This is the fourteenth annual listing of research on mathematics education prepared for the Journal for Research in Mathematics Education. References are organized alphabetically by author within three categories: research summaries, articles, and dissertations. Included are 32 summaries, 247 articles, and 300 dissertations. Studies focused on mathematics education are annotated, whereas studies in which mathematics education was not the primary focus are usually not annotated. Annotations generally indicate one principal finding of a study, although most studies have additional findings. Journals searched and the number of articles located in each are listed. Also provided is an index to aid in locating references to designated mathematical topics: achievement, algebra, arithmetic operations, attitudes and anxiety, calculators and computers, cognitive style, diagnosis and remediation, ethnic and social variables, geometry and measurement, learning, learning disabilities, materials, number and numeration, organizing for instruction, problem solving, sequencing, sex differences, and test analysis. Grade or age level is noted for each entry. (MNS)
RESEARCH ON MATHEMATICS EDUCATION

REPORTED IN 1983

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Research on Mathematics Education

Reported in 1983

Marilyn N. Suydam, The Ohio State University

In this 14th 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). Studies focused on mathematics education are annotated, whereas studies in which mathematics education was not the primary focus are usually not annotated. 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.

A number of other persons searched several journals not available to me: Karen Fuson, Jeremy Kilpatrick, Laurie Reyes, David Robitaille, and Alan Schoenfeld, as well as Beverly Brooks Keith. In addition, several authors sent copies of articles from journals I do not usually search. 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.

This year, because of space limitations, the number of dissertations was reduced from the original set located. The 55 dissertations omitted were those judged to have the most tenuous connection with mathematics education. However, we wish to announce . . .

A compilation of the 1983 dissertation abstracts for mathematics education, reproduced from Dissertation Abstracts International with the permission of University Microfilms International, will be available from the ERIC.
Clearinghouse for Science, Mathematics and Environmental Education in August 1984 at a cost of $5.00. Included will be 355 references, with the full text of the abstracts for over 250 dissertations and title and source for the remainder, along with a full index. This publication will provide, in one place, additional information on each citation in the JRME listing.

The cooperation of the Editorial Board of JRME and University Microfilms International with ERIC/SMEAC is deeply appreciated: we hope the publication will prove useful to you. Orders may be sent after August 1, 1984 to ERIC/SMEAC, 1200 Chambers Road - Third Floor, Columbus, OH 43212, with a check for $5.00 made out to SMEAC Information Reference Center.
Footnotes

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 ERIC 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

Two listings of research reports and 19 articles summarizing or discussing research findings were located.


Use of an individualized teaching system had only a small effect on student achievement in secondary school courses. (Mathematics effect size = .03) (secondary)


CAI programs seem to have been structured to increase academic learning time, and this increase may result in improved efficiency. (grades K-12, college)


Information from research on how successful teachers organize and manage their classrooms is described. (grades K-12)


Research on the intellectual demands of curricular tasks (including mathematics) and how academic work is accomplished are reviewed. (grades K-12)


Research on characteristics of the mathematically gifted is synthesized. [---]

Findings from a number of surveys on the uses of mathematics in industry are given. (adults)


The studies of Stanley, Krutetskii, and Bloom are reviewed. (---)


Rosenshine, Barak. Teaching Functions in Instructional Programs. Elementary School Journal 83: 335-351; March 1983. [elementary, secondary]


Data from four studies are reviewed; results from psychological research do not agree with results from classroom research. (---)


This thirteenth annual annotated listing includes 23 research summaries; 260 articles, and 284 dissertations for kindergarten through post-secondary levels. An index is given. (grades K-12, college)

Suydam, Marilyn N. Teaching Effectiveness. Arithmetic Teacher 31: 3; October 1983.

Ways effective teachers manage their classes are concisely listed. (elementary)


Research indicates that calculators can aid mathematics instruction, with no decrease in achievement. (elementary)

Suydam, Marilyn N. Low Achievers. Arithmetic Teacher 31: 40; December 1983.

Ways low achievers are treated by teachers are briefly reported. (elementary)

26 dissertations are listed, with annotations. (college)


**Articles**

In this section, 247 articles are listed. The journals searched and the number of articles from each may be found at the end of the total listing.


Ayabe, Harold I.; Freese, Anne R.; Kim, Kyoung-Ja; Arakaki, Masakazu; and Kameoka, Keith Y. Feedback and Locus of Control. *Journal of Genetic Psychology* 143: 141-142; September 1983. (college)


The Wynroth program seems fairly successful in cultivating a basic relational concept of "equals". (grades 1-3)


Commutativity was used extensively at each grade, while the addition-subtraction principle to solve subtraction varied across grades and the N+1 pattern was seldom used. (grades 1-3)


Counting skills such as cardinality developed before conservation. (grades K, 1)


Benbow, Camilla Persson; Stanley, Julian C.; Kirk, Marshall K.; and Zonderman, Alan B. Structure of Intelligence in Intellectually Precocious Children and in Their Parents. *Intelligence* 7: 129-152; April-June 1983.

Mathematically precocious children were brighter than their intelligent parents. Vernon's model of intelligence best fits the results, with verbal-educational and practical-spatial-mechanical factors explaining most of the variance in both samples. (secondary, adult)

Benbow, Camilla Persson; Zonderman, Alan B.; and Stanley, Julian C. Assortative Marriage and the Familiality of Cognitive Abilities in Families of Extremely Gifted Students. *Intelligence* 7: 153-161; April-June 1983.

For mathematically precocious children, parental similarity in cognitive abilities was greater than in the general population, but parent-offspring similarity was less. (secondary, adult)


Scores on calculation questions were significantly higher than on understanding (problem) questions, with the Scotland sample outperforming the Michigan sample and girls outperforming boys on most items. (grade 6)

Birenbaum, Menucha and Tatsuoka, Kikumi K. The Effect of a Scoring System Based on the Algorithm Underlying the Students' Response Patterns on the Dimensionality of Achievement Test Data of the Problem Solving Type. *Journal of Educational Measurement* 20: 17-26; Spring 1983. [grade 8]

Blair, R. Clifford; Higgins, J. J.; Topping, Mary E. H.; and Mortimer, Allen L. An Investigation of the Robustness of the t Test to Unit of Analysis Violations. *Educational and Psychological Measurement*

Performance was very poor on both knowledge and application of distributivity. (grade 8)


Generally, the estimated proportion of errors attributable to short-term memory failure was far greater than that attributable to processing failure. (ages 4, 5, grade 1)


Data from a study by Haines about sex differences are reported, indicating that males and females had different attitudes toward mathematics. (college)


Two versions of Mastermind were not differentially effective; the game was not effective in improving formal logical reasoning skills. (grades 6, 8)

Brophy, Jere; Rohrkemper, Mary; Rashid, Hakim; and Goldberger, Michael. Relationships Between Teachers' Presentations of Classroom Tasks and Students' Engagement in Those Tasks. Journal of Educational Psychology 75: 544-552; August 1983. (grades 4-6)


Women who selected the all-female section of an algebra course had lower mathematical ability scores, yet attained significantly higher achievement scores. (college)


Prior to instruction, children's solution processes directly modeled the action or relationships in a problem. After instruction, they generally used a separating strategy for all subtraction problems. (grade 1)

Carpenter, Thomas P.; Lindquist, Mary M.; Matthews, Westina; and Silver, Edward A. Results of the Third NAEP Mathematics Assessment:

The decline of 17-year-olds' performance leveled out between the second and third assessments; 13-year-olds improved significantly. Data from a variety of topics are included. (ages 13, 17)


Most students were competent in knowledge of simple basic metric concepts, but deficient in specific applications to daily life situations. Teachers' attitudes were generally positive. (grade 6)


Course selection was based on perceptions of high mathematics and science requirements. (grades 10-12)


Duke, J. D. Disparities in Grading Practice, Some Resulting Inequities, and a Proposed New Index of Academic Achievement. *Psychological Reports* 53: 1023-1080; December 1983. (college)


Numerical skills, instructional method, age, self-assessment of mathematical knowledge, and attitude toward mathematics were determinants of success or failure in remedial mathematics courses. (college)


Fennell, Eileen B.; Satz, Paul; and Morris, Robin. The Development of Handedness and Dichotic Ear Listening Asymmetries in Relation to School Achievement: A Longitudinal Study. *Journal of Experimental Child Psychology* 35: 248-262; April 1983. [grades K, 2, 5]

Fitzgerald, A. The "Mathematics in Employment 16-18" Project: Its


Scores on four of five mathematics attitude scales were strongly related to a single, underlying attitude toward mathematics. Correlates of mathematics anxiety were noted. (college)


Girls and boys are approaching equivalent facility in mathematical ability. (grades 7, 8)


Five styles of textbook use of one mathematics textbook were considered in relation to five standardized tests. Each style resulted in a unique profile of topics taught. (grade 4)


The four mathematics textbooks and five tests studied did not reflect a consensus on what should be taught. Only six topics were emphasized in all texts and tests. (grade 4)


Fulkerson, Katherine Fee; Furr, Susan; and Brown, Duane. Expectations and Achievement Among Third-, Sixth-, and Ninth-Grade Black and White Males and Females. *Developmental Psychology* 19: 231-236; March 1983. [grades 3, 6, 9]

Children used both matching and counting to make correct judgments of numerical equivalence. (ages 4, 5)


For women, but not men, high anxiety about mathematics is related to negative attitudes toward the metric system. (college)


Teachers gave significantly more wait-time to boys than to girls. (grade 4)


Green, David. From Thumbtacks to Inference. *School Science and Mathematics* 83: 541-551; November 1983. [ages 11-16]


Selecting the smallest of a given set of decimals was difficult; many students selected the longest decimal. (college freshmen)

1983. [elementary]


Support for the model of factors affecting attitudes was moderately positive in grade 4 and more substantial in grades 7 and 9. (grades 4, 7, 9)


Work-sample test items and questionnaire items each contributed to the predictive efficiency of a standardized test. (grade 9)


Some achievement differences were found related to both type of instruction and ethnic group on some subtests. (grade 6)


Mathematics performance was significantly related to systems-based instructional methods. (grades 5, 6)


Ten major strategies found to contribute to lesson organization and clarity are discussed. (college)


Students in grades 5 and 7 taught to use estimation strategies used more on the posttest than those taught the guess-and-check method. (grades 5, 7, college freshmen)


Low-scoring students profited more from the distributive assignment homework, while high-scoring students achieved better when homework related to the daily topic only. (college)


Non-traditional mathematics career aspirants could be discriminated from five other career-aspiration groups on the basis of seven self-estimates of ability. (grade 10)


Houston, Lawrence N. The Comparative Predictive Validities of High School Rank, the Ammons Quick Test, and Two Scholastic Aptitude Test Measures for a Sample of Black Female College Students. *Educational and Psychological Measurement* 43: 1123-1126; Winter 1983. [college]

Howe, Ann C.; Hall, Vernon; Stanback, Bessie; and Seidman, Shari. Pupil Behaviors and Interactions in Desegregated Urban Junior High Activity-Centered Science Classrooms. *Journal of Educational Psychology* 75: 97-103; February 1983. [grades 8, 9]


Many children were skillful at establishing correspondences and determining exact numerical differences between disjoint sets. Kindergarten children used a sophisticated indirect counting strategy frequently. (ages 4-8)


Hunting, Robert P. Alan: A Case Study of Knowledge of Units and

The thought processes and schemes used by one child were explored. (age 9)


Mean scores for students given vocabulary-oriented activities were significantly higher than for control group students on computational and verbal items. (grade 7)


People can store and use both viewer-centered and object-centered representations of three-dimensional objects. (adults)


An interview with one girl about division facts is described. (grade 4)

Kaneko, Ryutaro; Tanaka, Akio; and Matsui, Michiko. Comparison of Natural and Model-Trained Conservers. *Psychological Reports* 53: 623-630; October 1983. [preschool, grade 3]

Karplus, Robert; Pulos, Steven; and Stage, Elizabeth K. Early Adolescents' Proportional Reasoning on 'Rate' Problems. *Educational Studies in Mathematics* 14: 219-233; August 1983.

No type of comparison appeared to be more 'natural' than another. Use of strategy was affected by content and context variables. (grades 6, 8)


Kingma, J. and Koops, W. Piagetian Tasks, Traditional Intelligence and Achievement Tests. *British Journal of Educational Psychology*


LaBercane, George D.  Correlations of Reading Achievement and Ability for Learning Disabled Students.  *Psychological Reports* 53: 212-214; August 1983.  [ages 9-12]


Leeds, Alan; Dixon, David; and Brannigan, Gary G.  The Development of Spatial Representation in Children from Five to Thirteen Years of Age.  *Genetic Psychology Monographs* 108: 137-165; August 1983.  [ages 5-13]


Data on enrollment in college remedial classes and from a pilot study of new materials for a grade 12 course are included in this description of the course.  (grade 12, college)


Differences in achievement were found, favoring the self-instructional group.  (ages 9-12)

Levine, Daniel U. and Ornstein, Allan C.  Sex Differences in Ability and Achievement.  *Journal of Research and Development in Education* 16: 66-72; Winter 1983.  [elementary-adult]


Lindquist, Mary Montgomery; Carpenter, Thomas P.; Silver, Edward A.; and Matthews, Westina.  The Third National Mathematics Assessment: Results and Implications for Elementary and Middle Schools.  *Arithmetic Teacher* 31: 14-19; December 1983.

Data from a variety of items are presented.  Overall, 9-year-olds'
performance changed little from the second assessment; gains were noted for 13-year-olds. (ages 9, 13)


Fewer than half the students consistently displayed proportional reasoning, with females slightly less successful than males. (grades 7, 9, 11)


Students performed better when tested in English than in Spanish, and when tested on concepts than on applications. (grades 4, 5)


Females were about half of the students in each of the mathematics tracks, although differences in schools were found. (secondary)

Marsh, H. W.; Parker, J. W.; and Smith, I. D. Preadolescent Self-Concept: Its Relation to Self-Concept as Inferred by Teachers and to Academic Ability. *British Journal of Educational Psychology* 53: 60-78; February 1983. [grades 5, 6]

Marsh, Herbert W.; Smith, Ian D.; and Barnes, Jennifer. Multitrait-


A significant interaction between sex and choice of distracter occurred for a large majority of the items. (grade 6)


Matthews, Julia. A Subtraction Experiment with Six and Seven Year Old Children. *Educational Studies in Mathematics* 14: 139-154; May 1983. [ages 6, 7]


The response patterns of 19 students suggested that they were not at the proper level to learn formal geometry. The van Hiele levels were found to represent a hierarchy. (elementary preservice)


Teachers in grades 3 and 5 utilized seatwork a majority of the time; the seventh grades used a majority of teacher-led activities. As grade level increased, student engagement decreased. (grades 3, 5, 7)


Even kindergarteners appeared to understand the importance of magnitude as a basis for judging similarity between numbers. (grades K, 3, 6, adults)

Miller, Louise B., and Bizzell, Rondeall P. Long-Term Effects of Four Preschool Programs: Sixth, Seventh, and Eighth Grades. *Child Development* 54: 727-741; June 1983. [grades 6-8]

Mims, Michael; Cantor, Joan H.; and Riley, Christine A. The Development of Representation Skills in Transitive Reasoning Based on Relations of Equality and Inequality. *Child Development* 54: 1457-1469; December 1983. [grades K, 3, adults]


Mishra, Shitala P. Validity of WISC-R IQs and Factor Scores in Predicting Achievement for Mexican-American Children. *Psychology in the Schools* 20: 442-444; October 1983. [elementary]

Achievement gain was higher for the class using a microcomputer for three geometry strategy games than for the class without a computer. (grade 6)


Students in the low-explanatory and standard text conditions performed better on formulas than on story problems; those using high-explanatory texts did equally well on both types of problems. (college)

More agreement on objectives was found within than across institutional types. Substantial differences were found between university and vocational teachers, with secondary teachers in the
middle. (secondary & college teachers)


Students often missed repeated digits and decade numbers. (college)


Newfield, John and McElyea, Virginia B. Achievement and Attitudinal Differences Among Students in Regular, Remedial, and Advanced Classes. Journal of Experimental Education 52: 47-56; Fall 1983. [grades 10, 12]


Students were reasonably proficient in multiplication computation, but few could construct a multiplication context until grade 6. (grades 4-6)


The multiplication stories developed by the children had many fewer errors than the non-multiplicative stories. (grades 4-6)


Orton, A. Students' Understanding of Integration. Educational Studies in Mathematics 14: 1-18; February 1983. [ages 16-22 (secondary, college)]


Ozawa, Joseph P. and Michael, William B. The Concurrent Validity of a Behavioral Rating Scale for Assessing Attention Deficit Disorder (DSM III) in Learning Disabled Children. Educational and
Psychological Measurement 43: 623-632; Summer 1983. [ages 8-12]


The male-female gap in SAT-M performance shrank considerably when sex differences in quantitative high school coursework were controlled. (grades 5, 7, 9, 11, 12)


Self-instruction was found to be beneficial for gifted children. (grades K-2)


Overall, no significant differences by sex were found in mathematical ability, although some differences were found at some grade levels. (grades 4, 8, 11)


Success and teacher were found to affect self-concept significantly, but sex did not. (grades 9, 10)


Pineau, Samuel R.; Dillehay, Ronald C.; and Sassenrath, Julius. Behavior Patterns of Normal Children: II. Genetic Psychology


Children's partitioning capabilities were traced in relation to a five-level theory. (grades K-3)


Powers, Stephen; Thompson, Douglas; Azevedo, Barbara; and Schaad, Olivia. The Predictive Validity of the Stanford Mathematics Test Across Race and Sex. Educational and Psychological Measurement 43: 645-649; Summer 1983. [grades 6, 8]


The more involved the principal was in the adoption process for a new mathematics curriculum, the more the school utilized mathematics consultants and the more students gained in achievement. (grade 6)


General mathematics and algebra students were similar on individually linked measures such as self-esteem, but expressed clearly divergent views about the adequacy of the classroom learning environment. (grade 9)


The meaning of concepts and relationships was a major source of difficulty, and levels in understanding the concept of ratio were identified. (ages 9-14)


Ridley, Dennis R. and Novak, Joseph D. Sex-Related Differences in
High School Science and Mathematics Enrolments: Do They Give Males
a Critical Headstart Toward Science- and Math-Related Careers?
Alberta Journal of Educational Research 29: 308-318; December
1983.

Differences in mathematics enrollments (from previously published
data) appeared too small to account for large gender differences in
career pursuits. (secondary)

Ridley-Johnson, Robyn; Cooper, Harris; and Chance, June. The Relation
of Children's Television Viewing to School Achievement and I.Q.
[grades 5-8]

Roberge, James J. and Craven, Patricia A. Deductive Reasoning and Its
Relationship to Reading Comprehension. School Science and Math-

Students in the high reading comprehension group had generally
superior deductive reasoning scores. Results differed from other
studies on percentages using valid and invalid principles. (grades
5-8)

Roberge, James J. and Flexer, Barbara K. Cognitive Style, Opera-
tivity, and Mathematics Achievement. Journal for Research in
Mathematics Education 14: 344-353; November 1983.

Field-independent students scored significantly higher than field-
dependent students on concepts and problem solving. Level of oper-
ational development also affected achievement. (grades 6-8)

Robinson, Jack E. Can "Soft" Data Be Used to Evaluate the Effectiveness
of Educational Technologies? Educational Technology 23: 17-
21; June 1983. [college]

Robitaille, David F. and O'Shea, Thomas. The Development of an Item
Bank in Mathematics Using the Rasch Model. Canadian Journal of
Education 8: 57-70; January 1983.

The Rasch simple logistic model was used to calibrate all items on
tests keyed to the British Columbia mathematics curriculum.
(grades 3-4, 7-8, 10-11)

Roe, Kiki V.; McClure, Anne; and Roe, Arnold. Infant Gesell Scores
vs. Cognitive Skills at Age 12 Years. Journal of Genetic Psychol-
ogy 142: 143-147; March 1983. [age 12]

Rovet, Joanne and Netley, Charles. The Triple X Chromosome Syndrome
in Childhood: Recent Empirical Findings. Child Development 54:
831-845; August 1983. [ages 8-11]

Saigh, Philip A. and Khouri, Amen. The Concurrent Validity of the
Mathematics Anxiety Rating Scale for Adolescents (MARS-A) in Re-
lation to the Academic Achievement of Lebanese Students. Educa-
tional and Psychological Measurement 43: 633-637; Summer 1983.
[secondary]

Salend, Spencer J. Self-Assessment: A Model for Involving Students in the Formulation of Their IEPS. *Journal of School Psychology* 21: 65-70; Spring 1983. [grades 2, 3]

Sanford, Julie P. and Evertson, Carolyn M. Time Use and Activities in Junior High Classes. *Journal of Educational Research* 76: 140-147; January/February 1983. Significant relationships were found between time use and class achievement and attitude in mathematics classes, but not in English classes. (junior high)


Schoenfeld, Alan H. Beyond the Purely Cognitive: Belief Systems, Social Cognitions, and Metacognitions as Driving Forces in Intellectual Performance. *Cognitive Science* 7: 329-363; October-December 1983. Students' beliefs about mathematical thinking are shown to affect the way they go about solving mathematical problems. Students' solutions to geometry construction problems are modeled, and their attitudes about proof are discussed. (college freshmen, sophomores)


Schultz, Karen A. and Austin, Joe Dan. Directional Effects in Transformation Tasks. *Journal for Research in Mathematics Education* 16: 95-101; March 1983. Slide tasks seemed easiest regardless of direction, whereas the ordering by difficulty of flip and turn tasks depended on direction. (grades 1, 3, 5)

Self- and external monitoring on subtraction tasks led to significantly higher percepts of efficacy, skill, and persistence compared with no monitoring. (ages 8-9)


Use of most materials tended to decrease as grade level increased. Most teachers used few materials other than textbooks; only rulers and flashcards were used by over half the teachers. (teachers in grades K-5)


Adequate subskill performance was strongly related to counting-on. Brief instruction resulted in most learning to count-on. (grade 1)


Increases in tutors' and tutees' mathematics achievement was significantly greater than those of control children. (grades 2, 3, 5, 6)


A number of variables was identified which show promise as predictors of student attitudes. Fatalism and overall teacher quality had the strongest relationship across grade levels. (grades 4, 7, 9)


Four situations in which computational errors were identified in interviews are presented. (ages 16-18)

Shepard, Lorrie A.; Smith, Mary Lee; and Vojir, Carol P. Characteristics of Pupils Identified as Learning Disabled. *American

Students tended to skim for facts rather than rereading problems, did not check, and did not use heuristics. (grade 7)


Giving both positive and negative instances was favored when frequency of irrelevant features was unequal. (grade 9)


Teacher concerns and level of implementation of CAI were evaluated. They felt insecure and were judged as mechanical users. (secondary teachers)


Snyder, Sharyne D. and Michael, William B. The Relationship of Performance on Standardized Tests in Mathematics and Reading to Two Measures of Social Intelligence and One of Academic Self-Esteem for Two Samples of Primary School Children. *Educational and Psychological Measurement* 43: 1141-1148; Winter 1983. [grades 1-3]


Mathematical ability affected the self-esteem only of girls. (grades 7, 8)


Microcomputer-assisted drill and practice on computation significantly improved computer literacy. (grade 5)


Interviews with six pupils yielded information on counting schemes. (age 7)


Size of initial problems strongly affected transferability of strategies. (college, adults)


Overall, students' attitudes were rather neutral toward mathematics. High school mathematics background was clearly related to attitudes toward mathematics in college. (college)


Svenson, I. F.; Lawrence, J. A.; and Willis, S. G. Distance University Students' Processing of Mathematics Exercises. *Educational Studies in Mathematics* 14: 73-85; February 1983. [college]

Svenson, Ola and Sjoberg, Kit. Speeds of Subitizing and Counting Processes in Different Age Groups. *Journal of Genetic Psychology* 142: 203-211; June 1983. [ages 7, 8, 10, 12, 15, adults]

Szynal-Brown, Carol and Morgan, Ronald R. The Effects of Reward on Tutor's Behaviors in a Cross-Age Tutoring Context. *Journal of Experimental Child Psychology* 36: 196-208; October 1983. [grades 1, 3]

Tatsukawa, Kikumi K. Rule Space: An Approach for Dealing with Misconceptions Based on Item Response Theory. *Journal of Educational...
Measurement 20: 345-354; Winter 1983. [?]


Data on the enrollment of females and all races in mathematics classes in Minneapolis are included in this description of the equity program. (secondary)

Tegano, Rosemary Zockowski and Faulkender, Patricia F. Adult Sex Differences in the Concept of Horizontality as Related to Mechanical Ability, ACT Scores and State Anxiety. Psychological Reports 53: 858; December 1983. [college]

Tennyson, Robert D.; Youngers, Judith; and Suebsonti, Prapvadee. Concept Learning by Children Using Instructional Presentation Forms for Prototype Formation and Classification-Skill Development. Journal of Educational Psychology 75: 280-291; April 1983. [grade 3]


Hierarchies of problem difficulty were found within grade level. Children were less able to write correct number sentences than to solve the verbal problems. (grades 1-4)


Except in grade 2, performance increased between pretest and posttest and was maintained. (grades 2-6)


Question placement had no effect on ability of students to solve problems regardless of complexity or length of problems. (community college)


Achievement was significantly associated with attitudes, sex, ethnicity, father's and mother's education, verbal opportunities in the home, and frequency of mathematical practices. (age 13)

Veldman, Donald J. and Worsham, Murray. Types of Student Classroom Behavior. Journal of Educational Research 76: 204-209; March/
April 1983. [junior high]


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About one-half of the sixth graders and one-half to two-thirds of the eighth graders were successful on most items. Items were scaled by difficulty level. (grades 6, 8)


Interaction in the group was a potent predictor of mathematics achievement; asking a question and receiving no answer was detrimental to achievement. (grades 7-9)


Preservice teachers had an inadequate knowledge about zero. (elementary preservice)


Self-instructional training led to reliable increases in accuracy on regrouping problems. [ages 10-13 (EMRs)]


Williams, Paul D. Discovery Learning in Remedial Mathematics: Multiple-Choice Versus Written Generalization. *Mathematics and Computer Education* 17: 171-177; Fall 1983.

No significant difference in achievement or attitudes was found for
students given instruction with differing discovery methods.


Motivation contributed to low mathematics achievement, but different factors were more important for different groups. (grades 4-8)


Principal sources of reversal errors were haste, failure to think of checking, failure to base the equation on meaning of the sentence, and use of non-algebraic symbols. (college)


Less than one-fourth of the students answered a question about area correctly. (grade 8)


After a unit on decimals, mastery level was attained by over 75 per cent of the students on tenths, over 45 per cent on hundreds, over 23 per cent on mixed tenths and hundreds, but only ten per cent to 33 per cent on applications. Many retention scores showed further improvement. (grades 4-6)


Dissertations

This final section of the listing contains 300 dissertations. Another 55 dissertations judged to have only a tenuous connection to mathematics education are not included.

Abbate, Louis Edward. A Method of Interpretation of the Wechsler Intelligence Scale for Children—Revised to Assess Cognitive Style. (University of Massachusetts, 1983.) DAI 43A: 3842; June 1983. [DA8310251] [elementary]


Tutoring, testing, and calculators were considered by students to be the three most essential services offered by learning centers. (college)

Alfred, Elizabeth Ann. A Measurement of the Relationship Between ESEA Title I Program Management and Student Achievement, Attitude Toward School, and Self Concept. (The University of Nebraska-Lincoln, 1983.) DAI 44A: 919; October 1983. [DA8318645] [elementary]

Al-Saloom, Abdul Hussain M. The Cognitive Process Fostered by the Iraqi Mathematical Textbooks as Revealed by Content Analysis. (University of Northern Colorado, 1982.) DAI 43A: 2883; March 1983. [DA8301131] [grades 4-6]

Astill, Shelley. Freshmen Sex Role Self Concept, Academic Achievement and Career Choice. (Yeshiva University, 1983.) DAI 44B: 2008; December 1983. [DA8323163] [grade 12]

Aviv, Cherie Denise Adler. Oral Reading Behavior and Its Relationship to Solving Open Addition and Subtraction Sentences. (University of Georgia, 1983.) DAI 44A: 415; August 1983. [DA8314704]

Incorrect reading of open sentences was due to using a wrong name or omitting symbols. (grade 2)

Baker, Dale Rose Raczkowski. Differences in Personality, Attitude, and Cognitive Abilities Found Among Biological, Physical Science, and Nonscience Students. (Rutgers University The State U. of New Jersey (New Brunswick), 1982.) DAI 43A: 2621; February 1983. [DA8301562] [college]

Bedi, Stephen Stalker. A Longitudinal Study of an Alternative Organizational and Instructional Model for Academically High-Risk Primary-Level Children. (The George Washington University, 1982.) DAI 43A: 2627-2628; February 1983. [DA8229461] [grades 1-3]

Ben-Haim, David. Spatial Visualization: Sex Differences, Grade Level Differences and the Effect of Instruction on the Performance and Attitudes of Middle School Boys and Girls. (Michigan State University, 1982.) DAI 43A: 2914; March 1983. [DA8303753]
After instruction, students performed significantly higher on spatial visualization, but no change in attitude toward mathematics occurred and no sex differences were found. (grades 5-8)


Students trained to initiate their own goal setting did not score significantly better than groups with externally-imposed goals. (ages 6-11)

Berkovitz, Roslyn A. Faculty Trust and Acceptance of Decisions Made at Three Hierarchical Levels of a College by Sexually-Defined Departments. (Cornell University, 1982.) DAI 43A: 2247; January 1983. [DA8228356] [college]

Bhartiya, Anil. The Effectiveness of Mathematics in Mathematics in Relation to Certain Student's Characteristics. (Meerut University (India), 1981.) DAI 43A: 2263; January 1983. [―] [grade 9]


Four gifted students were found to have similar perceptions about mathematics and school. (grades 7-10)


Thought listing took longer and produced higher anxiety, while thinking aloud resulted in more task-oriented cognitions. (college)

Blake, Ann Beth. The Effect of Language on Wechsler Adult Intelligence Scale-Revised Arithmetic Subtest Scores. (University of Washington, 1983.) DAI 44A: 1690-1691; December 1983. [DA8319387]

Students did not score higher on personalized non-gender-specific items than on three other item formats. (college)


Most large commercial courseware programs were for arithmetic, with the emphasis on drill and practice. (grades K-12)

Bone, Dorothea Darrow. The Development and Evaluation of an Introductory Unit on Circular Functions and Applications Based on Use of Scientific Calculators. (Columbia University Teachers College, 1983.) DAI 44A: 1363; November 1983. [DA8322178]

Most of the ten students using the developed unit learned the content and developed appreciation for the variety of applications.
Bower, JoAnn Crabtree. The Impact of Teaching Test-Taking Skills Upon the Scores of Selected Secondary Students Taking the Louisiana State Assessment Test. (The Louisiana State University and Agricultural and Mechanical College, 1982.) DAI 44A: 55-56; July 1983. [DA8312075] [grade 10]


A significant difference was found between performance on extraneous and non-extraneous problems, and between addition and subtraction problems. (elementary)

Brimlow, Patricia Anne. The Feasibility of Implementing an Evaluation Model to Assess Group Achievement and Attitudinal Changes. (Ohio University, 1982.) DAI 43A: 3248; April 1983. [DA8304355]

The model was found to be practicable. Differences among groups were attributable to achievement but not attitude. (college freshmen)

Brunson, Larry DuRand. Effects of Developmental Therapy on Concrete-Operational Reasoning for a Sample of E-S-N Children. (The University of Alabama, 1982.) DAI 43A: 3563; May 1983. [DA8303334] [secondary]

Bujan-Delgado, Victor Manuel. A Study of the Relationships Between Socioeconomic Characteristics and Aspects of Mathematical Achievement of Primary School Children of Grades Four and Six in Costa Rica. (The Ohio State University, 1982.) DAI 43A: 2583; February 1983. [DA8300215] [grades 4, 6]


The coding system and schematic framework used in the study were noted. (college)

Burke, Antoinette Marie. Microcomputer Technology in Public Schools in Southeastern Michigan. (Wayne State University, 1983.) DAI 44A: 654; September 1983. [DA8315580] [grades K-12]

Burrowes, Sharon Kathleen. A Study of the Effects of Using CAI to Teach Signed Numbers to Seventh Grade Gifted Students. (The University of Akron, 1983.) DAI 43A: 2264; January 1983. [DA8227441]

No conclusions were drawn regarding achievement or attitude. (grade 7)

Performance on three levels of comprehension provided some support for the three-level construct. (grades 5, 7)

Buscavage, Thomas James. The Relationship of Coordinated Instruction, Past Mathematical Performance, Duration of Time Enrolled, and Mathematical Achievement of Pull-Out Title I Students. (The Florida State University, 1982.) DAI 43A: 3869-3870; June 1983.

Two years of enrollment in a Title I program appeared to be the optimum time for achievement. An additional year sustained but did not increase achievement. (grades 2-6)


Before entering the methods course, five preservice teachers knew much about the general teaching behavior of mathematics teachers. Types of behaviors used were studied. (secondary preservice)

Byanski, Thomas Joseph. Impact on Pupils’ Attitude and Achievement Following Transfer Resulting from Closing a School. (Purdue University, 1982.) DAI 43A: 3762; June 1983.

The model significantly affected mathematics scores. (grades 3-6)

Carrington, Mary Ann. The Effect of School Entrance Age on Achievement and Adjustment. (Rutgers University The State U. of New Jersey (New Brunswick), 1982.) DAI 43A: 2503; February 1983.

The best predictors of performance in entry-level mathematics courses included SAT scores, GPA, previous background, and age. (college)

Case, Jeffrey Dean. Predicting Student Performance in Entry Level Electrical Engineering Technology and Mathematics Courses Using Precollege Data. (University of Illinois at Urbana-Champaign, 1983.) DAI 44A: 1768; December 1983.

Casper, Ellen Frances. A Study to Determine the Effectiveness of Rational-Emotive Affective Education Upon the Academic Achievement
No significant differences were found between type of affective treatment and mathematics achievement. (grade 6)


Significant relationships existed between mathematics placement level and Piagetian stage. (college)

Clark, Jeffrey. Microcomputer Based Remediation Strategies for Subtraction. (The University of Utah, 1983.) DAI 44A: 1026; October 1983. [DA8319379]

No significant differences were found between groups receiving different forms of feedback. Systematic errors were not stable over time. (grades 3-5)


Non-conservers who understood 1-1 correspondence used counting to solve conservation problems involving larger set sizes more than did those not understanding 1-1 correspondence. (primary)


No evidence was found that students with computer programming experience outperform those with no such experience. (secondary)

Colon Colon, Jesus. An Investigation of the Effects of Migration on Self-Concept, Attitude Toward Mathematics and Achievement in Mathematics Among Puerto Rican Return-Migrant Students and Puerto Rican Students Who Have Never Migrated. (The Pennsylvania State University, 1982.) DAI 43A: 3201-3202; April 1983. [DA8300749] (grades 10-12)


Spatial visualization and attitude toward success were the only significant predictors of mathematics achievement in grade 9; in grade 12, spatial visualization and perceptions of counselors' attitudes were significant. (grades 8, 12)

No significant difference in achievement was found between groups using a laboratory or in-class method. (primary)


Part of the plan involved the preparation of four articles to inform parents of the need to support their daughters in mathematics. The collaborative model had limited usefulness, however. (secondary teachers)

Czerwinski, Michael Henry. An Examination of Blind Children's Braille Symbol Knowledge in the Areas of Reading and Mathematics. (The Florida State University, 1982.) DAI 43A: 3265; April 1983. [DA8306160] (grades 1-9)

Dallman, Mary Ellen. The Relationship Between the ACT Assessment and the ETS Tests of General Education as Measures of Basic Skill Levels of Ball State University Secondary Teacher Education Candidates. (Ball State University, 1983.) DAI 44A: 453; August 1983. [DA8315166]

The ETS mathematics test was not a reliable substitute for the ACT mathematics test. (secondary preservice)

Daniele, Vincent Anthony. A Naturalistic Study of Intermediate and Junior High Level Mathematics Classrooms for the Deaf, with Emphasis on Time-on-Task. (Syracuse University, 1982.) DAI 43A: 2308; January 1983. [DA8228978]

Strong positive correlations were found between student attentiveness and mathematics achievement. Uses of time were also noted. (intermediate, junior high)

Donley, Raymond Roger. A Study of Relationships Between Environments and Student Achievement. (University of Toronto (Canada), 1982.) DAI 43A: 3796; June 1983. [--]

The interaction of home and classroom environments was found to have a significant relationship with mathematics concept scores, but not problem solving. (grade 5)


Direct instruction groups, both with fixed and extended practice, scored higher than traditional instruction groups. (grade 4)

Davenport, Martha Ann Reid. The Utility of WISC-R Pattern Analysis in the Prediction of Academic Achievement for Learning Disabled
Children. (East Texas State University, 1983.) DAI 44A: 1754; December 1983. [DA8323489] [ages 8-13]

Davis, Beverly Irby. A Comparative Analysis of Enrichment Program Participation and Academic Achievement of Intellectually Superior Students. (The University of Mississippi, 1983.) DAI 44A: 728; September 1983. [DA8316179] [grades 5, 6]

Davis, Mary Jean. Locus of Control as a Predictor of School Success for Primary-Grade Children. (The University of Florida, 1982.) DAI 44A: 970; October 1983. [DA8313627] [grade 2]

Deery, Brian Edward Wolfe. The Effect of Project Adventure on Sixth Grader's Reading and Math Scores, and Its Relationship to Locus of Control. (Boston College, 1983.) DAI 44A: 435; August 1983. [DA8314858] [grade 6]


A partial hierarchical structure of mathematical abilities was found. (--) 

Dennis, Oneita Sue Shirah. The Relationship of Attitude, Mathematics Background and Junior College Transfer Status in Entering Elementary Education Majors to Competency in Elementary Mathematics. (University of Southern Mississippi, 1983.) DAI 44A: 1332; November 1983. [DA8321481]

Significant relationships were found between mathematics competency, attitudes, and mathematics background, but not transfer status. (elementary preservice)

Dettloff, Janet May. Predicting Achievement in Community College Science Students. (The University of Michigan, 1982.) DAI 43A: 3197; April 1983. [DA8304478] [community college]

Dews, Janet Lee. The Effects of Data-Based Instruction on the Learner's Acquisition of the Basic Addition and Subtraction Facts. (Northern Illinois University, 1982.) DAI 43A: 2217; January 1983. [DA8229213]

Students using data-based instruction scored higher on the facts test than traditional instruction students. (grade 2)


AP calculus students scored as well or better than first-year college calculus students. However, 45 per cent of the AP students usually do not take the exam. (secondary, college)

DiPabio, David Michael. Cognitive Style and the Identification of Educationally "At Risk" Kindergarten Children. (The University of
Doll, Elizabeth Jane. *An Exploration of the Relationship Between Inferencing Ability and School Achievement in Fourth and Sixth Grade Children.* (University of Kentucky, 1983.) *DAI* 44A: 1417-1418; November 1983. [DA8321709] [grade K]


The group using materials written at the lowest readability level scored significantly higher. (grade 8)


Use of a computer drill program did not significantly improve standardized test scores. (grade 5)


The individualized program reduced sex differences between mathematics scores. (7)

Edens, Helen Smith. *Effects of the Use of Calculators on Mathematics Achievement of First Grade Students.* (University of Virginia, 1981.) *DAI* 43A: 3248; April 1983. [DA8228649]

The non-calculator group scored higher on the test of mathematics
objectives and concepts than did the calculator group, with no differences for computation or total score. (grade 1)


Only the grade 5 sample from NLSMA even weakly supported Bloom’s hierarchy. Factor analyses provided possible evidence that the hierarchy does exist in the data, however. (grades 5, 8, 11, 12)


Problem-solving achievement was highly correlated to understanding of mathematical concepts and somewhat correlated to race-related differences. (grades 6-8)


Faust, Ace Thomas. The Effect of Robinson v. Cahill on Fifth Grade Reading and Mathematics Achievement in Selected New Jersey Suburban (Rural) School Districts. (Northern Arizona University, 1983.) DAI 44A: 917; October 1983. [DA8319234] [grade 5]

Fee-Fulkerson, Katherine Cynthia. Cognitions and Performance of High and Low Math Anxious College Men and Women. (The University of North Carolina at Chapel Hill, 1982.) DAI 43B: 3729-3730; May 1983. [DA8308305]

No anxiety-related differences were found, and no overall gender-related differences. (college)

Ferguson, Ronald Dale. The Structure of Mathematics Anxiety in a Community College Setting. (Texas A&M University, 1982.) DAI 43A: 3531; May 1983. [DA8308770]

A 30-item self-inventory of abstract anxiety was found to measure that factor plus others. (community college)

Ferro, Salazar F. Language Influence on Mathematics Achievement of Capeverdean Students. (Boston University School of Education, 1983.) DAI 43A: 3879; June 1983. [DA8309726] [secondary?]


Teachers used a variety of strategies which varied with the problem. Algebra accounted for one-fourth of the solutions and
proportional approaches for one-half, with the proportion formula used most frequently. (secondary teachers)

Flanagan, Analyne. The Effect of a Record Keeping System on Student Achievement and Attitude in Mathematics. (University of Oregon, 1982.) DAI 43A: 2873; March 1983. [DA8301776]

Significant increases in achievement were found for fifth and sixth grades using the record-keeping system, and teacher acceptance was positive. (grades 3, 5, 6)

Flinter, Paul Francis. A Follow-Up of Second and Third Graders Who at One Time Qualified for Title I Intervention Based on Deficits in Reading and Mathematics. (The University of Connecticut, 1982.) DAI 43A: 3564; May 1983. [DA8306997] (secondary)

Forster, Beverly Roane. Pupil Productivity in Elementary School Mathematics as Related to Principal and Teacher Leadership Style. (The College of William and Mary in Virginia, 1983.) DAI 44A: 929; October 1983. [DA8316476]

Some relationship between student achievement and leadership style was found. (grades 4-6)


The performance of learning disabled and normal students was similar across measures. Few differences were found between the two methods. (elementary)

Francis, Vany Martins. Peer Tutoring Among Behaviorally Disordered Students: Academic and Social Benefits to Tutor and Tutee. (George Peabody College for Teachers of Vanderbilt University, 1982.) DAI 44A: 459; August 1983. [DA8313837] (middle school)

Fremouw, Laura-Jean. Achievement Motivation Changes with Title I Mathematics Students in a Middle/Lower Class Secondary School. (University of Northern Colorado, 1982.) DAI 43A: 3249; April 1983. [DA8305231]

Only intelligence was predictive of dropping out of the program. Slight differences in motivation were found. (secondary)

Friel, Susan N. Analysis of the Use of Inferential Reasoning by Eighth, Tenth and Twelfth Grade Students. (Boston University School of Education, 1983.) DAI 44A: 1364; November 1983. [DA8319895]

More combined-item than single-item inferences and more complex than simple inferences were drawn. Other differences occurred during the problem-solving process. (grades 8, 10, 12)

Friske, Joyce Stivers. Interaction of General Reasoning Ability and Selected Affective Variables with Instrumental and Relational Treatments in Junior High Mathematics. (The University of Texas at Austin, 1982.) DAI 43A: 2265; January 1983. [DA8227647]
No significant differences were found between three aptitudes and two treatments. (grades 8, 9)

Frye, Elizabeth Weimer. The Effect of Knowledge of Level of Mathematics Basic Skills on Math Anxiety. (West Virginia University, 1983.) DAI 44A: 1013; October 1983. [DA8318746]

Use of diagnosis and prescription for mathematics deficiencies may be related to lowered anxiety scores. (college freshmen)

Fuchs, Curtis Ray. Microcomputer Futures: Predictions of Selected Faculty Members in Missouri Secondary Schools. (University of Missouri-Columbia, 1982.) DAI 43A: 3787; June 1983. [DA8310390]

[secondary]


Overall, no statistical differences were found between groups trained with tachistoscopes, slides, or flashcards, but all aided retention. (grades 3, 4)


Mathematics achievement was little affected by training on the prerequisites of abstract thinking, but training did affect ability to conserve. (grade K)


Performance on tests of quantitative ability and problem solving are primarily related to the simultaneous synthesis factor, while computation performance is primarily related to the behavior regulation factor. (elementary)


Non-disabled pupils had superior calculation and conservation performance, especially in providing correct justifications. (grade 2)

Garza-Buentello, Maria Teresa. A Study of the Relationship of Mexican Teachers' Attitudes to the Mathematics Achievement of Their Pupils. (Stanford University, 1983.) DAI 44A: 1732; December 1983. [DA8320708] [teachers in grade 5]

No significant difference in total mathematics gain was found between Years 1 and 2. Growth in mathematics was greater than in reading. (grades 4-6)

Gill, Robert Jerome. The Effectiveness of Chisanbop and Fingermath Reckoning in Remediating Computational Weaknesses of Fourth and Fifth Grade Compensatory Arithmetic Students. (Rutgers University The State U. of New Jersey (New Brunswick), 1982.) DAI 44A: 415; August 1983. [DA8313438]

Both Chisanbop and Fingermath group gains were significantly better than the Control group gains in subtraction, but not the other operations. (grades 4, 5)


The level of positiveness of self-concept had no significant effect on achievement gain scores. (grade 6)

Gohs, Deborah Ellenberger. Exploration of Teacher Classroom-Activities Relating to Classroom Environments: An Approach to Studying Teacher Effectiveness. (University of Kentucky, 1983.) DAI 44A: 1732; December 1983. [DA8322977] [grades 7, 9]

Goiran; Anne Fontaine. The Effects of a Cognitive-Behavior Instructional Strategies Treatment on Pupil Academic Engaged Time. (University of Northern Colorado, 1983.) DAI 44A: 972; October 1983. [DA8313975]

The CBIS program was effective in increasing academic engaged time. (grade 7)


The group using calculators performed significantly better on multiplication and division than did the non-calculator group. (grades 7-9)


Relationships were found between mathematics anxiety, beliefs about mathematics, and mathematics self-concept. (college)

Green, Gussie Lee. Instructional Use of Microcomputers in Indiana Public High Schools. (Ball State University, 1983.) DAI 44A: 1678; December 1983. [DA8322551] [secondary]
Grinstead, Joe Dale. The Effect of Teacher Signals, Group Participation, and Error Correction Procedures on Students' Verbal Math Responses. (University of Kansas, 1982.) DAI 43A: 2884-2885; March 1983. [DA8303892]

Student participation increased on group questions, with decreased incorrect responding when questions were directed to individuals. (grades 3, 4)

Gutierrez, Myrtle Lee. The Effects of Nonpromotion on First Through Fourth Grade Students as Related to Academic Achievement, Self-Concept and Intellectual Maturity. (Northern Arizona University, 1983.) DAI 44A: 984; October 1983. [DA8319235] [grades 1-4]

Haines, James Mills. Brief Counseling Intervention in College Algebra. (Kansas State University, 1982.) DAI 43A: 3813; June 1983. [DA8310116]

Some variables affecting mathematics anxiety were noted. (college)

Halderman, Barrett G. The Relation of Socioeconomic and Scholastic Aptitude Variants to Academic Achievement for Males and Females at Third and Fifth Grades. (Iowa State University, 1982.) DAI 43B: 3719-3720; May 1983. [DA8307749] [grades 3, 5]

Hammer, Marlene Breger. Comparison of Mathematical Achievement of Psychotic Children and Emotionally Disturbed Nonpsychotic Children. (Duke University, 1982.) DAI 44A: 135; July 1983. [DA8311174]

Psychotic pupils had significantly discrepant performances in mathematics and reading. (ages 8-11)

Handler, Barbara Hershey. Reduction of Mathematics Anxiety in College Remedial Algebra Students. (The University of Tennessee, 1982.) DAI 44A: 95; July 1983. [DA8313297]

Students given anxiety reduction experienced a decrease in mathematics anxiety and an increase in mathematics competency. (college freshmen)


No significant achievement differences were found between groups. (secondary)


Significant trends were found on problems and objectives. (grade 9)

Harvey, Patricia Cooper. Variations on Direct Instruction in One
Third Grade Classroom. (Stanford University, 1983.) DAI 43A: 3498-3499; May 1983. [DA8307164]

Significant differences in mathematics achievement favored the researcher-taught class given direct instruction. (grade 3)

Hathaway, Harriet Anne. The Relationship of Certification and Mathematics Background of Teachers and Pupil Performance on the NCCT-M After Remediation. (The University of North Carolina at Greensboro, 1983.) DAI 44A: 694; September 1983. [DA8315641]

Only number of semester hours a teacher had formally studied made a significant difference in student performance. (grade 11)


Teachers' lesson organization and clarity were independent of teachers' general scholastic ability and only moderately related to their motivation or experience. (college)


Most students made marked gains in computation after computer drill. (junior high)

Hazlett, Benjamin Addison. Relationships Between Elementary Teachers' Expressed Attitudes Toward Students, Quality of Dyadic Classroom Interaction and Student Grades. (Oklahoma State University, 1982.) DAI 43A: 2516; February 1983. [DA8300157] [grades 5, 6]

Beidenreich, Boyce Hughett. Faculty Development Strategies for Improving Mathematics Instruction in Intermediate Elementary Grades. (Seattle University, 1982.) DAI 43A: 3571; May 1983. [DA8306442]

The in-service workshops were considered successful by teachers, and their pupils' mathematics scores increased. (teachers in grades 4-6)


Students were more successful in problem solving if they were rated at the high level on one or more structural variables. Field independent students scored higher than field dependent students. (college)

Helmick, Faith Illeen. Evaluation of the Placement Test for First-Year Mathematics at the University of Akron. (The University of Akron, 1983.) DAI 44A: 401; August 1983. [DA8314628]

Factors predictive of achievement were ascertained. (college freshmen)
Bershberger, James Russell. The Effects of a Problem Solving Oriented Mathematics Program on Gifted Fifth-Grade Students. (Purdue University, 1983.) DAI 44A: 1715; December 1983. [DA8323998]

Extensive computer problem solving enhanced understanding of mathematical topics and aided in developing strategies. (grade 5)

Bigab, Ahmed Kamal Ahmed. The Effects of Aptitudes and Structurally Different Methods of Teaching Mathematics on Achievement and Satisfaction. (University of Southern California, 1983.) DAI 43A: 3787; June 1983. [---]

Interactions were found only between reasoning aptitude and teacher, and quantitative aptitude and sex. (secondary)

High, Jane. The Effects of a Summer Learning Program and a Parent Training Program on Children's Achievement and Self-Concept. (George Peabody College for Teachers of Vanderbilt University, 1982.) DAI 43A: 2936; March 1983. [DA8227062] [ages 6-13]


Items dealing with whole numbers, fractions, decimals, measures, tables, graphs, and calculators were identified as essential for every graduate. (post-secondary)

Horine, Julie Elaine. The Cumulative Effects of Incremental Practice on the Retention of Mathematical Rules. (The Florida State University, 1983.) DAI 44A: 372; August 1983. [DA8314190]

Use of incremental practice had no significant effect on student performance. (grade 5)


No significant difference in achievement was found among groups having peer teaching from different levels of partners. (college)

Immers, Richard Carl. Linear Estimation Ability and Strategy Use by Students in Grades Two Through Five. (The University of Michigan, 1983.) DAI 44A: 416; August 1983. [DA8314296]

Ability to estimate length was significantly correlated with age. Instruction proved most effective for long and vertical estimates. (grades 2-5)

James, Rebecca Lou. Relationship of Elements of Individualized Instruction to Arithmetic Achievement. (University of Houston, 1982.) DAI 43A: 2232; January 1983. [DA8229071]

Use of sequenced outcome objectives, mastery procedures, and the combination of program elements were correlated with computation scores. (grade 2)
Janes, Catherine John. An Investigation of Differences in Verbal Ability and Mathematical Ability Among Talented Male and Female High School Students. (University of Houston, 1982.) DAI 43A: 2265; January 1983. [DA8229072] [grade 10]

Johnson, Margaret Akers. Spatial Visualization Ability: Effects of Long Term Practice and Relationship to Mathematical Ability. (The University of Arizona, 1983.) DAI 44B: 593; August 1983. [DA8311412]

The effect of training as gymnasts and architects was explored. Little evidence on correlation with mathematical ability or sex differences was found. (college)


Johnston, Georgeann Vann. Interaction of General Reasoning Ability and Locus of Control with Instructional Treatments in Algebra I. (The University of Texas at Austin, 1982.) DAI 43A: 2266; January 1983. [DA8227670]

The interactions sought were not statistically established. (grade 9)


During training, self-instruction resulted in greater accuracy than didactic instruction, but this was no longer evidenced during maintenance nor in generalization. (elementary?)


Kaczala, Caroline Mary. Sex Role Identity and Its Effect on Achievement Attitudes and Behaviors. (The University of Michigan, 1983.) DAI 44A: 1734; December 1983. [DA8324210] [grades 5-12]


Both types of instruction were effective. Neither changed attitudes toward computer science. (secondary)

Keimig, Ruth Talbott. The Change Facilitator Model for Managing and Evaluating Developmental Studies Programs Applied to the Study of
Freshmen Achievement at the Marymount College of Virginia. (The George Washington University, 1982.) DAI 43A: 2542; February 1983. [DA8229475] [college freshmen]

Kim, Eunja Connie. The Effect of Test-Wiseness Training on the Achievement and Causal Attributions of Korean and Hispanic Elementary Students. (University of Southern California, 1983.) DAI 44A: 1428-1429; November 1983. [elementary]

Kinney, Patricia Ann. Parent Tutoring and Mathematics Achievement of Sixth-Grade Students. (New Mexico State University, 1983.) DAI 44A: 20; July 1983. [DA8311387]

Parents as tutors did not improve students' achievement, but parental opinion was correlated with achievement. (grade 6)


Koh, Young Bee. An Analysis of Cognitive Functioning of Korean Middle School Students. (University of Pittsburgh, 1982.) DAI 43A: 2875; March 1983. [DA8303621] [middle school]

Koontz, Patricia M. Yourst. Theoretical Study, Development, and Concept Validation of a Microcomputer Literacy Curriculum for the Intermediate Grade (4-6) Student. (Kent State University, 1983.) DAI 44A: 1680; December 1983. [DA8321144] [intermediate]

Kvet, Edward Joseph, III. Excusing Elementary Students from Regular Classroom Activities for the Study of Instrumental Music: The Effect on Sixth-Grade Reading, Language, and Mathematics Achievement. (University of Cincinnati, 1982.) DAI 43A: 2270-2271; January 1983. [DA8228802] [grade 6]


Results differed, dependent on ability level, level and operation of problems, and instructional unit. (grade 4)

Larkin, Martha Ann. The Effects of a Placement Test to Counsel Students in Precalculus Mathematics Registration. (Brigham Young University, 1983.) DAI 44A: 1715; December 1983. [DA8322666]

It was concluded that the placement test helped to reduce the failure rate in the Polynomials and Synthetic Division course. (college)

Leyton Soto, Fernando. The Extent to Which Group Instruction Supplemented by Mastery of the Initial Cognitive Prerequisites Approximates the Learning Effectiveness of One-to-One Tutorial Methods. (The University of Chicago, 1983.) DAI 44A: 976-975; October 1983. [grade 9]

Skill performance was not significantly different, yet males perceived their ability, general expectancy, and efficacy judgments consistently higher than females did. (grades 6-8)


Self-efficacy ratings were not reliable predictors of computation performance. (grade 4)


Mathematics anxiety appeared to be a unidimensional construct related to students' attitude toward mathematics more than to their personality characteristics. Females did not suffer mathematics anxiety more than males. (college freshmen)

Liu, Jeannie M. The Effect of Concept Instruction on Students' Abilities to Apply Algorithms to Solve Mathematics Problems. (University of South Carolina, 1983.) DAI 44A: 1013; October 1983. [DA8319300]

Concept instruction did not enhance ability to apply the algorithm directly or to solve problems, although mastery of the concept denoting the algorithm did have a significant effect. (grade 7)

Loase, John Frederick. An Analysis of the Relationship Between the Mathematical Competencies Requisite to Employment and to Satisfactory Job Performance in Certain Mathematical Professions. (Columbia University Teachers College, 1983.) DAI 44A: 96; July 1983. [DA8313374]

For both actuaries and computer scientists, the use of elementary arithmetic was daily or weekly. Topics from algebra were also met frequently. The vast majority of topics from collegiate mathematics was very rarely used. (secondary, college)

Long, Lynne Greer. The Influence of School Building Design and Instructional Style on Title I First-Grade Math Achievement Scores in the District of Columbia Public Schools. (The George Washington University, 1983.) DAI 44A: 660; September 1983. [DA8315345]

The highest mean gain scores were attained by students having traditional instructional style in traditional school buildings. (grade 1)

Luisser, Thomas Robert. College Science Students' Perceptions of the Value of High School Mathematics Instruction in Preparing Students for Freshman College Science. (Lehigh University, 1983.) DAI
High school calculus was consistently ranked highest in all questions related to mathematics course value and applicability.

Lulow, Roger James. The Effect of School Employee Strikes on Student Achievement in Nine Ohio School Districts. (Kent State University, 1983.) DAI 44A: 1274; November 1983. [DA8321147] [grade 6]

Maddocks, John Calvin. The Relationship Between Average Student Achievement and Nonpromotion Rate: A Path Analysis Model for North Carolina Elementary Schools. (The University of North Carolina at Greensboro, 1983.) DAI 44A: 631-632; September 1983. [DA8315647] [grades 1-3]


Homework was found to be beneficial for problem-solving achievement but not for computation achievement. (grades 5, 6)


Students recalled the least about circular items. Figural presentation of question stems elicited more correct responses than verbal presentation. (grade 10)

Martin, Mary Jo. Organizational Climate and Student Achievement in Mathematics. (Duke University, 1983.) DAI 44A: 1275; November 1983. [DA8321573]

Significant relationships appeared to exist between organizational climate (open to closed) and mathematics achievement. (grades 3-9)

Martin, Michael Kemp. The Relationship of Student Self-Concept to Achievement in Reading and Mathematics and Time Off-Task. (The University of Wisconsin-Madison, 1982.) DAI 43A: 2232-2233; January 1983. [DA8216254] [grades 3, 4]


Hispanic students benefited from short training in test-taking skills. (college)

Mateja, John Andrew. An Investigation into Middle School Students' Knowledge of Textbook Metastructure. (University of Georgia, 1982.) DAI 43A: 3554; May 1983. [DA8308190] [grade 6]

Maxim, Bruce Robert. A Comparison of Two Sequences for Teaching Percent. (The University of Michigan, 1982.) DAI 43A: 3249; April 1983. [DA8304541]
Performance exceeded several nationally reported test results, with few significant differences between factor product and proportion methods. (grade 7)


McDermot, Sharon Anne. *First-Graders' Performances on Subdivision Tasks Involving Discrete and Continuous Materials.* (The University of Texas at Austin, 1983.) DAI 44A: 1013; October 1983. [DA8319644]

Students achieved more successful subdivisions with discrete objects than with continuous units. No difference was found when tasks were presented directly or in story context. (grade 1)

McDonald, David G. *Structural Coupling and School Outcomes: Job Satisfaction, Student Attitudes and Perceptions of School, Student Achievement in Reading, Student Achievement in Mathematics, and Perceived Organizational Effectiveness.* (University of Kansas, 1982.) DAI 43A: 3770-3771; June 1983. [DA8309303] [elementary]


The four teachers believed that geometry would have an impact on students' thinking, and wanted to insure a smooth-running school system by completing the syllabus. (secondary in-service)

McGee, William Earl. *The Relationship Between Learning Methods and Academic Achievement in 10-Year-Old Boys.* (The University of Tennessee, 1982.) DAI 43A: 2940; March 1983. [DA8303704] [elementary]


McKee, Lynda Diane. *Figure-Drawing Ability in Solving Mathematical Problems.* (University of Georgia, 1983.) DAI 44A: 417; August 1983. [DA8314734]

Figure-drawing ability was moderately correlated with figure-drawing tendency, problem-solving ability, and mathematical achievement. Problem-solving ability was significantly correlated with mathematical achievement and spatial visualization. (grades 9, 10)

Support groups and tutorial sessions helped reduce mathematics anxiety. (college)


Mehdikhani, Nasser. The Relative Effects of Teacher Teaching Style, Teacher-Learning Style, and Student Learning Style upon Student Academic Achievement. (The Catholic University of America, 1983.) DAI 44A: 374; August 1983. [DA8314893] [college]

Merritt, Robert L. Achievement With and Without Computer-Assisted Instruction in the Middle School. (University of Southern Mississippi, 1982.) DAI 44A: 34-35; July 1983. [DA8311071] [grades 6, 7]

Meyer, LaVern James. Teaching Problem Solving in a College Level General Education Mathematics Class. (The University of Iowa, 1982.) DAI 43A: 2584; February 1983. [DA8229949]

No significant difference in scores was found between groups given or not given instruction on a problem-solving model, although attitudes improved with instruction. (college)


Tasks with number, length, area, and volume were given, and accuracy and strategies used were noted. (ages 3, 5, 7, 9)

Minsky, Shulamith K. Playing a Logic Game: From Childhood to Adolescence. (Rutgers University The State U. of New Jersey (New Brunswick), 1982.) DAI 43B: 2724; February 1983. [DA8301595] [grades 5, 8, 11]

Minter, Mary Louise Davis. Factors Associated with Changes in Academic Achievement and Adaptive Behavior. (The University of Texas at Austin, 1983.) DAI 44A: 1391; November 1983. [DA8319652] [ages 5-12]

Moller, Nancy J. The Impact of Gender, Masculinity, and Femininity on Math Achievement and Course Decisions. (Purdue University, 1982.) DAI 43A: 2584; February 1983. [DA8300943]

Sex differences favoring females were found in computation, but not concepts or problem solving. Both males and females based
mathematics course-taking on career usefulness and achievement score cues, but females ranked male friends as very influential. (grade 8)


The old form of the test yielded five factors while the new form yielded three. Objectives tended to cluster on factors based on the test form rather than content. (grade 10)


Students in Algebra II were able to comprehend the material presented in the modules. However, no significant difference in achievement was found in comparison with a control group who did not use the modules. (secondary)


Mosley, Elaine S. Christian. The Effects of a Classroom Volunteer Program on Achievement, Self-Concept, and Behavior Among Primary Grade Pupils. (Oklahoma State University, 1982.) DAI 43A: 3175; April 1983. [DA8304875] [grades 1-3]


High-math-aptitude students used symbolic strategies almost exclusively. High percentage of correct responses was due to strategy choice rather than mathematical ability. (secondary)

Nagarkatte, Shailaja Umesh. Nonstandard Analysis and Its Place in Undergraduate Education. (Columbia University Teachers College, 1983.) DAI 44A: 417; August 1983. [DA8313380]

The development and basic ideas of Nonstandard Analysis are traced, and applications in various areas are discussed. (college)


Between grades 2 and 5, mathematics achievement is causally related to self-ratings of ability; between grades 5 and 10, this relationship diminishes. Estimating $w_{xy}$ also explored. (grades 2, 5, 10)

Noll, Rhona Susan. Effects of Verbal Cueing and a Visual Representation on Percent Problem-Solving Performance of Remedial Adults. (Fordham University, 1983.) DAI 43A: 3833; June 1983. [DA8308487]

Verbal cueing plus visual representation had a greater effect on performance than verbal cueing alone. (college)


A method including mastery in analysis, task-specific information, and procedural knowledge was responsive to four students' needs. (elementary?)

Oldham, Ben Richard. The Longitudinal Effects of Pupil Retention Practices in the First Three Grades. (University of Kentucky, 1982.) DAI 43A: 3772; June 1983. [DA8309069] [grades 3, 6, 10]

Olsen, Jill Trousdale. Differences in Learning Modality as They Relate to Academic Achievement of Seventh Grade Students. (Northern Illinois University, 1983.) DAI 44A: 1035; October 1983. [DA8318311] [grade 7]


Owen, Mary Scott. The Effects of the ITV Series "Figure Out" on the Mathematics Achievement of Fifth-Grade Students in Mississippi. (The University of Mississippi, 1983.) DAI 44A: 1688; December 1983. [DA8323349]

The television series was just as effective as traditional instruction for teaching five mathematics skills. (grade 5)


Students using manipulative materials scored at approximately the 85th percentile; students not using manipulatives scored at the 50th percentile. (elementary)

Parra, Elena B. Bias in IQ Test Predictions of Subtraction Skills Learning and Achievement. (The University of Arizona, 1983.) DAI 44A: 1429; November 1983. [DA8319727]

IQ test scores were not suitable predictors of subtraction scores for Mexican-American pupils. (elementary)

Peeples, Lilla Kirk. Second Language Learning Ability and Mathematical Ability: The Correlation of These Two Variables and the Extent to Which Ability in One May Be Used to Predict Ability in the Other. (Georgia State University-College of Education, 1983.) DAI 44B: 596; August 1983. [DA8312330]

A moderate, positive correlation was found between second language learning ability and mathematical ability. (secondary)

Pelfrey, Ronald Stephen. Factors Influencing High Ability Students in Fayette County to Pursue Four Years of Mathematics After Eighth Grade Algebra. (University of Kentucky, 1982.) DAI 43A: 3773-3774; June 1983. [DA8309071]

The time from grades 5 through 8 appeared to be the most critical period for these students. Correlations with enrollment were also explored. (grade 12)


Arithmetic notation affected the way information was retrieved and updated. Reaction times were related to the number of operations to be performed. (college?)


The processing of both visual and verbal material in an analytic or synthetic fashion is correlated. Other relationships were also found. (community college)

Peters, Carole Eswine. A Comparison of Treatments for the Reduction of Math Anxiety Among Eighth Grade Girls. (The Ohio State University, 1982.) DAI 43A: 2559; February 1983. [DA8300322]

No significant differences were found between tutoring, self-instruction training, or study-skills training for mathematics anxiety. (grade 8)

Pogatshnik, Lee Wolfram. Influential Factors in the Decision to
Enroll in Advanced High School Mathematics Courses. (Cornell University, 1983.) DAI 44B: 626; August 1983. [DA8319467]

No sex difference was found in the amount of mathematics elected. However, girls chose to take mathematics because of college or career needs; boys chose it who had more confidence in themselves as learners of mathematics. (grades 9, 12)


Conservers could perform rote, rational, and reproduction counting up to 20. Some did not understand the meaning of "less". (ages 5-7)


Significant differences were found in the beliefs and behaviors of teachers in basic or advanced classes. (secondary)

Pratton, Jerry Dee. A Study of the Effects of Active Participation in Instruction upon Learning. (Portland State University, 1982.) DAI 43A: 3774; June 1983. [DA8310674]

Teaching was more effective when active student participation was incorporated. (grade 5)

Price, Charles Alden. The Uses of Microcomputers in the Public Schools Within the East Texas School Study Council. (East Texas State University, 1983.) DAI 44A: 1632; December 1983. [DA8323503] [grades K-12]

Prillwitz, Barbara Ellen. The Correlates of Success Among Women in Mathematics and Mathematics-Related Fields: Implications in Educational Program Development. (University of Southern California, 1983.) DAI 44A: 349-350; August 1983. [---]

Characteristics of women mathematicians were noted. (adults)

Quam, Johanna Marie. An Experimental Comparison of the Effects of Hutchings' Low-Stress Algorithm and the Conventional Algorithm for Subtraction on the Computational Rate and Accuracy of Elementary Special Education Students. (University of Washington, 1983.) DAI 44A: 139; July 1983. [DA8312167]

Both treatments were effective in increasing subtraction scores, with no significant difference between them. (ages 8-11)


A graphics system was developed and methods outlined for its use
with a variety of mathematical topics. (secondary)


No significant sex differences were found in expectancy of success in mathematics nor in attribution patterns. (grades 3, 5, 7, 9, 11)


The group having incremental, continuous review significantly outperformed the control group. No attitude difference was found. (college)

Regan, Madelyn K. An Analysis of Multiplication Computation Errors of High-School Learning Disabled and Regular-Class Students. (University of Kansas, 1982.) DAI 43A: 3874; June 1983. [DA8309369]

Learning disabled students made significantly more errors in many categories. They consistently used ineffective and inefficient procedures. (secondary)


Spanish-speaking bilingual students achieved at a higher level when taught in a bilingual program. They retained significantly more when they used self-review. (grade 8)

Rickman, Claude Meredith. An Investigation of Third and Fourth Grade Students' Understanding of a Decomposition Subtraction Algorithm Based on Individual Interviews. (University of Georgia, 1983.) DAI 44A: 1365; November 1983. [DA8320135]

Only 45 per cent of third graders' responses and 66 per cent of fourth graders' responses were correct. Few fourth graders gave meaningful explanations of the decomposition algorithm. (grades 3, 4)

Ricks, James Daigh. The Impact of the Instructional Game "Equations" upon Mathematics Achievement of Middle-School Students. (The University of Michigan, 1983.) DAI 44A: 1716; December 1983. [DA8324272]

No significant differences in achievement were found between players of the Equations game and non-players. (grades 7, 8)

Rin, Hadas. Linguistic Barriers to Students' Understanding of Definitions in a College Mathematics Course. (University of California, Berkeley, 1982.) DAI 43A: 2584; February 1983. [DA83300632]

Inadequate understanding of formal definitions was a major source of difficulty. (college sophomores)

No significant difference in achievement was found between groups using integrated goal structures or competitive, individualistic structures. (grades 2-3)


The test appears to be valid and reliable as a measure of petmath and mathematics content for retarded adults. (adults)

Ross, Kenneth Scott. A Status Study of Mathematics Education in Adult Basic Education. (The University of Tennessee, 1982.) DAI 43A: 2915; March 1983. [DA8303715]

Teachers appeared to be inadequately prepared to teach ABE courses. (adults)

Roth, Duane Dennis. An Experimental Study to Investigate the Effects on Achievement of Sixth Graders in Mathematical Problem Solving Using Textbook Problems Compared to Problems Constructed by the Teacher. (University of Northern Colorado, 1982.) DAI 43A: 2915-2916; March 1983. [DA8301172]

No significant differences in achievement or attitude were found between groups using teacher-made or textbook problems. (grade 6)

Rubenstein, Rheta Norma Pollock. Mathematical Variables Related to Computational Estimation. (Wayne State University, 1982.) DAI 44A: 695; September 1983. [DA8306935]

Students performed differently on three types of estimation; order of magnitude was most difficult, followed by reference number and open-ended. (grade 8)

Rule, Judy Gayle. Effects of Multigrade Grouping on Elementary Student Achievement in Reading and Mathematics. (Northern Arizona University, 1983.) DAI 44A: 662-663; September 1983. [DA8315672] [grades 3-6]


Formal operations appeared to be necessary but not sufficient for conditional reasoning. (college)

Saab, Nouredine. Study of the Relationship Between Acculturation and Academic Achievement of Arab Students in an Elementary School Setting. (Wayne State University, 1982.) DAI 43A: 3502; May 1983. [DA8306937] [grades 3-5]

Sacks, Bernard. A Study to Investigate Whether Navajo Special Education Elementary Students Develop Differences in Cognitive Abilities from Regularly Placed Navajo Elementary Children. (Northern Arizona University, 1982.) DAI 43A: 3250-3251; April 1983. [DA8305290] [ages 7-13]

Samuels, Willis Dean. Mathematics Achievement and Attitude in Grades Six Through Eight in Lebanon, Oregon. (Brigham Young University, 1983.) DAI 44A: 96; July 1983. [DA8313057]

Attitudes toward mathematics were positive and correlated with achievement. (grades 6-8)


The formal operational students scored moderately higher in mathematics achievement than the concrete operational students. (ages 11-13)

Sasscer, Monica Flynn. An Exploratory Study of the Relationship Between Learner Control Patterns and Course Completion in Computer Assisted Instruction. (Virginia Polytechnic Institute and State University, 1982.) DAI 44A: 376-377; August 1983. [DA8313773] [community college]

Schielack, Vincent Paul, Jr. A Personalized System of Instruction Versus a Conventional Method in a Mathematics Course for Elementary Education Majors. (The University of Texas at Austin, 1982.) DAI 43A: 2267; January 1983. [DA8227717]

PSI students performed significantly higher than lecture students on the final examination and had significantly more positive attitudes toward mathematics. (elementary preservice)

Schmitt, Rita Therese. The Achievement and Adjustment of Children from Open and Traditional Elementary Schools in Grade Six of Traditional Middle Schools. (Temple University, 1983.) DAI 44A: 1334; November 1983. [DA8321275] [elementary]


Some students had little difficulty applying probability concepts and explaining their strategies, while others could not relate moves to probability. (grades 4-6)

Virtually no competence in proof-writing was found in 30 per cent of the students; 40 per cent had some, while about 30 per cent achieved a 75 per cent mastery level. (grade 10)

Service, Jolayne Williams. Implicit Intuitive Statistical Description: Perceptions That May Impede or Facilitate Statistical Instruction. (North Carolina State University at Raleigh, 1982.) DAI 43A: 3803; June 1983. [DA8308571]

A location dimension and a dispersion dimension were identified. (grades 2, 5, adults)

Shearn, Elizabeth Louise. Adapting the Developmental Instruction Model, Based on Perry's Theory, to a Mathematics Content Course for Preservice Elementary Teachers to Enhance Attitudes Toward Mathematics, Cognitive Development, and Achievement. (University of Maryland, 1982.) DAI 44A: 1716-1717; December 1983. [DA8323585]

No significant differences in achievement or attitude were found between groups using or not using the model. (elementary preservice)

Shilling, Harry Frederick. The Relationship Between Family Structure and Academic Achievement in Selected Variables of the Educational Quality Assessment. (The Pennsylvania State University, 1982.) DAI 43A: 3179; April 1983. [DA8305697] [grade 8]


Sources of difficulty were the operation involved, the quantity of numbers to process, and blanks and their placement, with wide individual differences found. (grade 2)


More than 80 per cent of the errors in the computational response mode were attributable to selection of inappropriate operations. Writing a paragraph explaining the solution process resulted in significantly fewer errors in selecting appropriate operations. (grade 8)

Sichel, Arthur Gutman. Effects of Varied Mediation on Spatial Concepts in Young Children. (Yeshiva University, 1982.) DAI 44B: 340-341; July 1983. [DA83311704] [ages 3-6]

Skills (average previous course grade) accounted for 49 per cent of the variance. (college)

Sigda, Edward Joseph. The Development and Evaluation of a Method for Teaching Basic Multiplication Combinations, Array Translation, and Operation Identification with Third Grade Students. (Temple University, 1983.) DAI 44A: 1717; December 1983. [DA8322597]

The use of the sequential-modal approach resulted in significantly higher acquisition and retention scores than the use of the textbook lesson plans. (grade 3)


On the average, teachers' predictions of pupils' performance by objectives were accurate. (teachers in grades 3, 6, 9)

Sinicrope, Rose. Conceptual Development of the Part-Whole and Operator Sub-Constructs of Rational Numbers. (Virginia Polytechnic Institute and State University, 1983.) DAI 44A: 1717; December 1983. [DA8324389]

Conceptualization of the part-whole and operator interpretations of fraction preceded the ratio interpretation. (grades 5-9)


Worksheets were significantly better than cooperative games; competitive games did not differ significantly. (adolescents)

Smedley, Shelley Helene. Attributions for Failure Among Low and High Self-Concept Learning Disabled and Nondisabled Students. (University of Houston, 1982.) DAI 43A: 3855-3856; June 1983. [DA8307029] [grades 4, 5]


The model, incorporating probability of success and perceived utility of and liking for mathematics, was found to fit the data "reasonably well". (grades 9, 10)

Smith, Thomas H. The Effects of a Self-Paced College Algebra Program on Mathematics Achievement and Mathematics Anxiety. (Temple University, 1983.) DAI 44A: 96-97; July 1983. [DA8311567]

Students using a self-paced approach did not differ significantly
in performance or anxiety from those having traditional instruction. (community college)

Sonnabend, Thomas Andrew. Holland Personality Types, Student Attitudes, and Other Factors Which Affect the Preferences of Preservice Elementary Teachers in a Mathematics Content Course. (University of Maryland, 1982.) DAI 43A: 3834; June 1983. [DA8308773]

The five factors best explaining students' mathematical preferences were usefulness, informativeness, novelty, interest level, and clarity. (elementary preservice)

Speck, Royce Allen. A Laboratory Activities Textbook Versus Traditional General Mathematics Textbooks for Teaching Computational Skills to Tenth Grade Low Achievers. (University of Kentucky, 1982.) DAI 43A: 3834; June 1983. [DA8309080]

"Geometry without Proofs" was found to be more effective for teaching computational skills and how to choose the correct operation than a general mathematics textbook. (grade 10)

Spencer, Helen Patricia. The Relationship Between Cardiorespiratory Fitness and Performance in Basic Arithmetic Skills in Fifth-Grade Students. (University of LaVerne, 1983.) DAI 44A: 1726; December 1983. [DA8318863]

A correlation was found between improvement in cardiorespiratory fitness and improvement in arithmetic performance. (grade 5)

Spires, Roger Dewain. The Effect of Teacher In-Service About Learning Styles on Students' Mathematics and Reading Achievement. (Bowling Green State University, 1983.) DAI 44A: 1325; November 1983. [DA8318640] [grades K-6]

Spraings, Violet Evelyn. The Influence of Conceptual Development Training on Rate of Learning, Conceptual Skill and Achievement in Learning Disabled Students. (University of San Francisco, 1982.) DAI 43A: 3275; April 1983. [DA8302708] [elementary, secondary]


An interrogative format, questions requiring performance, substantive discourse, ongoing feedback, and implicit sanctioning of correct answers were found to be effective strategies. (college teachers)


The instructional sequence was successful in developing procedures
to aid learners in translating problems. (grade 6)

Stout, David Lee. The Effects of Negative Instances and Focusing Strategies on Conjunctive Concept Learning. (The Ohio State University, 1982.) DAI 43A: 2584-2585; February 1983. [DA8300357]

Negative instances were "powerful" in learning a seven-dimension focusing strategy, but no differences were found when a three- or five-dimension strategy was used. (?)

Stuker, Earl. Two Methods of Teaching Mathematics and Student Achievement Scores in Jordan School District. (Brigham Young University, 1982.) DAI 43A: 3249; April 1983. [DA8306263]

No significant difference was found between schools using GEMS materials (unexplained in abstract) or a traditional textbook. (elementary)


Students' strategies were mostly content-specific; few general heuristic strategies were applied. In most cases, the use of curtailed processes contributed to failure. (grade 12)

Swoope, Regina Borinsky. The Development and Evaluation of an Instructional Program in Problem-Solving Strategies for Second Year Algebra Students. (Clark University, 1983.) DAI 44A: 1717-1718; December 1983. [DA8322686]

Instructing students in strategies and techniques for problem solving in Algebra II had no marked effect on their performance. (secondary)

Tamburino, Joseph Louis. The Effects of Knowledge-Based Instruction on the Abilities of Primary Grade Children in Arithmetic Problem Solving. (University of Pittsburgh, 1982.) DAI 43A: 2943; March 1983. [DA8303643]

Groups given instruction on word problem diagrams or on word problem and relationship diagrams both improved significantly. (primary)


Thayer, Constance Johnson. The Relationship of Skills in Arithmetic Computation, Word Recognition, and Interpersonal Relations to Job Performance. (The University of Connecticut, 1983.) DAI 44A: 980; October 1983. [DA8319203] [adults]

Themes, Ellen Patricia. Three Methods of Reducing Math Anxiety in Women. (Kent State University, 1982.) DAI 44A: 97; July 1983. [DA8311453]

Children had substantial knowledge of shapes before the teaching sessions; teachers focused on familiar content. (grade K)

Thomas, Dawn Frances. An Analysis of Sex Differences in Teacher-Student Interaction in Elementary/Secondary and Postsecondary Mathematics/Science and Composition/Language Arts Classrooms. (The American University, 1983.) DAI 44A: 1633; December 1983. [DAI8322784]

Teachers' beliefs, views, and preferences about mathematics and its teaching play a significant, albeit subtle, role in shaping their behavior. (junior high teachers)


Thompson, Albert Ray. The Teacher Perceiver Interview as Related to Student Achievement. (University of Northern Colorado, 1982.) DAI 43A: 2852; March 1983. [DAI8301182]

Thompson, Assad John. Programme for the Improvement of the Preservice Mathematics Education of Secondary Teachers at the Teachers College in Jamaica. (Columbia University Teachers College, 1982.) DAI 43A: 3249-3250; April 1983. [DAI8304059]

Thompson, Tommy Joe. Interaction of General Reasoning Ability and Locus of Control as Predictors of Achievement in College Algebra. (The University of Texas at Austin, 1982.) DAI 43A: 3834-3835; June 1983. [DAI8309204]

The high- and low-support treatments were not substantially different in producing learning among the students retained. The completion rate was 50 per cent in the low-support section and 81 per cent in the high-support section. (community college)


Tiu, Paul Chi-Hung. Audio Tapes Use in Bilingual Multiplication Instruction. (University of the Pacific, 1983.) DAI 44A: 664; September 1983. [DAI8316512]

No significant difference in achievement was found between pupils using Chinese bilingual tapes and pupils in a control group. (grade 3)

Tohidi, Nayereh Esfahani. Sex Differences in Cognitive Performance
on Piaget-Like Tasks: A Meta-Analysis of Findings. (University of Illinois at Urbana-Champaign, 1982.) DAI 43A: 2943; March 1983. [DA8303006] [grades K-12]

Toliver, Peggy Jean. Effects of an Anxiety Management Treatment on Mathematics Anxiety. (The University of Texas at Austin, 1982.) DAI 43A: 2267; January 1983. [DA8227730]

Significant reductions in mathematics anxiety and increases in mathematics performance were found in some groups, but not all. (elementary preservice, secondary)

Truckson, Erika B. The Effects of Heuristic Teaching and Instruction in Problem-Solving on the Problem-Solving Performance, Mathematics Achievement, and Attitudes of Junior College Arithmetic Students. (University of Cincinnati, 1982.) DAI 43A: 3532; May 1983. [DA8307537]

Students taught problem-solving by a heuristic or a conventional method showed substantial increases in problem-solving scores. Those taught heuristics were likely to be more successful in obtaining solutions. (junior college freshmen)


Relatively weak mathematical skills were found. (ages 10-13)

Tuokko, Holly Anna. Cognitive Correlates of Arithmetic Performance in Clinic Referred Children. (University of Victoria (Canada), 1983.) DAI 44B: 930; September 1983. [---]

Pattern of cognitive ability had no relationship to pattern of arithmetic performance, but level of verbal and memory abilities differed in relation to pattern of arithmetic performance. (elementary)


Students viewed solving algebra word problems as setting up equations; other strategies were only sporadically used. (grade 9)


A positive relationship was found between course-taking and spatial visualization skills and attitude toward the usefulness of
mathematics. Few sex-related differences were found. (grades 8, 10, 11)

Virostko, Joan. An Analysis of the Relationships Among Academic Achievement in Mathematics and Reading, Assigned Instructional Schedules, and the Learning Style Time Preferences of Third, Fourth, Fifth, and Sixth Grade Students. (St. John's University, 1983.) DAI 44A: 1683-1684; December 1983. [DA8322770] [grades 3-6]

Waddell, Linda Hecht. Correlates of Math Anxiety in Female College Freshmen Students: A Predictive Study. (University of Missouri-Columbia, 1982.) DAI 43B: 4132-4133; June 1983. [DA8310437]

The four variables of greatest value in predicting math anxiety were confidence in learning mathematics, mathematics as a male domain, teachers' attitude, and usefulness of mathematics. (college freshmen)

Walker, Robert C. The Effects of Test Administration Procedures on Standardized Diagnostic Mathematics Test Results. (Lehigh University, 1983.) DAI 44A: 981; October 1983. [DA8317146]

The warm, spontaneous, animated testing treatment resulted in higher scores in grades 5 and 7 than the aloof, formal, mechanical treatment. (grades 5-8)


Incrementing skill appeared in children who could not count accurately, but counting skill did not appear in children who could not increment. (ages 4-5)

Ware, Dorothy Lee. The Relationship of Testosterone Concentration, Spatial Ability, and Sex Role Identification in Women Teaching Secondary Mathematics and Primary Grades. (University of Houston, 1982.) DAI 43A: 2321; January 1983. [DA8229085]

Significant positive correlations were found between spatial visualization, spatial orientation, level of masculinity, and teaching field choice among women teachers. (teachers in grades K-3, secondary)

Watson, Charles Daniel. An Analysis of Teacher and School Factors Influencing Computational Skills Achievement in Eighth Grade Mathematics in Arkansas Schools. (University of Arkansas, 1983.) DAI 44A: 1750; December 1983. [DA8322874]

Students in small school districts scored lower than students in larger districts. Other teacher and school factors were also related to achievement. (grade 8)

Watson, Jane Marie. Individualized Mathematics Instruction in an Australian University. (Kansas State University, 1982.) DAI 43A: 2268; January 1983. [DA8229205] [college]

Weinberg, Frederick Hunter. An Experimental Investigation of the Interaction Between Sensory Modality Preference and Mode of
No one teaching method was best for all students. Some support was found for some aptitude-instruction interactions. (grade 3)

Weisbeck, Chrisanne. School Mathematics Lessons as a Collaborative Effort Between Teacher and Students in Two Ninth Grade Mathematics Classes - General Math and Algebra. (Michigan State University, 1982.) DAI 43A: 2916; March 1983. [DA8303872]

The two classes involved almost the same amounts of communication by teacher and students, but cooperation differed. (grade 9)

Welch, Carron Whitis. The Effects of Early Intervention on the Learning Rates of Learning Disabled Students in the Basic Skill Areas of Reading and Mathematics: A Longitudinal Study. (Texas Woman's University, 1982.) DAI 44A: 67; July 1983. [DA8312292] [elementary, secondary]

Whitney, Dixie Lynn. Retention vs. Assignment: Immediate and Longitudinal Effects on Student Performance. (Indiana State University, 1983.) DAI 44A: 1766; December 1983. [DA8322850] [middle school]


Four problem-solving strategies did not differ significantly in their ability to foster transfer. (grade 4)

Williams, Kathryn Virginia. A Curriculum Model for Computer Literacy for Elementary School Teachers. (University of the Pacific, 1983.) DAI 44A: 1684; December 1983. [DA8322612] [elementary teachers]

Willott, Patricia Christina. The Use of Imagery as a Mnemonic to Teach Basic Multiplication Facts to Students with Learning Disabilities. (West Virginia University, 1982.) DAI 43A: 2317; January 1983. [DA8226953]

More correct responses were made when facts were presented with both factors and product shown concretely (by pictures). (grades 4-6)


The instrument identified as gifted some students already recognized and some not already recognized, but did not identify as...
gifted others already recognized. (grades 4-6)

Wilson, Patricia Simmons. Frequency of Features of Irrelevant Dimensions in a Geometric Feature Identification Task. (The Ohio State University, 1982.) DAI 43A: 3250; April 1983. [DA8305412]

A significant interaction was found between sequence conditions and frequency conditions. (junior high)

Yaseen, Naval Hamed. A Study of the Factors Relating to Admission and Academic Achievement of Female Students in the College of Education, Mecca, Saudi Arabia. (University of Northern Colorado, 1983.) DAI 44A: 378-379; August 1983. [DA8313983] [college]

Yim, Gloria Y. Interruptive School Attendance and Academic Achievement of Elementary School Students. (United States International University, 1982.) DAI 43A: 2551; February 1983. [DA8229642] [grade 6]

Yim, Roger (Ki-Song). An Investigation of Three Arithmetic Programs in the Development of Basic Arithmetic Skills of Specific Learning Disabled Fourth, Fifth, and Sixth Grade Students. (University of Southern Mississippi, 1982.) DAI 44A: 142; July 1983. [DA8311090]

The three programs did not appear to affect achievement differentially. (grades 4-6)

Young, Eleanor Shafer. Time for Completion of Arithmetic Course as Predictor of Success in Follow-Up Elementary Algebra Course. (University of Cincinnati, 1982.) DAI 44A: 379; August 1983. [DA8313513]

Students who completed the learning task in less time were more likely to earn a satisfactory grade in the next mathematics course. (two-year college)


Zeh, Brenda Sue. The Effect of Selected Events of Instruction on Student Mastery of a Mathematics Rule. (The Florida State University, 1982.) DAI 43A: 3807; June 1983. [DA8309287]

Learner guidance, recall of prerequisite skill, and practice and feedback did not affect the proportion of students reaching mastery of the rule for dividing mixed fractions. (grades 5-8)

Zielke, Donald Henry. Solving Linear Equations on a Microcomputer: Thought Processes, Errors, and Guidance. (The University of Texas at Austin, 1982.) DAI 43A: 3835; June 1983. [DA8309221]
Different ability levels, use of different methods, and instruction with different levels of guidance resulted in use of different thought processes, different errors, and different requirements for guidance. (college)
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 Current Index to Journals in Education (CIJE) or Psychological Abstracts. The number in parentheses indicates the number of references listed.

AEDS Journal (1)
* Alberta Journal of Educational Research (7)
* American Journal of Mental Deficiency (0)
* American Mathematical Monthly (1)
* Arithmetic Teacher (10)
* Australian Mathematics Teacher (2)
  Behavior Therapy (1)
* British Journal of Educational Psychology (6)
* Canadian Journal of Education (1)
* Child Development (10)
  Child Study Journal (1)
* Cognitive Psychology (1)
* Cognitive Science (1)
  Community/Junior College Quarterly of Research and Practice (1)
* Contemporary Education (0)
  Contemporary Educational Psychology (1)
* Developmental Psychology (4)
* ECTJ (1)
  Education Research and Perspectives (1)
* Educational and Psychological Measurement (21)
* Educational Research (4)
* Educational Researcher (1)
* Educational Studies in Mathematics (16)
* Educational Technology (3)
* Elementary School Journal (9)
  Exceptional Children (3)
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* For the Learning of Mathematics (0)
* Genetic Psychology Monographs (4)
  Gifted Child Quarterly (1)
  High School Journal (1)
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  Journal of Clinical Child Psychology (1)
* Journal of Computers in Mathematics and Science Teaching (0)
  Journal of Consulting and Clinical Psychology (1)
  Journal of Counseling Psychology (1)
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  Journal of Experimental Psychology: General (1)
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  Journal of Learning Disabilities (2)
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* Journal of School Psychology (2)

* Journal of Social Psychology (0)

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* Phi Delta Kappan (1)

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* Two-Year College Mathematics Journal (2)
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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 postsecondary.

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### Cognitive Style

#### Articles
- Linn and Pulos  
- Roberge and Flexer  

#### Dissertations
- DiFabio  
- Heller  
- Johnston, G.  
- Lindskog  
- Mbylan  
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- Perunko  
- Virostka  
- Weinberg  

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#### Articles
- Birenbaum and Tatsuoka  
- Brainerd  
- Clarkson  
- Fogel and Nelson  
- Hart  
- Knoff  
- Leon and Pelosi  
- Madden and Slavin  
- Marshall  
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- O'Brien (b)  
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- Parke  
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- Schunk (b)  
- Charpley et al.  
- Shaw and Pelosi  
- Suydam (d)  
- Szynal-Brown and Morgan  
- Tatsuoka  
- Thornton et al.  
- Wearne-Hiebert and Hiebert  
- Whitman and Johnston  
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- Ziomek and Schoenenberger
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Alberding  C
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Bedi  E
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Quinn  E
Regan  S
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Shipstead  E
Shoemaker  S
Speck  S
Sullenberger  S
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Ball et al.  S
Carpenter et al. (b)  S
Cox  S
Fennell et al.  E
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Mishra E
Oakland E/S
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Powers et al. E/S
Rovet and Netley E
Scarr and Weinberg S
Sheppard et al. E/S
Smith and Dittmann E
Snyder and Michael E
Stanley and Greenwood E
Taylor S
Tsai and Walberg S
Veldman and Worsham S
Walberg and Shanahan S
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Leeds et al.
Light and Gilmour
Lindquist et al.
Mayberry
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Newcombe and Bandura
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Schultz and Austin
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Woodward and Byrd

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Holzman et al.  
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Jolicoeur  
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Lawson  
Linn and Pulos  
Maloney  
Mayberry  
Masgud  
Oren  
Roberge and Craven  
Roberge and Flexer  
Schunk (a, b, c)  
Shumway et al.  
Steffe  
Steinberg  
Strang and Rourke  
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Willig et al.  

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**Learning Disabilities**

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- Ball et al. | S |
- Cherkes     | E/S|
- Fogel and Nelson | E |
- Labercane   | E |
- Leon and Pepe | E |
- Linn and Pulos | S |
- Lund et al.  | E |
- McDermott and Watkins | E |
- Ozawa and Michael | E |
- Patten      | E |
- Salend     | E |
- Shepard et al. | E/S|
- Strang and Rourke | E/S|
- Wilkinson and Spinelli | E |

**Dissertations**

- Abbate | E |
- Breault | E |
- Brunson | S |
- Davenport | E/S|
- Garofano | E |
(Learning Disabilities -- continued)

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McGuire E
Miller, Kelly -
Moore, S. S
Nuzum E
Regan S
Sacks E/S
Smalley S
Smedl E
Sprung E/S
Tuleya-Payne E/S
Tuokko E
Welch E/S
Willott -
Ylm, R. E

Materials

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Baker and Griffith E/S
Barco, et al. E
Bright et al. E/S
Clark -
Freeman et al. (a, b) E
Green and Smith -
Jackson and Phillips S
Labercane E
Moskowitz et al. E
Myers et al. C
Pothier and Sawada E
Tidley-Johnson et al. E/S
Roberge and Craven E/S
Scott E
Thornton et al. E

Dissertations

Al-Saloom E
Aviv E
Durham S
Gill E
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McGee  E
McKee  S
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Moylan  S
Noll  C
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Perunko  C
Roth  E
Rycek  C
Shipstead  E
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Stone  E
Sullenger  S
Swoope  S
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Wilcox  E

Sequencing

Articles

Backhouse  S
Bright (a)  E/S/C
Brophy et al.  E
Dekkers et al.  S
Derevensky et al.  E
Freeman et al. (a, b)  E
Fuson et al.  E
Gore and Roumagoux  E
Graden et al.  E
Hudson  E
Leitzel  S/C
McIntyre et al.  E/S
Miller and Gelman  E/S
Miller and Bizzell  E/S
Stanford and Evertson  S
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Dissertations

Bone  S
Buscavage  E
Daniele  E/S
Deery  E
Donovan  E
Goiran  S
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**Sex Differences**

**Articles**

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**Test Analysis**

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