ninth Grade General Mathematics Students: An Exploratory Study. (Temple University, 1982.) DAI 43A: 1070; October 1982. [DA8217726]

No findings were included in the abstract. (grade 9)

Bryant, Dorothy Taylor. A Study of the Relationship of Inservice Education to Teachers' Attitudes and Pupil Achievement. (George Peabody College for Teachers of Vanderbilt University, 1981.) DAI 42A: 4653-4660; May 1982. [DA8208438] [in-service teachers]

Bryant, Reva Ruth. Effects of Team-Assisted Individualization on the Attitudes and Achievement of Third, Fourth and Fifth Grade Students of Mathematics. (University of Maryland, 1981.) DAI 43A: 70; July 1982. [DA8213790]

The team-assisted individualized method resulted in higher scores than did use of the individualized materials without team learning or traditional materials and procedures. (grades 3-5)


No significant differences in learning of facts were found between groups given computer-assisted practice or traditional programs. Those with an internal locus of control learned better with the computer, while those with an external locus learned better from
traditional instruction. (grades 4-6)


The model was found to contain the problem-solving paths used by the six students interviewed. (secondary?)


A meta-analysis of 40 studies indicated that computer-supplemented instruction was significantly more effective in fostering achievement than was traditional instruction. (elementary, secondary)

Bushyager, Glenn Ray. The Development of a Mathematics Attitude Inventory for Secondary Students in the Des Moines Public Schools. (University of Northern Colorado, 1981.) DAI 42A: 3482; February 1982. [8202691]

The attitude instrument had a reliability of .90, while the validity coefficient was .77. (secondary)


The combination of microcomputer-based instruction and graphics display techniques was effective in producing achievement. (college freshmen)


Age and the student's opinion were highly significant variables affecting achievement, but sex was not. (community college)

Cardelle-Elawar, Maria. Effects of Training Venezuelan Teachers in Providing Feedback on Mathematics Homework. (Stanford University, 1982.) DAI 43A: 1508; November 1982. [DA8220435] [teachers in grade 6]

Carleton, Nancy Louise Riggs. Implications of Physical Education Activities as Reinforcement in Learning Multiplication Tables. (Oklahoma State University, 1981.) DAI 43A: 107; July 1982. [DA8213015]
No significant difference in learning the tables was found between students whose learning was or was not reinforced through specifically designed physical activities. (grade 4)

Carlini, Ronald John. Effects of Attribution Training and Self-Management Training on Arithmetic Task Completion. (The University of Tennessee, 1981.) DAI 42B: 3804; March 1982. [DA8203824] [elementary]

Carrier, Robert John. The Relationship of Non-School Factors to Achievement in Reading and Mathematics. (The University of Michigan, 1981.) DAI 42A: 3863; March 1982. [DA8204615] [grades 2-6]

Casey, Maureen Therese. Academic Achievement Levels and Demographic Characteristics of Mainstreamed Hearing Impaired Students: A Descriptive Study. (University of Oregon, 1981.) DAI 42A: 5084; June 1982. [DA8209653] [ages 6-20]

Chan, Victoria Owyang. The Discourse Patterns of Bilingual and Monolingual Mathematis Tutors: Effects on Mathematics Achievement of Bilingual Chicano Students. (Stanford University, 1982.) DAI 43A: 1070; October 1982. [DA8220437] Differences in achievement were not found, but differences in discourse were evident. (grade 7)

Christian, Marjory Elaine French. The Impact of Kindergarten Attendance on the Academic Achievement of Randomly Selected First Grade Students in a Southern Mississippi School District. (University of Southern Mississippi, 1981.) DAI 42A: 3359; February 1982. [DA820752] [grade 1]

Clemente, Clemencia Garcia de. The Relationship of Three Instructional Approaches to the Attitude and Achievement in Mathematics of Prospective Elementary School Teachers in Venezuela. (Boston University School of Education, 1982.) DAI 43A: 142-143; July 1982. [DA8213447] [elementary preservice]

Clemente, Jose. A Comparison of Two Mathematics Curricula for Seventh Grade Metropolitan Caracas Students. (Boston University School of Education, 1982.) DAI 43A: 101; July 1982. [DA8213446] [grade 7]

Clute, Pamela Sue. The Effects of Anxiety and Method of Instruction on Achievement in a Survey Course in College Mathematics. (University of California, Riverside, 1982.) DAI 43A: 1866; December 1982. [DA8223369] A significant interaction effect between expository and discovery methods and anxiety was found. (college)

Cooper, Trenton. Articulation for Physical Science and Mathematics in Arkansas Colleges and Universities. (The University of Tennessee, 1981.) DAI 42A: 3853; March 1982. [DA8203827] [college]
Cox, Mary Ann. The Effect of an Assessment, Voluntary Placement System on Student Success at the Community College. (University of La Verne, 1981.) DAI 43A: 1402; November 1982. [DA8220737] [community college]

Cox, Mary Osborne. Effects of Hypnotherapy and Relaxation Training on Mathematics Achievement. (Texas A&M University, 1981.) DAI 42B: 4186; April 1982. [DA8206614]

No achievement differences were found between three treatments designed to reduce anxiety. (college)

Crowe, Dorothy Ensley. The Use of Practice Programs to Improve Test Scores of Elementary School Students. (University of South Carolina, 1981.) DAI 42A: 3116; January 1982. [8129451]

[grades 4, 5]


Most of the factors studied were correlated with graph comprehension, but sex-related differences were found in grade 7 and not grade 4. (grades 4, 7)

Daniels, John Thomas. An Investigation into the Causes of Declining Academic Achievement at the Secondary School Level. (St. Louis University, 1981.) DAI 43A: 1492-1493; November 1982. [DA8223655] [secondary]

Darakjian, Gregory Peter. The Relationship of Junior High School Performance to Standardized Measures of Academic Self-Concept and Achievement and to Teacher Ratings of Citizenship and Effort: Implications for Curriculum and Instruction. (University of Southern California, 1982.) DAI 43A: 61; July 1982. [--] [grade 8]

David, Janet. The Effects of Placement in Foster Family Homes on Selected Aspects of School Adjustment and Academic Achievement. (Fordham University, 1982.) DAI 43A: 1474; November 1982. [DA8223593] [ages 6-14]

DeBoskey, Dana Stephens. An Investigation of the Remediation of Learning Disabilities Base on Brain-Related Tasks as Measured by the Halstead-Reitan Neuropsychological Test Battery. (The University of Tennessee, 1982.) DAI 43B: 2032; December 1982. [DA8225330] [ages 9-12]

Delaney, James, Jr. A Comparison Between Individualized Instruction and Traditional Teaching Methods in Elementary Grades in American Public Schools. (University of South Africa (South Africa), 1981.) DAI 42A: 3822; March 1982. [--] [grade 6]

Delventhal, Elmer Francis. The Effects of the Use of a Mathematics Tutoring Center on the Achievement and Attitude of Intermediate
Algebra Students at the College Level. (The University of Connecticut, 1982.) DAI 43A: 1456; November 1982. [DA8223407]

No significant differences in achievement or attitude were found among groups required, allowed, or not allowed to use the tutoring center. (college)

DeMary, Joe Lynne. A Study of the Relationship Between Chronological Age at the Time of Entrance to Kindergarten and Academic Achievement. (The College of William and Mary in Virginia, 1982.) DAI 43A: 660; September 1982. [DA8218001] [grade 4]


For students who understood proportionality, either method was successful; for others, the ratio-proportion method was significantly better. (grade 8)


No findings were reported in the abstract. (grade 8)


Two of the measures were found to have reasonable internal consistency and reliability over time. Both found that females had greater math anxiety. (college)

Dhafar, Abdulrazzag Ahmad. A Study of How Supervisors' Evaluations, Teachers' Behavior, and Students' Attitudes Toward Teachers are Related to Instructionally Effective Teachers of Ninth-Grade Mathematics. (Michigan State University, 1982.) DAI 43A: 1407; November 1982. [DA8224419] [teachers in grade 9]

Research Reported in 1982

The set of diagnostic-prescriptive teaching competencies was found to be valid. The program was effective in developing teachers' competencies. (elementary in-service)

Diaz Berdecia, Nelson. The Relationship Between the Degree of Bilingualism and Competence vs. Performance of Puerto Rican Children in the Acquisition of Conservation. (Temple University, 1982.) DAI 43A: 1086-1087; October 1982. [DA8217736] [grades 1-3]

Dickerson, Dale Gerardo. An Investigation of the Process of Classroom Teachers Cooperatively Designing Minimal Competencies. (Saint Louis University, 1982.) DAI 43A: 1407; November 1982. [DA8223658]

Responses to questionnaires did not differ significantly before and after teachers prepared competency statements, but differences were found on responses of participants and non-participants. (elementary in-service)

Dien, Dennis Charlton. The Effectiveness of Computer Assisted Instruction in College Algebra. (Florida Atlantic University, 1982.) DAI 43A: 1456; November 1982. [DA8224552]

No significant differences in learning were found among groups given traditional instruction or three types of computer-aided instruction. (college)


Dildy, Peggy Ann. An Investigation of the Impact of the Program for Effective Teaching on Student Achievement. (East Texas State University, 1981.) DAI 42A: 4714-4715; May 1982. [DA8207866] [grades 4-6]


Second graders used aids and calculators, and scored significantly higher than fourth graders, whose scores were higher using mental and written computation. Both groups attempted to solve non-routine problems, exhibiting strategies not ordinarily taught in elementary school. (grades 2, 4)

Dong, Archer Wah. A Comparison of Two Approaches to the Teaching of Mathematics: Team-Teaching Versus Individualized-Laboratory Instruction. (University of Massachusetts, 1982.) DAI 43A: 710; September 1982. [DA8210316]

No significant difference in achievement was found between the two approaches. (grade 10)

Driscoll, Annamae. The Effect of Tension Control Training on
Marilyn N. Suydam

Mathematics and Reading Achievement with Elementary School Children. (Boston University School of Education, 1981.) DAI 42A: 3853-3854; March 1982. [DA8203889] [grade 5]


Ebe, Arthur Frederick. A Study of the Effects of Early Retention on Fifth Grade Achievement. (Michigan State University, 1981.) DAI 42A: 3411; February 1982. [DA8202424] [grade 5]

Echols, Patricia Southerland. A Study of the Relationships Among Students' Attitudes Toward Mathematics and the Variables of Teacher Attitude, Parental Attitude, Achievement, Sex of the Student and Grade Level of the Student. (University of Houston, 1981.) DAI 42A: 4752; May 1982. [DA8210431]

The most important predictors of student attitude toward mathematics were attitude of father and of mother, achievement, and grade level. (grades 5, 7)

Edwards, John Peeples, Jr. The Effects of Aids, Error Types and Repetitions on the Times and Strategies Utilized in the Correction of Computer Program Errors. (The Catholic University of America, 1982.) DAI 43A: 1071; October 1982. [DA8221479]

No time advantage seemed to be gained by having beginning programmers debug their own programs. (community college)


The use of an abacus appears to be more effective than the calculator for teaching retarded adults addition facts. [adults (MRs)]


Direct instruction of formal analysis was effective in teaching LD pupils to compute single-step addition and subtraction problems.
containing extraneous information. (ages 9-12)

Feijó, Maria Carmen Capelo. Early Childhood Educational Programs and Children's Subsequent Learning: A Brazilian Case. (Stanford University, 1982.) DAI 43A: 1033; October 1982. [DA8220455] (grades K, 1)

Filemban, Samir Noorudein. Verbal Classroom Interaction in Elementary School Mathematics Classes in Saudi Arabia. (Oregon State University, 1982.) DAI 42A: 4342; April 1982. [DA8206527] [elementary inservice]


Self-instructional training was found to be more beneficial than an attention placebo or no treatment. (grade 2)

Fluck, Sandra Elaine. The Effects of Playing and Analyzing Computational-Strategy Games on the Problem Solving and Computational Ability of Selected Fifth Grade Students. (Temple University, 1982.) DAI 42A: 5020; June 1982. [DA8210481]

The maximum- and average-paced game-playing groups gained in problem-solving ability, but the minimum-paced group did not show a significant gain. No difference was found on computation performance. (grade 5)

Freeman, Carol Lipps. The Effect of a Mathematics Anxiety Reduction Model on the Students in a College Level Basic Mathematics Skills Course. (Saint Louis University, 1982.) DAI 43A: 1456; November 1982. [DA8223666]

The intervention treatment did not significantly affect anxiety, attitude, or achievement. (college)


The examination was found to have a significant influence on the mathematics curriculum. (college)

Garcia, Lazaro. The Treatment of Mathophobia by Means of Reinterpretation of Physiological Arousal as a Function of the Level of Perceived Arousal. (Fordham University, 1982.) DAI 43B: 1652; November 1982. [DA8223599]

Both reinterpretation and relaxation treatments were effective in improving test performance, with no significant difference between them. (secondary)

Although problem-solving statistics units differing in types of problems could not be linked to higher achievement, certain conditions appeared to be related to achievement when level of skill in mathematics was considered. (college)

Gazard, Susan Wright. Sex Differences, Spatial Visualization Ability and the Effects of Induced and Imposed Imagery on Problem Solving Performance. (University of Southern California, 1982.) DAI 43A: 115; July 1982. [--]

Significant sex-related differences in spatial visualization were found. Spatial visualization was highly related to problem-solving performance; visual adjuncts were equally useful for high and low spatial ability students. (grade 8)

Gee, Patricia Lee. Reading and Mathematics Achievement of Eighth-Grade Chinese-American Students Enrolled in Bilingual or Monolingual Programs. (University of San Francisco, 1982.) DAI 43A: 1814; December 1982. [DA8215492] [grade 8]

Ghandoura, Abbas Hassan. Achievement Effects of Teacher Comments on Homework in Mathematics Classes in Saudi Arabia. (Oregon State University, 1982.) DAI 43A: 388; August 1982. [DA8216635] [grades 4, 6, 9]


Higher levels of anxiety were associated with a smaller number and variety of problem-solving processes used by students, and with more structural errors and lower product scores. (community college)

Gibson, Billy Howard. Leader Behaviors and Successful Demonstration Programs in Reading and Mathematics for Low Achieving Students in the State of California for 1979-80. (University of Southern California, 1982.) DAI 43A: 990; October 1982. [--] [elementary, secondary]

Glass, Gladys Thomas. A Study of Mathematics Anxiety Among Female College Students. (Georgia State University-College of Education, 1982.) DAI 43A: 1867; December 1982. [DA8226162]

No significant differences in anxiety or attitudes were found between students taking or not taking an anxiety-reduction program. (college)


Both reading comprehension and computation abilities contributed to successful solution of problems. Extraneous information made problems more difficult, but syntactic structure had no significant
Godia, George Imbanga. A Comparative Study of the Effects on Achievement, Changes in Attitude Toward Mathematics and Attrition Rate of Students Enrolled in the Freshman Remedial Arithmetic Course Under Two Different Instructional Approaches. (Ohio University, 1981.) DAI 42A: 3412; February 1982. [8201446]

The group in which the calculator was used with small-group instruction had significantly higher achievement than a large-group approach using diagnostic remediation. Attitudes were more favorable in the latter group, however. (college freshmen)


Teachers in schools for the deaf had taken fewer mathematics courses than public school teachers. They wanted in-service education at a practical level. (pre- and in-service teachers, grades K-12)


Goulas, Fara Marilyn. A Diagnostic Study of the Prevalence of Learning Disabilities Detected in Randomly Selected Referrals to Jefferson County Probation Services, Jefferson County, Texas. (McNeese State University, 1982.) DAI 42A: 1926; December 1982. [DA8225123] [secondary?]

Green, Janice Martin. The Mathematics Education of Preservice Elementary Teachers in the State of Ohio. (Kent State University, 1981.) DAI 42A: 4753; May 1982. [DA8209195]

Ohio preservice education programs indicated an awareness of national recommendations. Specific aspects of the programs are noted. (elementary preservice)


Griffin, Karen Jane Mayes. The Effects of Fingermath, or Chisanbop upon the Mathematical Computational Ability and Mathematical Attitudes of Ninth Grade General Mathematics Slow Learners with
Attention Given to the Variables of Sex and Learning Styles. (Northwestern State University of Louisiana, 1982.) DAI 43A: 1071; October 1982. [DA8217981]

No significant difference in computation or attitude scores was found between students taught or not taught Fingermath. (grade 9)


Parents and pre-student-teachers were both effective in using games to increase achievement scores of pupils. (grades 2, 3)

Hailey, Willy Larry. The Effects of Cross-Age Tutoring on Self-Concept and Mathematics Achievement. (Mississippi State University, 1982.) DAI 42A: 4753; May 1982. [DA8210075]

Significant differences in achievement and self-concept were found between tutors and non-tutors in grade 4 but not grade 8. (grades 4, 8)


Higher achievement and creativity resulted from using the suggestive-accelerative method with gifted students. (grade 4)

Hallford, James Reynolds. The Relationship Between Teacher Performance and Pupil Advancement on Teacher- Constructed Criterion-Referenced Tests. (George Peabody College for Teachers of Vanderbilt University, 1982.) DAI 43A: 1946; December 1982. [DA8227086] [secondary, teachers]


Curriculum thinking which led to stress on rigorous proof, the axiomatic method, and mathematical practice are discussed. (second)


The size of the search-space was a viable predictor of difficulty. Three types of problem-solving moves were identified: 76 per cent of the total moves involved guessing and successive approximation, 16 per cent were manipulative, and the remainder were certainty moves. (grade 7)

Harris, Eileen Dempsey. An Investigation of Mathematically Successful High School Students' Ability to Successfully Rationalize, Comprehend, and Apply Meaningful Strategies in the Computation of Decimal Division. (The Florida State University, 1982.) DAI 43A: 1456-1457; November 1982. [DA8223190]
Research Reported in 1982

After the first problem, there was a decided shift to more meaningful explanations of computational procedures. (grades 9, 10)


Successful problem solvers were more able than unsuccessful ones to manipulate and evaluate information, construct more meaningful representations, and explore problems before drawing conclusions. (college)


Saturation learning did not produce overwhelming achievement or retention gain compared to traditional learning. (grade 9)


Roots and changes of the "new math" programs at both elementary and secondary levels are described. (grades K-12)

Haynes, Sarah Wynder. The Relationship of Selected High Schools and Student Characteristics with Scores Achieved on the ACT Assessment in the Seven Great Plains States. (The University of Iowa, 1982.) DAI 43A: 992; October 1982. [DA8222237] [college]

Hebert, Herbert Charles. Life Skills Minimum Competency Testing and Basic Academic Skills Mastery of Selected Louisiana Tenth Grade Students. (McNeese State University, 1982.) DAI 43A: 426-427; August 1982. [DA8216509] [grade 10]

Hecht, Miriam Ratnofsky. Program Design Options in Remedial Mathematics at the City University of New York. (Columbia University Teachers College, 1980.) DAI 42A: 4342; April 1982. [DA8207352]

The 17 CUNY remedial mathematics programs are described. (college)


No significant achievement differences were found between boys and girls at age 13 with principals of either sex. At age 17, girls scored lower in schools with male principals. (ages 13, 17)


The strategy used to analyze errors was not significant, but
reflective students scored significantly better than impulsive students. (elementary preservice)


Both direct translation and schema approaches improved accuracy, but the schema approach produced faster solution times and increased the number of classifications made. (college freshmen)


Hodge, Clare Carni, Jr. Predictive Study of the Meeting Street School Screening Test and Academic Achievement from Grades Two Through Six by Race, Sex, and Kindergarten Experience. (University of South Carolina, 1981.) DAI 42A: 3118; January 1982. [8129498] [grades 2-6]


Generally, the groups given advance organizers did not learn significantly more than the control group, although the combined means were higher. (grade 8)

Hosseini-Nasab, Davood. The Relation of Teacher Perception of Parental Occupational Level and Expected Competency Attainment in Basic Skills for Elementary School Children. (University of Southern California, 1981.) DAI 42A: 4364; April 1982. [---] [grade 3]

Hoy, Cheri Ann. An Investigation of Certain Components of Division with Learning Disabled and Normal Sixth-Grade Boys. (Northwestern University, 1982.) DAI 43A: 1927; December 1982. [DA8225938]

Level of difficulty affected LD boys more than normal boys, but both groups had difficulty understanding the indicated quotient representation of division. (grade 6)

Huerta, Juan F. T. The Status of Mathematics Instruction in Spanish
Eighty-four per cent of the ESEA Title VII proposals stated that mathematics would be taught in Spanish. About half of the teachers stated that they had been trained, and most spent more time on language and reading than on mathematics. (grades K-6)

Hutz, Claudio Simon. The Effect of Belief in Premises and Conclusions on Children's Logical Reasoning. (The University of Iowa, 1981.) DAI 42B: 4502; May-1982. [DA8210001]

The children in general were capable of making correct inferences, whether or not they believed in the truth of the premises. Performance was better when the premises were high inbelievability. (mean age 7-8)


Jenkins, Olga Culmer. The Relation of Personality Factors and Learning Style Preferences to Achievement of Seventh Grade Individualized Mathematics Students. (Columbia University Teachers College, 1981.) DAI 42A: 4342-4343; April 1982. [DA8207322]

No significant achievement difference was found between groups given individualized and conventional instruction, but results varied by personality trait. (grade 7)

Jensen, Joyce Stovall. The Effect of Summer Recess on the Retention of Reading and Mathematics Achievement for Third-Grade and Fifth-Grade Students in a Compensatory Education Program. (Memphis State University, 1981.) DAI 42A: 5020-5021; June 1982. [DA8208407]

Johanssen, Kenneth Ludwig. The Relationship of a Unique Teacher Selection Method to Student Achievement. (George Peabody College for Teachers of Vanderbilt University, 1981.) DAI 42A: 4671-4672; May 1982. [DA8208467]

No significant difference was found in the mathematics gain scores between pupils taught by teachers selected by an interview method or by the district's traditional method. (elementary in-service)

Johnson, Gayle Ann S. An Investigation of Selected Variables and Their Effect upon the Attitude Toward the Teaching of Elementary School Mathematics by Preservice Elementary School Teachers. (University of Houston, 1981.) DAI 42A: 3566-3567; February 1982. [DA820921]

Achievement in and attitude toward mathematics, and type of field experience, accounted significantly for variance in attitude toward teaching mathematics. Attitude toward mathematics was also a significant variable alone. (elementary preservice)

Johnson, Willie C. A Comparison Between Traditional and
Nontraditional Elementary Schools on the Basis of the Academic Achievement and Self-Esteem of Students and Parental Perceptions of the Education Provided. (Iowa State University, 1982.) DAI 43A: 1428; November 1982. [DA8224331] [elementary]


Neither discussion nor instruction in heuristics had a significant effect on attitude toward problem solving or performance. Students working alone scored higher than those in groups. (elementary pre-service)


Arithmetic/mathematics was reported as the predominant subject area where microcomputers were used. (teachers in grades K-12)

Kallio, Kenneth David. A Levels of Functioning Hypothesis of the Development of the Ability to Solve Transitive Inferences. (University of California, Santa Barbara, 1981.) DAI 42B: 4950; June 1982. [DA8207640] [grades K, 3, college]


Children's understanding of place value seemed to be built in phases, over a long period of time, in conjunction with other kinds of knowledge. (ages 4-9)


Junior high school attended, number of retentions, and number of parents present in the home were significant factors in explaining variance in scores; previous computation or problem-solving scores were significant predictors. (grade 8)


A non-normed computation test had results characteristic of a norm-referenced test, while a locally developed minimal competency test had results characteristic of a criterion-referenced test, not suited to evaluation with Model A2. (grade 9)
Over 85 per cent of instructional time was devoted to teaching basic skills. Operations were most emphasized, followed by concepts and measurement. Least emphasized were problem solving and geometry. Emphasis and achievement were not related on the test. (teachers in grade 6)

Khampalikit, Choosak. Race and Sex Differences in Guessing Behavior on a Standardized Achievement Test in the Elementary Grades. (University of Pittsburgh, 1982.) DAI 43A: 771; September 1982. [DA8218173] [grades 2, 5, 8]  

The topic is explored "for the benefit of teachers and mathematicians". (college)

Klaus, William Duane, Jr. A Comparison of Student Achievement in Individually Guided Education Programs and Non-Individually Guided Education Elementary School Programs. (University of Missouri-Columbia, 1981.) DAI 42A: 3856; March 1982. [DA8205395] [grades 4-6, 11]  
The computer-augmented approach was more effective than traditional instruction alone, especially for diverse or complex concepts. (grade 12)

LaMain, Gladys Marie. The Relationship Between Piagetian Cognitive Measurements and Standardized Achievement Measurements of Inner-City School Children Ages 12 to 15 of Varied Ethnic Backgrounds. (Claremont Graduate School, 1982.) DAI 43A: 1909-1910; December 1982. [DA8220588] [grades 6-8]  

The context of argument, minimum domain of interpretation, and number of logical connectives and quantifiers were found to be important in predicting difficulty--Student behaviors were also described. (college)

Lawson, Samuel Patrick. The Design of a Metric Curriculum Component to Complement the State Plan for Mathematics Education in Pennsylvania. (University of Pittsburgh, 1982.) DAI 43A: 650;
The curriculum design included concepts for five attribute strands, metric units appropriate for each, objectives, and procedures. (grades K-12)

Layne, Thomas Norwood. A Comparison Study of the Relative Effectiveness of Two Problem-Solving Strategies When Taught to Poorly Prepared College Mathematics Students. (George Peabody College for Teachers of Vanderbilt University, 1982.) DAI 43A: 1867; December 1982. [DA8227090]

The two treatments were equally effective for simple and for novel problems, while the translation/computation strategy was more effective than the Polya strategy for complex problems. (college)


Lee, Mabel Christine. The Impact of Preschool Education Programs on the Cognitive and Affective Behaviors of Appalachian Children in Bedford and Huntingdon Counties. (The Pennsylvania State University, 1981.) DAI 42A: 3857; March 1982. [DA8129178] [grades 1-3]


No interaction was found between cognitive style and teaching method, nor was either method superior overall. However, age appeared to be a relevant factor. (grades 2-6)


No significant differences in achievement were found for groups using problem writing or two commercial textbooks, but attitudes were better in the problem-writing group. (intermediate)

Loudin, Nicholas Glenn. The Relationship Between Field Dependence-Independence and Differential Achievement. (West Virginia University, 1981.) DAI 42A: 4368; April 1982. [DA8207509] [college freshmen]

No significant relationship was found between course grades and anxiety measures, although self-reported attitudes toward mathematics were related to both mathematics and test anxiety. (community college)


Schools classified as A and AAA were most closely aligned in their interpretation of mathematical competencies. (secondary)


Mandelker, Annabel Volk. The Effects of Direct Teacher Instruction and Seatwork on the Acquisition of Math Facts. (The Pennsylvania State University, 1981.) DAI 42A: 4401; April 1982. [DA8205940]

For four or five of the six pupils studied, the direct instruction resulted in higher scores and faster rates than did seatwork. (elementary)


Applications emphasizing calculus techniques, physics, matrix methods, energy, statistics, and miscellaneous topics were collected. (college)


Use of computer-enhanced practice did not benefit achievement or attitudes. (grade 9)

Mattair, Judy Elizabeth Moore. The Use of Error Pattern Analysis in the Diagnosis and Remediation of Whole Number Computational Difficulties. (Texas A&M University, 1981.) DAI 42A: 4343; April 1982. [DA8206643]

In-service training was significantly effective in improving teachers' scores in analyzing errors. (teachers in grades 3-6)


Significant correlations were found between student achievement in mathematics and both performance evaluation and professional growth, but not parent-teacher communication or grouping procedures. (teachers in grades 2-6)
Matus, Virginia Catherine. A Comparison of Reading and Math Achievement for Learning Handicapped Limited English Proficient Students Receiving Bilingual or English-Only Instruction. (University of Southern California, 1982.) DAI 43A: 757; September 1982. [elementary?]

McAnich, Georgia Newman. Relationship Between Selected Principal Characteristics and Pupil Achievement in Title I Elementary Schools. (University of Southern California, 1982.) DAI 43A: 997-998; October 1982. [elementary principals]


Students having formal operational schemata structured content more like subject matter experts and teachers than did concrete operational students. (grade 10)


The two groups differed significantly overall, but did not significantly differ on some subtests. (ages 9-11)

McKethan, Lillian Dolores. An Attitudinal and Achievement Comparison of Mathematics Deficient Lincoln University Freshmen Resulting from Structured Peer Tutoring Versus No Peer Tutoring in Mathematics. (Temple University, 1982.) DAI 43A: 710; September 1982. [DA8217781]

Tutored students had significantly higher attitude scores than those not choosing to be tutored, but achievement differences were not significant. (college freshmen)

McMeniman, Marjorie. Logical Reasoning in Adolescence: Interpretation of Class Inclusion Statements and Recognition of Logically Necessary, Possible, and Impossible Conclusions in Syllogistic Reasoning. (Adelphi University, 1982.) DAI 43B: 901; September 1982. [DA8219002]

Four experiments were conducted to determine how students reacted to the statements, using Venn diagrams. (grades 7, 9, 12)

Minix, Nancy Alice Holder. An Exploratory Study of Mathematics Anxiety in Elementary School Children and Its Implications for Program and Staff Development. (George Peabody College for Teachers of Vanderbilt University, 1981.) DAI 42A: 4279; April 1982. [DA8205832]

Teachers believed 13 percent of their pupils were experiencing mathematics anxiety. Characteristics, causes, and intervention strategies were described. (teachers in grades 1-6)

Mitchell, Charles Edward. First-, Second-, and Third-Grade Children's
Performance on Selected Verbal and Symbolic Subtraction Problems.

Open sentence or verbal problem item type, number size, context, and existence of a whole-number solution generally affected children's ability to produce a correct answer, as did solution strategy. (grades 1-3)


Students using calculators had significantly higher achievement and less positive attitudes immediately after instruction than those using rods or paper and pencil only. (grade 3)

Moskalski, Michael Dennis. The Effects of Teacher Strikes on Student Achievement. (The Pennsylvania State University, 1981.) DAI 42A: 2954; January 1982. [8129192] [grades 5, 8, 11]


Mueninghoff, Elaine Marie. What's Happening in the Classroom: An Analysis of Classroom Interactions. (University of Cincinnati, 1982.) DAI 43A: 1421; November 1982. [DA8223065] [elementary]


A computer program was developed to analyze examples in an algebra textbook. (grade 9)


Differences between the aspirations and attitudes of males and females were noted. (secondary)

Normandie, Bruce Richard. The Relationship Between Cognitive Level and Modes of Instruction, Teacher-Centered and Activity-Centered, to the Learning of Introductory Transformational Geometry. (Rutgers University The State University of New Jersey (New Brunswick), 1981.) DAI 43A: 102; July 1982. [DA8214537]
Marilyn N. Suydam

The activity-centered group performed significantly better than the teacher-centered group. (grade 8)

Kuhlicek, Allan Lee. Relationship of School Boundary Conditions, Gemeinschaft Conditions, and Student Achievement Scores in Reading and Mathematics in Selected Milwaukee Public Elementary Schools. (Marquette University, 1982.) DAI 43A: 1039; October 1982. [DA8217284] [grade 6]


This sourcebook for teachers of mathematics and engineering contains background information and applications. (college)

Oden, Robin Earl. An Assessment of the Effectiveness of Computer-Assisted Instruction on Altering Teacher Behavior and the Achievement and Attitudes of Ninth Grade Pre-Algebra Mathematics Students. (Wayne State University, 1982.) DAI 43A: 355; August 1982. [DA8216159]

Changes in teachers' indirect influence and in students' achievement and attitudes scores were significantly greater for those using computer-assisted instruction. (grade 9)


Onnuam, Duangduen. Constructing and Validating a Hierarchy of Elementary School (K-6) Intuitive Euclidean Geometry Classification and Relation Concepts. (Kansas State University, 1981.) DAI 42A: 4717; May 1982. [DA8207771]

The structures of two proposed hierarchies were strongly supported by a panel of experts. (grades K-6)

Oppenheimer, Philip. Increasing Teachers' Use of Non-Symbolic Material in Seventh-Grade Mathematics Classes: The Effectiveness of a Facilitator Model. (The Union for Experimenting Colleges and Universities, 1982.) DAI 43A: 1867-1868; December 1982. [DA8225092]

The program was effective in increasing use of non-symbolic material, but failed to improve achievement. (grade 7)

Orfan, Lucy Jajosky. An Investigation into Mathematics Education for Gifted Elementary Students. (Fairleigh Dickinson University, 1981.) DAI 42A: 3484; February 1982. [DA820933]

Case studies of three pupils, a survey of school district practices, and recommendations are included. (elementary)

Padilla, Rosemary Kathryn Lund. Effects of Age, Ability, and
Relevant Displacement on Young Children's Number Recognition Performance. (University of Georgia, 1982.) DAI 43A: 1898-1899; December 1982. [DA8225220]

Counting-and-sorting ability was more important than age in number recognition performance. (ages 3-6)


Paolicchi, Robert Henry. The Effect of School Closing on the Achievement of Affected Students. (Northern Illinois University, 1982.) DAI 43A: 1001; October 1982. [DA8220326] [grades 2-4]


Significant effects were not found for readability level, and the use of readability formulas was questioned. (grades 3-6)


Phillips, Robert Leonard. The Effects of an Attitude/Career Unit on Middle School Students' Attitudes Toward Mathematics and Intentions to Continue the Study of Mathematics. (The University of Texas at Austin, 1982.) DAI 43A: 710-711; September 1982. [DA8217924]

The unit positively altered students' attitudes toward mathematics, but did not increase the number of mathematics courses they planned to take. (middle school)


Pinsel, Jerry Elizabeth. Math Attitude in Terms of Various Factors. (The Louisiana State University and Agricultural and Mechanical Col., 1982.) DAI 43A: 654; September 1982. [DA8216686]

The relationship between math attitude and the extent of high school training was significant for non-remedial students, but largely non-significant for remedial students. (college)


Tutors made significant achievement gains compared to non-tutors. (grades 1-6)

Poland, A. Scott. The Effects of Cognitive Behavior Modification on
Behavior modification tutoring and conventional tutoring were ineffective regardless of cognitive style when compared to the control group receiving no tutoring. (grade 2)

Porter, Elijah. An Assessment of the Effectiveness of a Teacher Behavior Training Program on the Achievement and Attitudes of Academically Talented Ninth-Grade Students in Reading and Mathematics. (Wayne State University, 1981.) DAI 42A: 4708; May 1982. [DA8209348] [teachers in grade 9]

Powell, Edwin Dan, Jr. The Effects of Grade Retention on the Academic Achievement of Elementary School Pupils. (North Texas State University, 1982.) DAI 43A: 773; September 1982. [DA8217647] [elementary]

Prince, Leo Robert. The Relationship of Attitude, Achievement, and Introversion-Extraversion Among High School Students in Euclidean and Transformational Geometry Classes. (Fordham University, 1982.) DAI 43A: 122; July 1982. [DA8213616]

No significant achievement or attitude differences were found between students in traditional or transformational geometry classes, nor was introversion-extraversion significant. (secondary)

Rachlin, Sidney Lee. Processes Used by College Students in Understanding Basic Algebra. (University of Georgia, 1981.) DAI 42A: 434; April 1982. [DA8206303]

The understanding of algebra of four women students was studied through 'think aloud' sessions. (college)


Modality strength and preference were not significant in explaining achievement variance, while field dependence-independence explained one-third of the variance in females' scores and environment explained one-fourth of males' variance. (grade 4)


Students with no access to computers achieved a higher mean gain than did students using computer programming. (grade 5)
Research Reported in 1982

Reed, Bill Dean. Metric System Instruction Within the Department of Defense Dependents Schools—Germany. (University of Missouri—Columbia, 1981.) DAI 43A: 97; July 1982. [DA8213865] [secondary?]

Reese-Dukes, Judson Leon. A Comparison of the Effects of Classroom Placement Status on the Self-Concept and Academic Achievement of Self-Contained and Mainstreamed Educable Mentally Retarded Students. (The University of Tennessee, 1981.) DAI 42A: 3951; March 1982. [DA8203863] [elementary (K-8)?]

Rekdal, Cynthia Kan. The Effects of Logical Versus Random Sequencing of a Spatial Curriculum on the Mathematical Problem-Solving and Spatial Abilities of Intellectually, Academically Gifted Fifth and Sixth Grade Males and Females. (University of Washington, 1982.) DAI 43A: 1819; December 1982. [DA8226593]

No significant differences in spatial learning or problem solving were found between the two sequences. (grades 5, 6)

Richmond, Alan Dean. Metrics: Sixth-Grade Student Achievement and Teacher Attitudes in Simi Valley, California, 1982. (Brigham Young University, 1982.) DAI 43A: 1830; December 1982. [DA8224802]

Students were proficient in their knowledge of the four basic metric units, but not in prefixes or relationships to reasonable measurements. Teachers had positive attitudes, but felt poorly trained to teach metrics. (grade 6)

Robicheaux, Ray Thomas, Sr. Developmental Mathematics Course Performance of College Freshmen as Related to Piagetian Cognitive Functioning Level. (McNeese State University, 1981.) DAI 43A: 388; August 1982. [DA8211203]

Piagetian level was significantly related to course grade. Both concrete and transitional levels benefited from the treatment aimed at enhancing functional reasoning. (college)

Robinson, Bertha Louise. An Investigation of the Effects of Teaching General and Specific Strategies for Word Problem Solving to Primary Grade Children. (University of Pittsburgh, 1982.) DAI 43A: 711; September 1982. [DA8218183]

Mean scores increased following instruction on a general strategy and using diagrams. (ages 4-8)

Rodman, Susan Margaret. The Differential Effects of Advance Organizers and Behavioral Objective on Achievement in a Basic Statistics Course. (West Virginia University, 1982.) DAI 43A: 736; September 1982. [DA8216785] [college]

Roling, Mary Angela Caylor. The Effect of the Andrews Primary Parent Involvement Program on Student Achievement in Reading and Mathematics and on Parent Involvement. (University of South Carolina, 1981.) DAI 42A: 5022; June 1982. [DA8212259] [primary grades]

Rosnick, Peter Carl. The Use of Letters in Precalculus Algebra.
Differences in the ways students at each grade level dealt with the problems were noted. (grades 7, 9, 11)

Ryder, Donald Gowen. The Effect of Hand-Held Calculators and Assigned Homework on the Achievement, Attitude, and Persistence of Remedial Algebra Students in a Small, Four-Year College. (Georgia State University-College of Education, 1982.) DAI 43A: 711; September 1982. [DA8219503]

No significant differences in achievement, attitude, or persistence were found when calculators or homework were used or not used. (college)

Saito, Noriko. A Comparison of Performance on Piagetian Tasks Among Japanese and Anglo-American Children Six Years of Age Who Were Exposed to One Language and Two Languages. (University of Southern California, 1982.) DAI 43A: 1093-1094; October 1982. [---] [age 6]


No sex differences in achievement were found within schools, but high performance for primary girls was found in the achievement-paced curriculum. (elementary)


No significant interactions were found between locus of control and reward conditions, nor was the reward treatment effective. (grade 3)

Schallhorn, Mary Margaret. The Effect of a Cognitive Style Mapping Program on Achievement of Community College Students with Internal
Locus of Control and External Locus of Control. (The University of Oklahoma, 1982.) DAI 43A: 389; August 1982. [DA8215795]

The group not given the mapping program scored higher than those given the program in basic mathematics courses. (community college)

Schenker, Sandra Lee. The Relationship Between Matched Middle School Student/Teacher Cognitive Style and Achievement, Self-Esteem, and Attitude Toward School Subject. (The University of Connecticut, 1981.) DAI 42A: 3860; March 1982. [DA8125459] [grade 7]

Schulman, Linda A. The Ability of Fourth Grade Students to Solve Five Types of Mathematical Problems. (Boston University School of Education, 1981.) DAI 42A: 3895-3896; March 1982. [DA8203906]

Students experienced the least difficulty with one-step problems. Computation ability and intelligence were the best predictors of variance in problem-solving ability; reading comprehension and sex did not contribute to any of the variance. (grade 4)

Sedra, Fayza Iskander. The Mathematics Assessment of Egyptian Students at the Sixth-Grade Level, 1981. (New York University, 1982.) DAI 43A: 1868; December 1982. [DA8226791] [grade 6]

Senigaur, Edward. The Teacher’s Perception of the Principal’s Leadership Behavior and Faculty Morale: Their Impact on Student Achievement. (University of Houston, 1981.) DAI 42A: 4679; May 1982. [DA8210436] [elementary in-service]


Achievement in computation skills increased across all treatment groups, with girls making greater gains than boys and having lower decreases in self-concept and attitude toward school. (grades 7, 8)


The training was effective in increasing students' mathematics motivation, achievement, and grades, but attitude and self-confidence were not altered significantly. (grade 11)

Sherwood, Norman Paul. An Interim Appraisal of the Basic Skills Education Program in Meeting the Needs of the Individual and the Army. (University of Southern California, 1982.) DAI 43A: 1004;
October 1982. [—] [adults]

Showalter, Millard E. Interactive Effects Between Field-Dependence-Independence and Level of Instructional Support in Elementary Probability for Non-Science College Students. (University of Virginia, 1981.) DAI 42A: 3485; February 1982. [8129301]

Students of both types performed equally well with both methods. (college)


Behaviors of three teachers were studied through process-tracing and stimulated recall. (elementary in-service)

Signer, Barbara Renee. A Formative and Summative Evaluation Study of a Project Integrating the Microcomputer with Second Year High School Algebra Instruction. (University of South Florida, 1982.) DAI 43A: 711; September 1982. [DA8216889]

Significant achievement differences favored the non-computer group, while attitudes were not significantly different. (grade 11)


The peer-tutored group made significant gains in all scores, while non-tutored students made significant gains on concepts/applications but not computation. (grades 9-12)


Differences in the strategies used by 12 students were reported. (grades 7, 9, 11)


Analysis of 192 mathematics test items verified the expected relationships. Item difficulty was related to the complexity of the thought process elicited, and unrelated to attributes of the item per se. (grades 6, 8)

Slotter, June Eleanor. The Significance of IQ, Self-Esteem and Causal Attribution Variables for the Prediction of Academic Achievement and Discrimination of High Academic Achievers and Low Academic Achievers. (The University of North Carolina at Chapel Hill, 1981.) DAI 42B: 4973-4974; June 1982. [DA8211648] [grade 10]

Smetko, John Anthony. Student Perceived Teacher Facilitation as a
Correlate of Academic Achievement, Academic Self Concept and Self Concept Among Inner City Seventh and Eighth Graders. (Northwestern University, 1982.) DAI 43A: 1902; December 1982. [DA8226021] [grades 7, 8]

Smith, Johnny L. A Study of the Relationships of Sequences of Enrollment in College Remedial Mathematics to Grades in a Subsequent College Algebra Course and to Persistence in College. (The University of Alabama, 1982.) DAI 43A: 1457; November 1982. [DA8224307]

Students who needed remediation fared best when they took remedial mathematics before college algebra. (college)

Smith, Steven Harmon. Achievement and Long-Term Retention in Geometry Using: Mastery Learning, Student Choice and Traditional Learning in the Elementary School. (Brigham Young University, 1981.) DAI 42A: 3423; February 1982. [DA8203723]

The mastery learning group made significantly greater achievement gains than the student choice or traditional groups, but retention did not differ. (grade 4)

Solkov, Janice Ilene. An Exploration into the Development of Exit Criteria for Mainstreamed Sixth Grade Low Income Bilingual Students. (Temple University, 1982.) DAI 43A: 1122; October 1982. [DA8217804] [grade 6]


No relationship was found between time off-task and performance on addition. The EMR group differed significantly from LD and normal groups, with more time off-task. (ages 13-15)


Differences among the contingencies had no significant effect on arithmetic worksheet scores. (elementary?)

Stall, Colleen Harmon. The Effect of Early Auditory Deprivation on Time Estimation Ability. (Texas Tech University, 1982.) DAI 43A: 1902-1903; December 1982. [DA8221984] [ages 13-21]

Stapleton, Ella Mae. Two Year Comparative Analysis of Mathematical Achievement on the California Achievement Test of Two Hundred Third Grade Students Taught in Mathematics Methodologies in the Detroit Public School District. (Wayne State University, 1982.) DAI 43A: 389; August 1982. [DA8216173]

No overall achievement difference was found between pupils using CSMP or another program. (grade 3)

Steele, Kathleen Jeanne Shaver. The Effect of Computer-Assisted
Mathematical Instruction upon the Computer Literacy of Fifth-Grade Students Using a Microcomputer. (Purdue University, 1981.) DAI 42A: 3433; February 1982. [8200736]

The use of computer-assisted drill and practice significantly improved both the affective and cognitive computer literacy of students, but no difference in acquisition of mathematical skills was found compared with a group using an individualized kit. (grade 5)


The only significant interaction between dyslexic and gifted pupils was on abstract reasoning. (ages 10-14)


Teachers saw their role as managing the efficient transfer of a body of content to their pupils. They occasionally adjusted procedures, but rarely DMP content. (elementary in-service)

Stevens, Patricia Carol. An Investigation of Socio-Cultural Factors and Mathematics Performance of Ninth Grade General Mathematics Students. (University of Missouri-Kansas City, 1982.) DAI 43A: 1072; October 1982. [DA8216966]

No sex differences were found, but a number of other variables yielded significant results. (grade 9)


Adequate sources of data were found available to evaluate the model. (community college)


Diagram, extraneous information, and order of numerical presentation appeared to be variables contributing heavily to problem-solving difficulty. Students were taught to manipulate these variables successfully. (grade 6)


Sullivan, Patrick Dennis. A Comparison of Students in an Urban Mini-School Program, Designed to Retain and Improve the Reading,
English, and Mathematics Achievement of Potential Dropouts, with Students in a Traditional High School Program. (New York University, 1981.) DAI 42A: 2962; January 1982. [DA8205060] [ages 10, 17]


The group using the flow-diagram format had significantly higher scores on the proof-writing test and was more efficient. (grade 10)


Thompson, Patrick Wilfrid. A Theoretical Framework for Understanding Young Children's Concepts of Whole Number Numeration. (University of Georgia, 1982.) DAI 43A: 1868; December 1982. [DA8225240]

The development of number and place value concepts for eight students was traced. (grades 1, 2)


LD students spontaneously generated and used problem-solving strategies, but these strategies did not appreciably affect their performance. (grades 4, 8)

Travis, Donald O'Neil. A Comparative Study of the Basic Skills Attainment of Sixth Grade Pupils in Public and Private Schools in Volusia County. (Florida Atlantic University, 1981.) DAI 42A: 3865; March 1982. [DA8205060] [grade 6]


The calculator-oriented materials were more effective than textbook materials at lower understanding levels, and equally effective at higher levels. (grade 11)

Students with high spatial performance tended to score higher and to prefer graphical representations. (college)

Turner, Mary Alice Giglio. The Effect of Retention upon Student Performance. (The Louisiana State University and Agricultural and Mechanical College, 1981.) DAI 42A: 4718; May 1982. [DA8207843] [grades 1-8]


Students attending the after-school sessions regularly were more likely than non-attenders to continue with college-preparatory mathematics and maintain satisfactory grades. (secondary)

Turpin, Ruth Esther. Classroom Climate, General Ability, and Anxiety in a Basic Skills Program for Saudi Arabian Naval Trainees. (Stanford University, 1982.) DAI 42A: 4710; May 1982. [DA8208916] [adults]


In general, students learned from the one lesson. The number of 'moves' affected learning. (grades 11, 12)


No significant differences were found between age groups on problem scores, but significant differences were found on the frequencies of some strategies. (community college)

Van Zant, Susan Lucille. Impact of Elementary Grade Level Retention upon Academic Achievement, Self-Concept, and Classroom Behavior. (United States International University, 1982.) DAI 43A: 74; July 1982. [DA8213380] [elementary]


von Stein, Janet Higginbotham. An Evaluation of the Microcomputer as a Facilitator of Indirect Learning for the Kindergarten Child. (Florida Atlantic University, 1982.) DAI 43A: 72; July 1982. [DA8214463]

No significant difference was found between children using or not using a computer program for learning to count and pattern shapes. (grade K)
Wallace, Dee Ann. The Relationship Between Predictive Variables and Academic Achievement. (The Pennsylvania State University, 1981.) DAI 42A: 4291-4292; April 1982. [DA8205985] [grade K]


Visual strategies for subtraction with regrouping did not appear to be more productive than algorithmic strategies. (grade 3)

Wells, Peggy Larue. A Comparison of the Achievement of University Students Taught by an Individualized Instructional Approach vs. the Traditional Instructional Approach in a Combined Business Math/Business Machines Course. (University of Houston, 1981.) DAI 42A: 4697; May 1982. [DA8210438] [college]

White, Hedy Judith. The Development of Children's Ability to Solve Piagetian Combinatorial Ordering Problems: Performance as a Function of Training Condition and Pretest Level. (Claremont Graduate School, 1982.) DAI 43B: 1280-1281; October 1982. [DA8220598] [grades 2-5]

Wilson, Barbara Upton. The Effects of Pacing and Cognitive Style upon Student Achievement and Attitude in Basic College Mathematics. (The College of William and Mary in Virginia, 1981.) DAI 42A: 4331; April 1982. [DA8206549]

Field-dependent students scored higher in the instructor-paced approach, while field-independent students did better using self-paced modules. (college)

Winnick, Gloria Francis. The Effect of Treatment Structure and Verbal Ability on Achievement and Attitude. (University of Southern California, 1981.) DAI 42A: 3398; February 1982. [secondary]

Wiseman, E. Dewey. A Study to Determine the Effect of Both Adjunct Prequestions and Adjunct Postquestions on Achievement. (The Catholic University of America, 1982.) DAI 43A: 776-777; September 1982. [DA8213737] [elementary in-service]


Although significant differences were not found in most cases, some findings favored the group using the supplementary materials. (college)

Wong, Pierina Cheng-Noi. Relationship of Two Field-Dependent-

Factors of importance in teaching gifted students were noted from involvement in a summer program for the talented. (secondary)

Wroble, Linda Maxine. Psychological and Cognitive Correlates to Academic Achievement. (Boston University School of Education, 1982.) DAI 43A: 1095-1096; October 1982. [DA8220977] [grades 5-8]

Yoo, Han-Tai. Area Perception as a Function of Geometric Shape. (Illinois State University, 1982.) DAI 43A: 1330; November 1982. [DA8224100]
The perception of area was affected by geometric shape. (college)

No significant differences in achievement were found between groups given remedial treatments or self-study. Remediation reinforced with algorithms led to more satisfaction than remediation with immediate feedback. (elementary preservice)


Journals Searched

Journals indicated by an asterisk were searched page by page. For the remainder, either one or more issues could not be searched or articles were located through the use of an index such as CIFE. The number in parentheses indicates the number of references listed.

*Alberta Journal of Educational Research (8)
*American Journal of Mental Deficiency (1)
*American Mathematical Monthly (0)
*Arithmetic Teacher (8)
*Australian Mathematics Teacher (2)
Behavior Therapy (1)
Behavioral Disorders (1)
*British Journal of Educational Psychology (5)
Capstone Journal of Education (1)
*Child Development (11)
Child Study Journal (1)
*Cognitive Psychology (4)
*Contemporary Education (0)
Contemporary Educational Psychology (1)
*Developmental Psychology (4)
*ECTJ (2)
Education (1)
Education 3-13 (1)
Education and Training of the Mentally Retarded (1)
Education and Treatment of Children (2)
*Educational and Psychological Measurement (13)
Educational Leadership (3)
Educational Perspectives (1)
*Educational Research (1)
Educational Research Quarterly (1)
*Educational Researcher (1)
Educational Studies (1)
*Educational Studies in Mathematics (11)
*Educational Technology (2)
Electronic Learning (1)
*Elementary School Journal (9)
Exceptional Children (1)
*Genetic Psychology Monographs (1)
Gifted Child Quarterly (1)
Illinois School Research and Development (1)
Intelligence (2)
International Journal of Behavioral Development (1)
International Journal of Psychology (1)
*Journal for Research in Mathematics Education (25)
Journal of American Indian Education (1)
Journal of Applied Developmental Psychology (1)
Journal of Child Language (1)
Journal of Clinical Psychology (1)
*Journal of Computers in Mathematics and Science Teaching (3)
Journal of Correctional Education (1)
Journal of Counseling Psychology (1)
Journal of Cross-Cultural Psychology (1)
*Journal of Curriculum Studies (2)
*Journal of Educational Measurement (7)
*Journal of Educational Psychology (18)
Marilyn N. Suydam

*Journal of Educational Research (10)
*Journal of Experimental Child Psychology (2)
*Journal of Experimental Education (3)
*Journal of Experimental Psychology (3)
*Journal of Genetic Psychology (11)
*Journal of Learning Disabilities (1)
*Journal of Research and Development in Education (1)
*Journal of Research in Science Teaching (3)
*Journal of School Psychology (5)
*Journal of Social Psychology (2)
*Journal of Teacher Education (1)
*Journal of Visual Impairment and Blindness (1)
Learning Disability Quarterly (2)
*Mathematics and Computer Education (1)
Mathematics in School (5)
*Mathematics Teacher (3)
Mathematics Teaching (1)
Ohio Business Teacher (1)
Perceptual and Motor Skills (2)
Phi Delta Kappan (1)
*Psychological Abstracts (0)
*Psychological Bulletin (3)
*Psychological Reports (8)
Psychological Review (2)
*Psychology in the Schools (9)
Quarterly Journal of Experimental Psychology (1)
Reading Improvement (1)
Research Communications in Psychology, Psychiatry and Behavior (1)
Review of Educational Research (2)
School Psychology Review (1)
*School Science and Mathematics (14)
Sex Roles: A Journal of Research (1)
*Two-Year College Mathematics Journal (0)
This index is designed to help the reader locate references to designated mathematical topics. Not all studies are included, nor is the cross-referencing exhaustive. The studies have been grouped by articles and dissertations; level is indicated by E, elementary; S, secondary; and C, college and other post-secondary.

### Achievement

**Articles**
- Anderson et al.
- Antonak et al.
- Archer and Edwards
- Armstrong and Price
- Battle and Labercane
- Becker
- Benbow and Stanley
- Benbow and Stanley
- Bloom
- Bragman and Hardy
- Bridgeman
- Burke
- Burton and Jones
- Burton and Fleming
- Carpenter et al.
- Dekkers et al.
- Ford et al.
- Hansford and Hattie
- Kaplan and Pike
- Kavale
- Lorenz
- Low and Clement
- McCormack-Larkin and Kritek
- Perl
- Peterson and Swing
- Rossmiller
- Rust et al.
- Sandovaal
- Schofield
- Serow and Davies
- Sexton and Treloar
- Smith et al.
- Stigler et al.
- Stones et al.
- Suddick and Collins
- Swing and Peterson
- Thurman et al.
- Webb (*b*)
- Welch et al.
- Whitesitt
- Wileman et al.

**Dissertations**
- Annice
- Bailey

**Arithmetic Operations**
- Carpenter et al.
- Clement
- Saxson
- Dissertations
- Alexander
- Dhaifar
- Marchionini
- Neves
- Rachlin
- Signer
- Turinese

**Algebra**

<table>
<thead>
<tr>
<th>Article</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles</td>
<td>E Arts</td>
</tr>
<tr>
<td>Algebra</td>
<td>S Woods</td>
</tr>
<tr>
<td>Dissertation</td>
<td>E 62</td>
</tr>
<tr>
<td>Barton</td>
<td>S 62</td>
</tr>
<tr>
<td>Blume</td>
<td>S 62</td>
</tr>
</tbody>
</table>
Research Reported in 1982

Dissertations

Anania
Bain
Barron
Blume
Caputo
Chan
Doboskey
Delventhal
Dong
Ebe
Fallbeck
Gibson
Greene
Griffin, K.
Hailey
Henderson
Jensen
Mattair
McKethan
Offner
Plumb
Poland
Reese-Dukes
Seraydarian
Shannon
Singh, R.
Smith, J.
Sparks
Wilson
Yueh

Giannitrapani
Graziano et al.
Harris and King
Johnson and Johnson
Kornbluth and Sabin
Lancy and Goldstein
Loranger et al.
Low and Clement
McCormack-Larkin and Kritek
Melzer
Nevin et al.
Powers and Sanchez
Raschke et al.
Rotenberg
Sercho
Serow and Davies
Tallmadge
Voeltz
Warrington
Wolf and Wenzl
Aguro
Bardouille-Crema
Beal
Beckerman
Bordeau
Casey
DeBoskey
Gee
Glass
Goodstein
Jones, V.
Karickhoff
Kampalakit
La Main
Levine
Lieby
Nicholson
Smerko
Stall
Wong
Wroble

Learning

Articles

Albion and Salzberg
Anderson, J.
Ashcraft and Fierman
Barling
Becker and Gersten
Becker et al.
Bergan et al.
Bergman et al.
Blakemish and Baumgartner
Bretel
Cancelli et al.
Drew et al.
Dreyfus and Eisenberg
Ehndero
Eisenberger et al.
Giannitrapani
Gonfried
Hashway
Holzman et al.
Houtz and Shaming
Joseph and Maguire
Konarski et al.
Leask et al.
Luchins and Luchins
Lysakowski and Wallberg
Nevin et al.
Paine et al.
Peterson and Swing
Peterson et al.
Ross and Cermare
Ross and Rakow

Ethnic and Social Variables

Articles

Anderson, C.
Bacon et al.
Bar-Tal et al.
Becker and Gersten
Brulle and Brulle
Burke
Burton and Jones
Carman and Kosberg
Carmine and Gersten
Dombrower et al.

Gottfried
Hashway
Holzman et al.
Houtz and Shaming
Joseph and Maguire
Konarski et al.
Leask et al.
Luchins and Luchins
Lysakowski and Wallberg
Nevin et al.
Paine et al.
Peterson and Swing
Peterson et al.
Ross and Cermare
Ross and Rakow
<table>
<thead>
<tr>
<th>Research Reported in 1982</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem Solving</strong></td>
</tr>
<tr>
<td><strong>Articles</strong></td>
</tr>
<tr>
<td>Battista and Krockover</td>
</tr>
<tr>
<td>Brady</td>
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<tr>
<td>Bright and Harvey</td>
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<td>Caldwell et al.</td>
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<td>Davis et al.</td>
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<td>Fitz-Gibbon and Clark</td>
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<td>Karweit and Slavin</td>
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<td>Welch et al.</td>
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<td>Alexander</td>
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<td>Watson</td>
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<td><strong>Sex Differences</strong></td>
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<td><strong>Articles</strong></td>
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<tr>
<td>Armstrong and Price</td>
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<td>Benbow and Stanley</td>
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<td>Dekkers et al.</td>
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<td>Ehindero</td>
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<td>Fendrich-Salowey et al.</td>
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<td>Kaplan and Plake</td>
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<td>Kirschner</td>
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<td>Leder</td>
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<tr>
<td>Luchs and Luchins</td>
</tr>
<tr>
<td>Meece et al.</td>
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<td>Murphy (b)</td>
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<tr>
<td>Northam</td>
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<td>Onyejiakor</td>
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<tr>
<td>Parsons</td>
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<td><strong>ES</strong></td>
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<td><strong>S</strong></td>
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<td>Test Analysis</td>
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**Notes:**
- E: Experimental
- S: Systematic
- SC: Systematic and Critical
- C: Critical
- E/S: Experimental and Systematic
- SIC: Systematic, Innovative, Critical
- ES: Experimental, Systematic

**Sources:**
- Anderson et al.
- Arlin
- Austin and Lee
- Bar-Tal et al.
- Birenbaum and Tatsuoka
- Bredland and Griswold
- Brock
- Darakjian and Michael
- Devine and Raju
- Dombrower et al.
- Forsyth and Ansley
- Freeman et al.
- Grise et al.
- Gutman and Shoham
- Hagan
- Hart
- Hashway
- Jaeger and Wolf
- Murphy (a, b)
- Nyberg and Clark
- Plake and Parker
- Plake et al.
- Roberts and Saxe
- Russ et al.
- Sandoval
- Smith
- Siggler et al.
- Suddick and Collins
- Suinn and Edwards
- Tallmadge
- Thurlow and Ysseldyke
- Torabi-Parizi and Campbell
- Wiebe
- Wild et al.
- Beal
- Bushyager
- Crowe
- Dew
- Frisz
- Gorce
- Hodge
- Kearns
- Khampalikit
- Maggio
- Nicholson
- Petrolini
- Phillips, S.
- Siskind
- ES: Experimental and Systematic
- SIC: Systematic, Innovative, Critical
- ES: Experimental, Systematic

**Authors:**
- Parsons et al.
- Pennington et al.
- Peri
- Plake et al.
- Rogers
- Schnefield
- Stones et al.
- Bridges
- Curcio
- Dew
- Earle
- Echols
- Garrard
- Guangrasso
- Glass
- Heimann
- Khampalikit
- Nolan
- Phillips, R.
- Pinsel
- Ramires
- Saltzen
- Seraydarian
- Stevens
- Turner, S.