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ABSTRACT

An annual annotated listing of research on mathematics education is presented. The research is organized alphabetically by author(s) within three categories (research summaries, journal-published reports, and dissertation abstracts). Grade and age levels are indicated for each reference. An index of general topics is appended to help readers locate studies of particular interest. Included in the listing are studies in which mathematics education was not the sole or primary focus of the research. Most annotations indicate one principal finding of the study. (MP)

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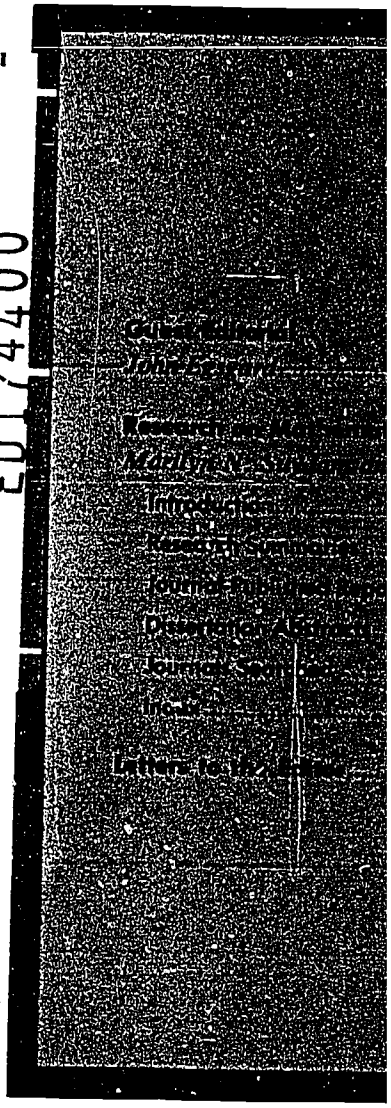

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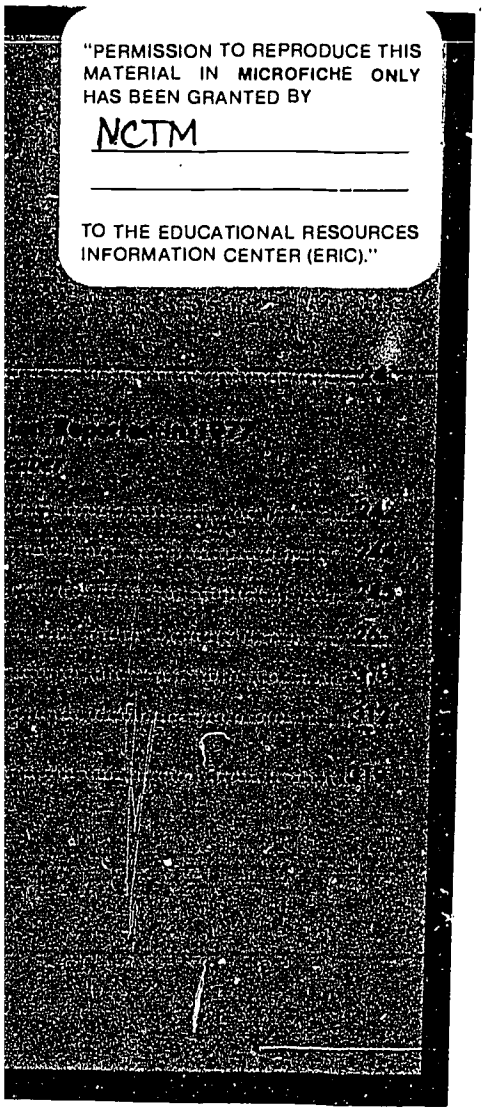

2 JULY 1978

ACHERS OF MATHEMATICS

A Journal of the National Council of Teachers of Mathematics

The *Journal for Research in Mathematics Education* is devoted to the interests of teachers of mathematics and mathematics education at all levels—elementary school through college.

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Also see the revised information for contributors in the January 1976 issue (Vol. 7, No. 1), pp. 3–7.

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GUEST EDITORIAL

How Can Research in Mathematics Education Become More Effective?

By John Egsgard

Most of the research in mathematics education is thesis oriented, for few academic institutions of higher learning give the mathematics educator the time to do research. We read the following in the document from the 1976 meeting of the International Congress for Mathematics Education in Karlsruhe on "The Education and Professional Life of the Mathematics Teacher": "The excessive teaching load in most teacher-education institutes scarcely allows for personal research on specific professional questions." It is a sad fact that many colleges expect their teachers to do much in-service work outside the college but refuse to give them any credit in teaching hours or in promotion for their efforts.

The National Council of Teachers of Mathematics has shown much interest in research in mathematics education, as is demonstrated by its *Journal for Research in Mathematics Education*, by the many research sections found at its meetings, and by its standing committee—the Research Advisory Committee. The Council's research project PRISM (Priorities in School Mathematics), funded by the National Science Foundation, also indicates that the NCTM realizes the importance of research. PRISM will obtain data to help a special NCTM committee make recommendations regarding mathematics in the 1980s.

Another quote from ICME-1976 is appropriate here: "Evaluations in a great number of countries show that educational research and research into the field of the pedagogy of mathematics have virtually no influence on school practice." The Council will always be interested in research. Nevertheless, until the mathematics-education research community can come up with results that will affect the classroom teacher, be it an elementary school teacher, a junior high teacher, a secondary school teacher, a community college teacher, or a teacher of mathematics education, I do not believe that the Council would be justified in providing additional resources for research.

Excerpt from the presidential address, 56th Annual Meeting of NCTM, San Diego, April 1978. These comments are on just one of several mathematics-education problems discussed in the address.

RESEARCH ON MATHEMATICS EDUCATION REPORTED IN 1977

Marilyn N. Suydam
The Ohio State University

J. F. Weaver
University of Wisconsin—Madison

Readers of this eighth annual listing of research on mathematics education published in *JRME* will note several changes. As has been usual, the research is organized alphabetically by author(s) within three categories (research summaries, journal-published reports, and dissertation abstracts). References are not separated by level, but grade or age is indicated for each reference. In addition, an index of general topics is appended to help readers locate studies of particular interest.

Included in the listing are studies in which mathematics education was not the sole or primary focus of the research. Most of these peripheral studies are not annotated, but studies specific to mathematics education are annotated, as in previous years.

Most annotations indicate one principal finding of the study, although there may be many other findings that are of interest to individual readers. We are aware that there is a danger in citing only a major finding: some people take it as the *only* finding, and, moreover, as a completely valid one. Although we have used some evaluative judgment in selection and annotation in order to reflect limitations, readers are urged to check the original research report for other results of a study as well as for information on sampling, design, and other factors that will aid them in assessing the validity of the findings. The annotations are no substitute for a careful

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The bibliographical entries in this listing do not conform to *JRME* style requirements. Permission was granted to the authors to follow the procedures and format previously established.—*The Editor*

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 publication were provided in part by the ERIC Center for Science, Mathematics, and Environmental Education pursuant to a contract with the National Institute of Education (NIE). Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official NIE position or policy.

checking of the complete report, especially if one intends to cite the report as supporting evidence for practice or further research.

Some readers have asked to have ERIC documents included in the listing. Space limitations preclude this, but we call attention to a source in which such a listing is published four times each year: *Investigations in Mathematics Education*, a journal of abstracts and critical analyses of research reports (available from ERIC/SMEAC, 1200 Chambers Road, Columbus, OH 43212). We have also been asked to include international journals, and although we did not have access to all issues, we have cited what could be located.

We would appreciate your reactions.

Research Summaries

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

Armstrong, David G. Team Teaching and Academic Achievement. Review of Educational Research 47: 65-86; Winter 1977.

Several mathematics studies are included in this review; it is concluded that research has failed to provide answers about the effectiveness of team teaching. (elementary, secondary)

Cotton, John W.; Gallagher, John P.; and Marshall, Sandra P. The Identification and Decomposition of Hierarchical Tasks. American Educational Research Journal 14: 189-212; Summer 1977.

Research on the development of hierarchies, most on mathematics, is discussed.

Fennema, Elizabeth and Sherman, Julia A. Sexual Stereotyping and Mathematics Learning. Arithmetic Teacher 24: 369-372; May 1977.

One conclusion from the review of studies was that the stereotyping of mathematics as a male domain has a subtle but powerful effect on females especially as it affects decisions about studying mathematics.

Michaels, James W. Classroom Reward Structures and Academic Performance. Review of Educational Research 47: 87-98; Winter 1977.

Four of the reviewed studies involved mathematics instruction; findings were varied, though most studies favored individual competition. (grades 4-college)

Suydam, Marilyn N. and Weaver, J. F. Research on Mathematics Education Reported in 1976. Journal for Research in Mathematics Education 8: 242-316; July 1977.

This seventh annual annotated listing includes ten research summaries, 112 journal-published reports, and 273 dissertations for grades K-12. For the college and other post-secondary levels, 26 articles and 81 dissertations were listed.

Suydam, Marilyn N. and Weaver, J. Fred. Research on Problem Solving: Implications for Elementary School Classrooms. Arithmetic Teacher 25: 40-42; November 1977.

The main findings from research on problem solving at the elementary school level are briefly summarized. (elementary)

Journal-Published Reports

This section contains 176 articles. The list of journals searched and the number of articles from each source may be found at the end of the total listing.

Af Ekenstam, Adolf. On Children's Quantitative Understanding of Numbers. Educational Studies in Mathematics 8: 317-332; October 1977.

One study on decimals and one on fractions, both testing Swedish children for understanding, were reported. (ages 13-16)

Airasian, Peter W.; Kellaghan, Thomas; Madaus, George F.; and Pedulla, Joseph J. Proportion and Direction of Teacher Rating Changes of Pupils' Progress Attributable to Standardized Test Information. Journal of Educational Psychology 69: 702-709; December 1977. [teachers in grade 2]

Allen, Layman E. and Ross, Joan. Improving Skill in Applying Mathematical Ideas: A Preliminary Report on the Instructional Gaming Program at Pelham Middle School in Detroit. Alberta Journal of Educational Research 23: 257-267; December 1977.

Playing "Equations" over a two-year period and then working intensively with a kit for two weeks enabled students "to apply mathematical ideas significantly better" than using the game alone or not using the game. (grade 8)

Arzi, Yehudit and Amir, Yehuda. Intellectual and Academic Achievements and Adjustment of Underprivileged Children in Homogeneous and Heterogeneous Classrooms. Child Development 48: 726-729; June 1977. [grade 4]

Bana, J. P. and Nelson, Doyal. Some Effects of Distractions in Nonverbal Mathematical Problems. Alberta Journal of Educational Research 23: 268-279; December 1977.

Both problem setting and degree of attention to distractions had a significant effect on performance and behavior in solving division problems. (grades 1-3)

Barstis, Susan Weiss and Ford, LeRoy H., Jr. Reflection-Impulsivity, Conservation, and the Development of Ability to Control Cognitive Tempo. Child Development 48: 953-959; September 1977. [grades K, 2]

Beck, Michael D. What Are Pupils' Attitudes toward the School Curriculum? Elementary School Journal 78: 73-78; September 1977.

Across grades, science was the best liked subject and mathematics the least liked (using data from the national standardization program of the Survey of School Attitudes inventory). (grades 1-8)

Becker, Wesley C. Teaching Reading and Language to the Disadvantaged--What We Have Learned from Field Research. Harvard Educational Review 47: 518-543; November 1977.

Mathematics data from the evaluation of the University of Oregon's Direct Instruction Model for Project Follow Through are included in this discussion. (grades K-3)

Blaney, Nancy T.; Stephan, Cookie; Rosenfield, David; Aronson, Elliot; and Sikes, Jev. Interdependence in the Classroom: A Field Study. Journal of Educational Psychology 69: 121-128; April 1977. [grade 5]

Borakove, Larry S. and Cuvo, Anthony J. Facilitative Effects of Coin Displacement on Teaching Coin Summation to Mentally Retarded Adolescents. American Journal of Mental Deficiency 81: 350-356; January 1977. [mean age 15 (EMRs)]

Bourgeois, Roger and Nelson, Doyal. Young Children's Behavior in Solving Division Problems. Alberta Journal of Educational Research 23: 178-185; September 1977.

The physical structure of apparatus used as vehicles for problems influenced problem difficulty. Partitive division appeared to be more difficult than measurement division. (ages 3-8)

Bowser, Samuel E. and Robinson, Eleanor R. Needs Assessment: A Study of Vocationally Related Needs for Secondary Special Education. Educational Technology 17: 43-46; November 1977. [grades 10-12]

Brainerd, Charles J. Feedback, Rule Knowledge, and Conservation Learning. Child Development 48: 404-411; June 1977. [grade K]

Brechting, Sister Mary Catherine and Hirsch, Christian R. The Effects of Small Group-Discovery Learning on Student Achievement and Attitudes in Calculus. MATYC Journal 11: 77-82; Spring 1977.

Students having the small-group, discovery-learning instruction achieved significantly higher than students having conventional instruction. (college)

Brekke, Beverly; Williams, John; Clark, Alice; Landry, Richard; and Follman, Dennis. Conservation of Weight with Social Deviants. Journal of Genetic Psychology 131: 325-326; December 1977. [ages 12-18]

Brown, Margaret and Kuchemann, Dietmar. "Is It An 'Add', Miss?" Mathematics in School 6: 9-10; January 1977. [ages 10-13]

Callihan, Hubert D. and Bell, Frederick H. Probability and Statistics in High Schools? School Science and Mathematics 77: 418-426; May-June 1977.

Few schools (15%) in Pennsylvania offered probability and statistics regularly as a complete course. Reasons and related information were noted. (secondary in-service)

Campbell, N. Jo and Schoen, Harold L. Relationships between Selected Teacher Behaviors of Prealgebra Teachers and Selected Characteristics of Their Students. Journal for Research in Mathematics Education 8: 369-375; November 1977.

Students' grades in mathematics were significantly related to their attitudes toward mathematics. Students' attitudes toward mathematics and toward their mathematics teachers were strongly correlated. (secondary)

Carroll, C. Dennis. The Relative Effectiveness of Three Geometric Proof Construction Strategies. Journal for Research in Mathematics Education 8: 62-67; January 1977.

Instruction employing analytic, synthetic, or combination strategies was found to yield differences in composite scores. (grade 10)

Catanzano, Robert. A Successful Experience With Mathematics For Prospective Elementary Teachers. School Science and Mathematics 77: 5-12; January 1977.

Student attitudes toward a three-course mathematics sequence were positive. A two-course sequence was considered minimal with respect to CUPM recommendations. (elementary preservice)

Catanzano, Robert and Godwin, Wanda. Comparative Effectiveness of Three Sequences of Moves for Teaching Conjunctive and Relational Mathematical Concepts to College Students. Journal for Research in Mathematics Education 8: 33-47; January 1977.

Three sequences of moves were equally effective for most concepts on most measures. One sequence was significantly effective for the low achievement level on one concept. (college)

Chang, Ping-Tung. Small Group Instruction: A Study in Remedial Mathematics. MATYC Journal 11: 72-76; Spring 1977.

Small-group instruction was found to be more effective than a lecture-demonstration method. (community college)

Charbonneau, Claude and Robert, Michele. Observational Learning of Quantity Conservation in Relation to the Degree of Cognitive Conflict. Psychological Reports 41: 975-986; December 1977. [grade 1]

Cherry, Flora F. and Eaton, Ethel L. Physical and Cognitive Development in Children of Low-Income Mothers Working in the Child's Early Years. Child Development 48: 158-166; March 1977. [age 7]

Cohen, Eli. Notes on the Reliability of Alternate Forms Constructed from a Table of Specifications. Journal of Experimental Education 46: 56-58; Fall 1977.

The alternate forms correlation of ten mathematics tests was .85, while the test-retest correlation was .82. (secondary)

Colgan, L. H. Reliability of Mathematics Multi-Choice Tests. International Journal of Mathematical Education in Science and Technology 8: 237-244; May 1977. [college freshmen]

Coulson, William F. and Howe, Travor G. Certain School and Pupil Characteristics and Mathematics Test Results in Wisconsin. Journal for Research in Mathematics Education 8: 223-227; May 1977.

Size of city or town and expenditure per pupil accounted for differences in group mean test scores, but no pattern across grades was observed. (grades 1-6)

Damarin, Suzanne K. The Interpretation of Statements in Standard Logical Form by Preservice Elementary Teachers. Journal for Research in Mathematics Education 8: 123-131; March 1977.

Students tended to treat conjunctive, conditional, and biconditional statements in the same way, declaring them true only if both parts were true. (elementary preservice)

Damarin, Suzanne K. Cognitive Interpretations of Logical Connectives: Replication of Results Using a New Type of Task. Journal for Research in Mathematics Education 8: 231-233; May 1977.

Most students treated the conditional and biconditional as if they were conjunctions. The disjunctive "or" was treated as conjunctive by about one-fourth and as inclusive by about one-fourth. (elementary preservice)

Dudley, Brian. The Mathematics of School Biology Examination Papers. Journal of Biological Education 11: 41-48; March 1977. [ages 16-18]

Eastman, Phillip M. The Use of Advance Organizers For Facilitating Learning and Transfer from Quadratic Inequalities. School Science and Mathematics 77: 377-384; May-June 1977.

No significant differences on a transfer test were found between groups given two-day analytic or graphical treatments with advance organizer or introductory overview. (grade 10)

Eastman, Phillip M. and Behr, Merlyn J. Interaction between Structure of Intellect Factors and Two Methods of Presenting Concepts of Logic. Journal for Research in Mathematics Education 8: 379-381; November 1977.

No significant aptitude-treatment interactions were found for figural-inductive or symbolic-deductive treatments. (grade 9)

Eisenberg, Theodore A. Begle Revisited: Teacher Knowledge and Student Achievement in Algebra. Journal for Research in Mathematics Education 8: 216-222; May 1977.

Teachers' knowledge of algebraic structures was correlated with number of postcalculus courses taken, but not with GPA or length of service. Teacher knowledge of subject matter had little effect on student performance. (teachers in grade 9)

Engelhardt, J. M. Analysis of Children's Computational Errors: A Qualitative Approach. British Journal of Educational Psychology 47: 149-154; June 1977.

Eight types of errors were classified: basic fact, grouping, inappropriate inversion, incorrect operation, defective algorithm, incomplete algorithm, identity, and zero errors. (grades 3, 6)

Ensey, Lowell F. and Cooney, Thomas J. The Effects of Two Methods of Presenting a Pedagogical Model to Preservice Teachers. Journal for Research in Mathematics Education 8: 107-114; March 1977.

The microteaching factor was significant, indicating an increase in both the number and variety of moves. (secondary preservice, grade 7)

Fennell, Francis and Trueblood, Cecil R. The Elementary School as a Training Laboratory and Its Effect on Low-Achieving Sixth Graders. Journal for Research in Mathematics Education 8: 97-106; March 1977.

Two field-based teacher-training experiences each significantly increased pupils' unit mastery scores. (elementary preservice, grade 6)

Fennema, Elizabeth and Sherman, Julia. Sex-Related Differences in Mathematics Achievement, Spatial Visualization and Affective Factors. American Educational Research Journal 14: 51-71; Winter 1977.

Few sex-related cognitive differences but many attitudinal differences were found. Relationships with socio-cultural factors were indicated. (grades 9-12)

Feshbach, Seymour; Adelman, Howard; and Fuller, Williamson. Prediction of Reading and Related Academic Problems. Journal of Educational Psychology 69: 299-308; August 1977. [grades K-3]

Foch, T. T.; DeFries, J. C.; McClearn, G. E.; and Singer, S. M. Familial Patterns of Impairment in Reading Disability. Journal of Educational Psychology 69: 316-329; August 1977. [ages 7-12]

Ford, Janet and McLeod, Douglas. Flow Charts in Mathematics Classes for Elementary School Teachers. Two-Year College Mathematics Journal 8: 15-18; January 1977.

Students who studied flow charts performed better on listing the steps involved in an algorithm, but performed as well on justification of algorithms as students not studying flowcharts. (elementary preservice)

Gaylord-Ross, Robert J. Array Properties and Conservation of Number Performance with Retarded Adolescents and Young Adults. American Journal of Mental Deficiency 82: 170-177; September 1977. [mean CA, 20 years]

Gemignani, Michael C. Remedial Mathematics: An Administrator's Viewpoint. American Mathematical Monthly 84: 481-484; June-July 1977.

Class size was found to increase from 1972-3 to 1975-6; the percentage of students failing was significantly higher as size increased. (college)

Ghodsian, M. and Calnan, M. A Comparative Longitudinal Analysis of Special Education Groups. British Journal of Educational Psychology 47: 162-174; June 1977. [primary]

Gilbert, Charles D. A Study of the Interrelationship of Factors Affecting Sixth Grade Students in Respect to Mathematics. School Science and Mathematics 77: 489-494; October 1977.

Attitudes toward taking mathematics tended to remain constant from beginning to end of the year. No significant correlations between attitudes and IQ, teacher perception of competency, or achievement were found. (grade 6)

Good, Thomas L. and Grouws, Douglas A. Teaching Effects: A Process-Product Study in Fourth Grade Mathematics Classrooms. Journal of Teacher Education 28: 49-54; May-June 1977.

Successful teaching appeared to be based on a large number of variables that must be present to at least a minimal extent, rather than on one or two critical factors. (teachers in grade 4)

Gordon, Marshall. Mathematics Presentation as a Function of Cognitive/Personality Variables. Journal for Research in Mathematics Education 8: 205-210; May 1977.

Students with a high conceptual level tended to present significantly more mathematics examples preceding discussion of a rule than did low-conceptual-level students. (elementary preservice)

Greenstein, Jane and Strain, Phillip S. The Utility of the Key Math Diagnostic Arithmetic Test for Adolescent Learning Disabled Students. Psychology in the Schools 14: 275-282; July 1977.

Mean performance peaked at approximately the fourth-grade level of difficulty. Performance of LDs was "quite distinct" from that of normal children in terms of computational errors. (ages 12-17)

Greenwood, Charles R.; Hops, Hyman; and Walker, Hill M. The Program for Academic Survival Skills (PASS): Effects on Student Behavior and Achievement. Journal of School Psychology 15: 25-35; Spring 1977.

Students in the PASS program (involving reinforcement for group academic behavior) exceeded the control group in levels of survival skill behavior while the program was in effect, but only first graders retained their lead. Larger mathematics achievement gains were also made by the PASS group. (grades 1-3)

Gregory, Mary K. Sex Bias in School Referrals. Journal of School Psychology 15: 5-8; Spring 1977. [grades K-6]

Groh, Linda A. and Groh, Thomas R. Token Reinforcement with an Eight-Year-Old for Learning Number Names. Reading Improvement 14: 131-136; Summer 1977. [age 8]

Guay, Roland B. and McDaniel, Ernest D. The Relationship between Mathematics Achievement and Spatial Abilities among Elementary School Children. Journal for Research in Mathematics Education 8: 211-215; May 1977.

Mean scores on four spatial tests were significantly higher for mathematics high achievers than for low achievers. (grades 2-7)

Hall, J. C. and Thomas, J. B. Research Report: Mathematics Department Headship in Secondary Schools. Educational Administration 5: 30-37; Spring 1977. [secondary in-service]

Hall, Vernon C. and Kaye, Daniel B. Patterns of Early Cognitive Development Among Boys in Four Subcultural Groups. Journal of Educational Psychology 69: 66-87; February 1977. [ages 6-8]

Hall, Vernon C.; Huppertz, John W.; and Levi, Alan. Attention and Achievement Exhibited by Middle- and Lower-Class Black and White Elementary School Boys. Journal of Educational Psychology 69: 115-120; April 1977. [ages 7, 8]

Haney, Russell; Michael, William B.; and Martois, John. The Prediction of Success of Three Ethnic Samples on a State Board Certification Examination for Nurses from Performance on Academic Course Variables and on Standardized Achievement and Study Skills Measures. Educational and Psychological Measurement 37: 949-964; Winter 1977. [post-secondary]

Heyneman, Stephen P. and Mintz, Pamela Cope. The Frequency and Quality of Measures Utilized in Federally-Sponsored Research on Children and Adolescents. American Educational Research Journal 14: 99-113; Spring 1977. [grades K-12]

Hirsch, Christian R. The Effects of Guided Discovery and Individualized Instructional Packages on Initial Learning, Transfer, and Retention in Second-Year Algebra. Journal for Research in Mathematics Education 8: 359-368; November 1977.

The guided discovery group scored significantly higher than the expository package and the programmed package groups on measures of immediate learning and transfer. (grade 11)

Hogan, Thomas P. Students' Interests in Particular Mathematics Topics. Journal for Research in Mathematics Education 8: 115-122; March 1977.

While the average percentage-liking figure across 72 items was 58 per cent ("indicating a generally favorable attitude toward mathematics topics"), there was wide variation in students' liking for specific items and across grades. (grades 1-8)

Hollander, Shiela K. The Effect of Questioning on the Solution of Verbal Arithmetic Problems. School Science and Mathematics 77: 659-661; December 1977.

Questioning subsequent to solving a problem appeared to encourage nine of the 12 students to change either the computational process or numbers used on at least one of seven problems. (grade 6)

Houston, Charles. The Improving of Academic Performance Using Instructional Objectives. MATYC Journal 11: 23-31; Winter 1977.

Students scored higher when given objectives than when not given objectives. (community college)

Hudson, H. T. and McIntire, W. R. Correlation Between Mathematical Skills and Success in Physics. American Journal of Physics 45: 470-471; May 1977. [college]

Hughston, George A. and Protinsky, Howard O. Conservation Among the Elderly: An Assessment of Women. Psychological Reports 41: 964-966; December 1977. [ages 63-87]

Hunkler, Richard. The Relationship Between a Sixth-Grade Student's Ability to Predict Success in Solving Computational and Statement Problems and His Mathematics Achievement and Attitude. School Science and Mathematics 77: 461-468; October 1977.

Girls were better able to predict their success in computation than were boys. (grade 6)

Hushak, Leroy J. The Role of Schools in Reducing the Variance of Cognitive Skills. Journal of Educational Research 70: 115-122; January-February 1977. [grade 4]

Inagaki, Kayoko and Hatano, Giyoo. Amplification of Cognitive Motivation and Its Effects on Epistemic Observation. American Educational Research Journal 14: 485-491; Fall 1977. [grade 4]

Jamison, Wesley. Developmental Inter-Relationships Among Concrete Operational Tasks: An Investigation of Piaget's Stage Concept. Journal of Experimental Child Psychology 24: 235-253; October 1977. [grades 1-3]

Jamski, William D. A Comparison of One Aspect of the Certification of Secondary Mathematics Teachers from 1957-1974. School Science and Mathematics 77: 681-682; December 1977.

The number of semester hours of mathematics required for certification has increased and become more uniform. (secondary preservice)

Jansson, L. C. Conditional Reasoning in Adolescents. Alberta Journal of Educational Research 23: 118-127; June 1977.

Significant differences in performance were found among grade levels, content types, principles of reasoning, and positions of a negation. Interactions were also noted. (grades 8, 10, 12)

Johnson, Carl S. and Byars, Jackson A. Trends in Content Programs for Preservice Secondary Mathematics Teachers. American Mathematical Monthly 84: 561-566; August-September 1977.

More mathematics content courses are required, with CUPM influence apparent. About ten per cent of the institutions had at least one course designed specifically for junior high school mathematics teachers. (secondary preservice)

Johnson, Martin L. The Effects of Instruction on Length Relations on the Qualitative Seriation Behavior of First- and Second-Grade Children. Journal for Research in Mathematics Education 8: 145-147; March 1977. [grades 1, 2]

Johnson, Martin L. The Effect Of Premise Order On The Making Of Transitive Inferences By First And Second Grade Children. School Science and Mathematics 77: 429-433; May-June 1977.

On only two of eight comparisons was the difference between "forward" and "backward" situations significant (favoring "forward"). More correct inferences were made for "smaller than" and "larger than". (grades 1, 2)

Jones, Chancey O.; Rowen, Mildred R.; and Taylor, Howard E. An Overview of the Mathematics Achievement Tests Offered in the Admissions Testing Program of the College Entrance Examination Board. Mathematics Teacher 70: 197-208; March 1977.

The mean score for all students on the level I test fluctuated between 536 and 545 from 1965-6 to 1975-6; on the level II test, the mean score fluctuated between 658 and 686. (grade 12)

Kagan, Martin H. and Tamir, Pinchas. Participation in and Views Concerning Inservice Training Among High School Science and Mathematics Teachers in Israel--A Survey. School Science and Mathematics 77: 31-46; January 1977. [secondary in-service]

Kagan, Spencer; Zahn, G. Lawrence; and Gealy, Jennifer. Competition and School Achievement Among Anglo-American and Mexican-American Children. Journal of Educational Psychology 69: 432-441; August 1977. [grades 1, 2, 4, 6]

Kantowski, Mary Grace. Processes Involved in Mathematical Problem Solving. Journal for Research in Mathematics Education 8: 163-180; May 1977.

The consistent use of heuristics and regular patterns of analysis and synthesis were noted for the above-median scores of eight algebra students. (grade 9)

Karplus, Robert; Karplus, Elizabeth; Formisano, Marina; and Paulsen, Albert-Christian. A Survey of Proportional Reasoning and Control of Variables in Seven Countries. Journal of Research in Science Teaching 14: 411-417; 1977. [ages 13-15]

Keim-Abbott, Sylvia and Abbott, Robert D. Moderation of Achievement Prediction in an Elementary School Metric Curriculum by Trait x Instructional Method Interactions. Educational and Psychological Measurement 37: 481-486; Summer 1977.

Mental ability was positively correlated (r = .71) with achievement using a guided discovery method, but essentially uncorrelated when a mastery learning method was used. (grade 2)

Kellaghan, Thomas. Relationships Between Home Environment and Scholastic Behavior in a Disadvantaged Population. Journal of Educational Psychology 69: 754-760; December 1977. [age 8]

Kepner, Henry S., Jr. and Koehn, Lilane R. Sex Roles in Mathematics: A Study of the Status of Sex Stereotypes in Elementary Mathematics Texts. Arithmetic Teacher 24: 379-385; May 1977.

It was concluded that there has been some change in the role given to females in textbooks, but no change in the male stereotype presented. (grades 1, 4, 7)

Kerlin, Marcella A. and Latham, William L. Intervention Effects of a Crisis-Resource Program. Exceptional Children 44: 32-34; September 1977. [ages 8-12]

Kloppenstein, Kenneth F. The Personalized System of Instruction in Introductory Calculus. American Mathematical Monthly 84: 120-124; February 1977.

The personalized self-paced course was not as effective as anticipated; withdrawal and failure rates were high. (college)

Knapp, Thomas R. The Reliability of a Dichotomous Test-Item: A "Correlationless" Approach. Journal of Educational Measurement 14: 237-252; Fall 1977. [grade 5]

Knifong, J. Dan and Holtan, Boyd D. A Search for Reading Difficulties Among Erred Word Problems. Journal for Research in Mathematics Education 8: 227-230; May 1977.

Interviews on problems for which the reasons for errors were unclear indicated that poor reading ability accounted for no more than ten per cent of the errors. Children who could read problems simply could not "work" them. (grade 6)

Kren, Sandra R. and Huntsberger, John P. Should Science Be Used to Teach Mathematical Skills? Journal of Research in Science Teaching 14: 557-561; 1977. [grades 4, 5]

Kulm, Gerald. The Effects of Two Summative Evaluation Methods on Achievement and Attitudes in Individualized Seventh-Grade Mathematics. School Science and Mathematics 77: 639-647; December 1977.

Low-ability students had better attitudes under unit testing, while high-ability students had better attitudes when tested after each objective. Other attitude differences were also found, but no achievement differences. (grade 7)

Lashier, William S., Jr. and Wren, Eugene L. Effect of Pretest Feedback and Mathematics Skills Overview on IPS Achievement. Science Education 61: 513-518; 1977. [grade 9]

Lehrer, Barry E. and Hieronymus, Albert N. Predicting Achievement Using Intellectual, Academic-Motivational and Selected Non-Intellectual Factors. Journal of Experimental Education 45: 44-51; Summer 1977. [grade 8]

Leinhardt, Gaea. Program Evaluation: An Empirical Study of Individualized Instruction. American Educational Research Journal 14: 277-293; Summer 1977. [grade 2]

Lindholm, Byron W.; Touliatos, John; and Rich, Amy. A Canonical Correlation Analysis of Behavior Problems and School Achievement for Different Grades, Sexes, and Races. Journal of Educational Research 70: 340-342; July-August 1977. [grades 3-6]

Macnab, D.; Mickasch, H. D.; and Georgi, W. Description and Assessment of Different Methods of Teaching Engineering Students Mathematics. International Journal of Mathematical Education in Science and Technology 8: 219-228; 1977. [college]

Maertens, Norbert W.; Jones, Rowen C.; and Waite, Ardis. Elemental Groupings Help Children Perceive Cardinality: A Two-Phase Research Study. Journal for Research in Mathematics Education 8: 181-193; May 1977.

Children were able to perceive elementally grouped objects significantly easier than nonelementally grouped objects. Groups arranged in subsets of 1 to 4 objects were perceived more easily than objects aligned in a row. (grades 1-3)

Marco, Gary L. Item Characteristic Curve Solutions to Three Intractable Testing Problems. Journal of Educational Measurement 14: 139-160; Summer 1977. [secondary]

Marjoribanks, Kevin. Affective and Environmental Correlates of Cognitive Performance. Journal of Educational Research 71: 3-8; September-October 1977. [ages 11, 12, 15]

Mayer, Richard E. Different Rule Systems for Counting Behavior Acquired in Meaningful and Rote Contexts of Learning. Journal of Educational Psychology 69: 537-546; October 1977.

Students who knew that a pattern of letters was related to base three numerals performed better on transfer tasks with base three. (college)

Mayes, Vivienne; Brigham, Lucille; and McNeill, Sarah Virginia. Student Attitudes Toward an Audio-Tutorial Course in Precalculus. Mathematics Teacher 70: 229-231; March 1977.

Ratings for various aspects of the course were obtained; reactions were generally favorable. (college)

McBride, Cecil C. and Rollins, James H. The Effects of History of Mathematics on Attitudes toward Mathematics of College Algebra Students. Journal for Research in Mathematics Education 8: 57-61; January 1977.

The course using items from the history of mathematics was effective in promoting positive attitudes toward mathematics. (college)

McCann, Patrick H. Mathematics Instruction with Games. Journal of Experimental Education 45: 61-68; Spring 1977. [naval trainees]

McGinty, Robert L. The Effects of Instruction in Sentential Logic on Selected Abilities of Second- and Third-Grade Children. Journal for Research in Mathematics Education 8: 88-96; March 1977.

The results "seem to indicate" that children in grades 2 and 3 can have some success in answering certain items from sentential logic when exposed to selected materials. (grades 2, 3)

McIntire, Walter G. and Drummond, Robert J. Multiple Predictors of Self-Concept in Children. Psychology in the Schools 14: 295-298; July 1977. [grade 4]

McMurray, N. E.; Bernard, M. F.; Klausmeier, H. J.; Schilling, J. M.; and Vorwerk, K. Instructional Design for Accelerating Children's Concept Learning. Journal of Educational Psychology 69: 660-667; December 1977. [grades 3, 4]

McSpadden, Jerry V. and Strain, Phillip S. Memory Thresholds and Overload Effects between Learning Disabled and Achieving Pupils. Exceptional Children 44: 35-37; September 1977. [grades 2, 4, 6]

Mellon, Phyllis M. and Crano, William D. An Extension and Application of the Multitrait-Multimethod Matrix Technique. Journal of Educational Psychology 69: 716-723; December 1977. [elementary]

Merrifield, Philip R. and Hummel-Rossi, Barbara. Relationships of Indices of Eighth Grade Academic Achievement to Sex and to Measures of Differentiated Aptitudes and Personality Traits. Educational and Psychological Measurement 37: 487-492; Summer 1977. [grade 8]

Michaels, Linda A. and Forsyth, Robert A. Construction and Validation of an Instrument Measuring Certain Attitudes Toward Mathematics. Educational and Psychological Measurement 37: 1043-1049; Winter 1977.

Scales developed to assess four attitudinal constructs [enjoyment of (a) word and (b) pictorial problems, appreciation of the utility of mathematics, and security with mathematics] had reliabilities of .61, .51, .78, and .73. (grade 7)

Miller, D. Merrily. Effects of Music-Listening Contingencies on Arithmetic Performance and Music Preference of EMR Children. American Journal of Mental Deficiency 81: 371-378; January 1977. [ages 9-14(EMRs)]

Miller, Scott A. A Disconfirmation of the Quantitative Identity-Quantitative Equivalence Sequence. Journal of Experimental Child Psychology 24: 180-189; August 1977. [grade K]

Morello, Vincent J.; Turner, Ralph R.; and Reed, Nedra E. Problem-Solving Strategies on a Partial Reinforcement Task: Effects of Socioeconomic Status and Cognitive Level. Journal of Experimental Child Psychology 24: 74-85; August 1977. [grades K-2]

Murray, Chris. Sex Differences in the Junior School Classroom. Journal of Experimental Education 45: 20-26; Summer 1977. [fourth year]

Murray, Frank B.; Ames, Gail J.; and Botwin, Gilbert J. Acquisition of Conservation Through Cognitive Dissonance. Journal of Educational Psychology 69: 519-527; October 1977. [grades K-3]

Musser, Gary and Thompson, Linda. A Learning Center Based System of Instruction. American Mathematical Monthly 84: 290-293; April 1977.

Students using the answer-until-correct test format scored higher than students using the standard multiple-choice format on mathematics tests. (college)

Nelson, L. D. and Kieren, T. E. Children's Behavior in Solving Spatial Problems. Alberta Journal of Educational Research 23: 22-30; March 1977.

A "distinct reluctance" on the part of about half the children at each age range to make predictions about the foldability of two-dimensional layouts was found. (ages 3-8)

Oanh, Nguyen Thi and Michael, William B. The Predictive Validity of Each of Ten Measures of Self-Concept Relative to Teachers' Ratings of Achievement in Mathematics and Reading of Vietnamese Children and of Those from Five Other Ethnic Groups. Educational and Psychological Measurement 37: 1005-1016; Winter 1977. [grades 4, 6]

O'Brien, Thomas C. and Shapiro, Bernard J. Number Patterns: Discovery versus Reception Learning. Journal for Research in Mathematics Education 8: 83-87; March 1977.

Expository instruction appeared to be more effective on an immediate measure, but a discovery method with students working in groups of three was better than independent discovery or expository instruction on retention and transfer measures. (elementary and secondary in-service)

Ohlson, E. LaMonte and Mein, Lillian. The Difference in Level of Anxiety in Undergraduate Mathematics and Nonmathematics Majors. Journal for Research in Mathematics Education 8: 48-56; January 1977.

Mathematics majors and non-mathematics majors were equally anxious; anxiety levels of mathematics majors did not increase from freshman through senior year. (college)

O'Leary, Susan G. and Schneider, Marlene R. Special Class Placement for Conduct Problem Children. Exceptional Children 44: 24-30; September 1977. [grade 1]

Olson, Melfried. Computational Competencies of Prospective Elementary Mathematics Teachers. School Science and Mathematics 77: 613-614; November 1977.

The students scored higher than the results reported on 17 NAEP items. (elementary preservice)

Pascarella, Ernest T. Interaction of Motivation, Mathematics Preparation, and Instructional Method in a PSI and Conventionally Taught Calculus Course. AV Communication Review 25: 25-41; Spring 1977.

On the average, students in the self-paced calculus course scored "substantially higher" than students having conventional instruction. Level of motivation was more strongly associated with achievement in the self-paced method. (college)

Pascarella, Ernest T. Student Motivation as a Differential Predictor of Course Outcomes in Personalized System of Instruction and Conventional Instructional Methods. Journal of Educational Research 71: 21-26; September-October 1977.

Significant motivation-by-instructional-method interactions were found. The "most dramatic" differences in achievement and course attitude favoring the PSI method were found at the highest motivational levels. (college)

Paulsen, James R. Hey Teacher, Your Personality's Showing! School Science and Mathematics 77: 237-240; March 1977.

On one of seven self-concept factors, "more effective" teachers scored significantly higher. (teachers in grades 4-6)

Peluso, Ada and Baranchik, A. J. Self-Paced Mathematics Instruction: A Statistical Comparison with Traditional Teaching. American Mathematical Monthly 84: 124-129; February 1977.

Data appear to indicate that self-paced instruction has a leveling effect on course achievement. (college)

Pereira-Mendoza, Lionel and Robbins, Maxfield. A Study of The Objectives of High School Geometry as Perceived by Teachers and University Mathematics Educators. School Science and Mathematics 77: 189-196; March 1977.

There appeared to be little agreement between teachers and mathematics educators on the more important objectives of the geometry course. (secondary)

Pike, Ruth and Olson, David R. A Question of More or Less. Child Development 48: 579-586; June 1977.

It was concluded that performance differences were attributable to differences in mental representations, not in the procedures employed in comparing the representations. (grades K, 2)

Post, Thomas R.; Ward, William H., Jr.; and Willson, Victor L. Teachers', Principals', and University Faculties' Views of Mathematics Learning and Instruction as Measured by a Mathematics Inventory. Journal for Research in Mathematics Education 8: 332-344; November 1977.

Teachers were found to be more similar to principals than to college professors in both factor structure and individual item responses. (secondary)

Price, Jack; Kelley, John L.; and Kelley, Jonathan. "New Math" Implementation: A Look Inside the Classroom. Journal for Research in Mathematics Education 8: 323-331; November 1977.

Characteristics of the sample of 1220 teachers and their responses to questions on objectives and assessments, textbooks and topics, class time, teaching methods, and other points were reported. It appeared that classrooms have changed "far less in the past 15 years than had been supposed". (teachers in grades 2, 5)

Robitaille, David F.; Sherrill, James M.; and Kaufman, David M. The Effect of Computer Utilization on the Achievement and Attitudes of Ninth-Grade Mathematics Students. Journal for Research in Mathematics Education 8: 26-32; January 1977.

In each of the two schools studied, the computer group nad lower achievement scores. (grade 9)

Rogers, W. Todd; Folsom, Ralph E., Jr.; Kalsbeek, William D.; and Clemmer, Anne F. Assessment of Nonresponse Bias in Sample Surveys: An Example from National Assessment. Journal of Educational Measurement 14: 297-311; Winter 1977. [age 17]

Ronning, Royce R. Modeling Effects and Developmental Changes in Dealing with a Formal Operations Task. American Educational Research Journal 14: 213-223; Summer 1977.

Performance in identifying a number between 1 and 100 improved with age; modeling significantly increased scores. (grades 1, 3, 5, 7)

Rozek, Felicia; Wessman, Alden E.; and Gorman, Bernard S. Temporal Span and Delay of Gratification as a Function of Age and Cognitive Development. Journal of Genetic Psychology 131: 37-40; September 1977. [ages 4-9]

Rubillo, James M. A Viable Individualized Learning System. MATYC Journal 11: 89-94; Spring 1977.

Students using the individualized materials scored significantly higher on achievement and attitude measures than students having traditional instruction. (college)

Rubin, Rosalyn A.; Dorle, Jeanne; and Sandidge, Susanne. Self-Esteem and School Performance. Psychology in the Schools 14: 503-507; October 1977. [age 12]

Salvia, John; Algozzine, Robert; and Sheare, Joseph B. Attractiveness and School Achievement. Journal of School Psychology 15: 60-67; Spring 1977. [grades 3-5]

Schiller, Diane Profita. The Effects of the "Fraction Ruler" Manipulative for Teaching Computation of Fractions. Clearing House 50: 300-303; March 1977.

The use of a manipulative device was compared with the "traditional" method. (grades 4-6)

Scott, C. C. and Fensham, P. J. Student and Teacher Perceptions of the Degree of Difficulty in a Mathematics Course. International Journal of Mathematical Education in Science and Technology 8: 375-384; November 1977.

Several approaches to determining reliability and validity of measures of perceived difficulty were explored. (college)

Scott, Norval C. Inquiry Strategy, Cognitive Style, and Mathematics Achievement. Journal for Research in Mathematics Education 8: 132-143; March 1977.

Students who had had inquiry training in grade 6 or 7 had better analytical responses and higher mathematics grades than the comparison group. However, no significant correlation between style and achievement was found. (grade 12)

Sekuler, Robert and Mierkiewicz, Diane. Children's Judgments of Numerical Inequality. Child Development 48: 630-633; June 1977.

Response times decreased linearly with the numerical difference of two digits, with students in grades 4, 7, and college having the same slope and younger children having a considerably steeper function. (grades K, 1, 4, 7, college)

Shann, Mary H. Evaluation of an Interdisciplinary, Problem Solving Curriculum in Elementary Science and Mathematics. Science Education 61: 491-502; 1977.

As one component of the evaluation, basic mathematical skill development was tested. The USMES students' mean scores were higher than non-USMES students' scores, but not significantly so. (elementary)

Shapiro, Leonard. Tutor Resources in Mathematics. American Mathematical Monthly 84: 476-481; June-July 1977.

Eleven resources available to calculus students were rated; differences in ratings for each type of tutorial help were noted between the lowest group and the entire group. (college freshmen)

Shaughnessy, J. Michael. Misconceptions of Probability: An Experiment with a Small-Group, Activity-Based, Model Building Approach to Introductory Probability at the College Level. Educational Studies in Mathematics 8: 295-316; October 1977.

The activity-based classes were more successful at overcoming reliance upon "representativeness" and tended to be more successful at overcoming reliance upon "availability". (college)

Sheehan, Daniel S. and Marcus, Mary. The Effects of Teacher Race and Student Race on Vocabulary and Mathematics Achievement. Journal of Educational Research 70: 123-126; January-February 1977. [grade 1]

Sherman, Julia and Fennema, Elizabeth. The Study of Mathematics By High School Girls and Boys: Related Variables. American Educational Research Journal 14: 159-168; Spring 1977.

Significantly more males than females, especially at the lower half of the achievement distribution, intended to continue to study mathematics. Few sex-related differences in attitudes toward mathematics were found. (grades 10, 11)

Smith, Edward L. and Padilla, Michael J. Strategies Used by First-Grade Children in Ordering Varying Numbers of Objects by Length and Weight. Journal of Research in Science Teaching 14: 461-466; 1977. [grade 1]

Smith, Lyle R. Aspects of Teacher Discourse and Student Achievement in Mathematics. Journal for Research in Mathematics Education 8: 195-204; May 1977.

Three teacher variables were correlated positively with student posttest achievement. (secondary in-service)

Sorge, D. H. and Wheatley, G. H. Calculus in High School--At What Cost? American Mathematical Monthly 84: 644-647; October 1977.

The percentage of calculus students who indicated they had taken trigonometry and analytic geometry in high school decreased between 1969-70 and 1974-75, while the percentage taking pre-calculus or calculus increased. (college)

Sovchik, Robert. An Analysis of Cognitive Achievement in a Number Systems Course for Prospective Elementary School Teachers. School Science and Mathematics 77: 66-70; January 1977.

Students made statistically significant gains in achievement. (elementary preservice)

Starr, Robert J. Modern Math Plus Computational Drills: Affective and Cognitive Results. School Science and Mathematics 77: 601-604; November 1977.

No significant differences in attitude or achievement were found between classes taught by a "modern" method or a similar method plus worksheets for drill. (grade 8)

Stedman, Mark E. and Breen, Michael J. Teacher Interest and Pupil Attitudes. Educational and Psychological Measurement 37: 1091-1094; Winter 1977. [teachers in grade 1]

Stephens, Larry J. The Effect of the Class Evaluation Method on Learning in Certain Mathematics Courses. International Journal of Mathematical Education in Science and Technology 8: 477-479; November 1977.

No significant difference in achievement was found between groups having collected and graded homework, monthly tests, or weekly tests. (college)

Strauch, A. Barry. More on the Sex x Race Interaction on Cognitive Measures. Journal of Educational Psychology 69: 152-157; April 1977. [grades 5, 8, 11]

Stromer, Robert. Remediating Academic Deficiencies in Learning Disabled Children. Exceptional Children 43: 432-440; April 1977. [age 8]

Struik, Ruth Rebekka and Flexer, Robert J. Self-Paced Calculus: A Preliminary Evaluation. American Mathematical Monthly 84: 129-134; February 1977.

Students in the self-paced calculus course had a significantly higher mean score than those in the traditional course. (college)

Sweigert, Ray L., Jr. Assessing Learner Needs with Criterion-Referenced Tests: A Working Approach. Educational Technology 17: 28-35; November 1977.

Several results from the Atlanta progress assessment are discussed, following a presentation of how the project was designed. (grade 12)

Talmage, Harriet and Hart, Alice. Investigative Teaching of Mathematics and Its Effect on the Classroom Learning Environment. Journal for Research in Mathematics Education 8: 345-358; November 1977.

"Cohesiveness" was the tested variable which significantly favored the classes whose teachers used "investigative teaching" over those whose teachers had not received instruction on the method. (elementary in-service)

Thornell, John G. Individual Differences in Cognitive Styles and the Guidance Variable in Instruction. Journal of Experimental Education 45: 9-12; Summer 1977.

No significant differences were found between students with the same cognitive style taught geometric concepts with intermediate or minimal guidance. However, students with analytic styles performed better than those with global style regardless of the amount of guidance. (grade 4)

Thornton, Carol Dodd. An Evaluation of the Mathematics-Methods Program Involving the Study of Teaching Characteristics and Pupil Achievement in Mathematics. Journal for Research in Mathematics Education 8: 17-25; January 1977.

Preservice teachers in the MMP performed higher than those in two control groups on the variables of Clarity, Questioning, Involvement, and Pupil Score. (elementary preservice, grade 3)

Tobin, Alexander and Bonner, James. Elementary Mathematics Resource Teacher Program. Arithmetic Teacher 24: 329-332; April 1977.

Median achievement levels on standardized tests have increased "modestly" for pupils in Title I schools using resource teachers. (elementary)

Touliatos, John; Lindholm, Byron W.; and Rich, Amy. Interaction of Race with Other Variables on Achievement in School. Psychology in the Schools 14: 360-363; July 1977. [grades 3-6]

Ullman, Douglas G. Children's Lateral Preference Patterns: Frequency and Relationships with Achievement and Intelligence. Journal of School Psychology 15: 36-43; Spring 1977. [ages 5-12]

Uprichard, A. Edward and Collura, Carolyn. The Effect of Emphasizing Mathematical Structure in the Acquisition of Whole Number Computation Skills (Addition and Subtraction) by Seven- and Eight-Year Olds: A Clinical Investigation. School Science and Mathematics 77: 97-104; February 1977.

Emphasizing structure facilitated the development of number concepts, place value, and computational skills for low-achieving pupils. (ages 7, 8)

Uprichard, A. Edward and Phillips, E. Ray. An Intraconcept Analysis of Rational Number Addition: A Validation Study. Journal for Research in Mathematics Education 8: 7-16; January 1977.

A hierarchy was constructed and tests to assess mastery at 45 "levels" were administered. Suggested sequences for addition with fractions were presented. (grades 4-8)

Vaillant, Suad K. and Choquette, Keith. Incentive Shifts in Children as They Relate to the Crespi Effect. Journal of Educational Research 71: 18-20; September-October 1977. [grades 5, 6]

Vinner, Shlomo. The Concept of Exponentiation at the Undergraduate Level and the Definitional Approach. Educational Studies in Mathematics 8: 17-26; 1977.

Over half of the freshmen and 80 per cent of upper undergraduates had at least two "correct" responses on three questions about equality. (college)

Wallbrown, Jane D.; Wallbrown, Fred H.; and Engin, Ann W. The Prediction of First Grade Achievement with Behavioral Ratings Taken During Kindergarten. Journal of Experimental Education 45: 16-20; Summer 1977. [grades K-1]

Walton, Gene A.; Havens, Kathryn Ellen; Johnson, Helen Dolores; and Paige, Donald. A Follow-up Study of Two Methods of Teaching Mathematics: Traditional versus New Math. School Science and Mathematics 77: 251-255; March 1977.

Analysis of grades and scores of students who had had a "modern" or "traditional" program in grade 7 indicated that high- and middle-ability "modern" students achieved better in succeeding mathematics courses. (secondary)

Weinstein, Carol S. Modifying Student Behavior in an Open Classroom Through Changes in the Physical Design. American Educational Research Journal 14: 249-262; Summer 1977. [grades 2-3]

Weissglass, Julian. Mathematics for Elementary Teaching: A Small-Group Laboratory Approach. American Mathematical Monthly 84: 377-382; May 1977.

The laboratory-taught group achieved higher scores than the lecture group, but the difference was not significant. (elementary preservice)

Werts, C. E. and Hilton, T. L. Intellectual Status and Intellectual Growth, Again. American Educational Research Journal 14: 137-146; Spring 1977. [grades 5, 7, 9, 11]

Wheatley, Grayson H. and McHugh, Daniel O. A Comparison of Two Methods of Column Addition for Pupils at Three Grade Levels. Journal for Research in Mathematics Education 8: 376-378; November 1977.

The group trained on the Direct method scored higher on each post-test whether they were trained on the Tens method before or after learning the Direct method. (grades 4, 7, secondary)

White, Kathleen M. and Friedman, Bruce. Conservation of Volume in College Students: Challenging Elkind. Journal of Genetic Psychology 131: 183-193; December 1977. [college]

Whyte, Lillian. Logico-Mathematical and Spatial Development in Children Underachieving in Arithmetic. Alberta Journal of Educational Research 23: 280-296; December 1977.

It was concluded that specific patterns of cognitive and spatial-motor development characterize children at different achievement levels. (ages 7, 9, 11)

Wiggins, E. Foster. Survey of Technical Mathematics Instruction in the Community Colleges of Massachusetts. MATYC Journal 11: 96-99; Spring 1977.

Five of nine colleges used only lecture-demonstration methods. Information on requirements and emphases was also obtained. (community college)

Willerman, Lee and Fiedler, Miriam Forster. Intellectually Precocious Preschool Children: Early Development and Later Intellectual Accomplishments. Journal of Genetic Psychology 131: 13-20; September 1977. [age 7]

Witkin, Herman A., et al. Role of the Field-Dependent and Field-Independent Cognitive Styles in Academic Evolution: A Longitudinal Study. Journal of Educational Psychology 69: 197-211; June 1977. [college]

Worner, Martha; Brekke, Beverly; Williams, John D.; and Harlow, Steven D. Conservation of Weight with the Deaf. Journal of Genetic Psychology 131: 323-324; December 1977. [ages 5-14]

Zammarelli, J. and Bolton, N. The Effects of Play on Mathematical Concept Formation. British Journal of Educational Psychology 47: 155-161; June 1977.

The play group made significantly higher scores than a group observing the play group or a control group. (ages 10-12)

Za'Rour, George I. and Panaouri-Kilaniotis, Angeliki L. Analytic Styles of Categorization and Conservation Abilities among Greek Cypriot Children. Science Education 61: 47-56; January-March 1977. [grades 1-3]

Zimmerman, Wayne S.; Parks, Henry; Gray, Kenneth; and Michael, William B. The Validity of Traditional Cognitive Measures and of Scales of the Study Attitudes and Methods Survey in the Prediction of the Academic Success of Educational Opportunity Program Students. Educational and Psychological Measurement 37: 465-470; Summer 1977. [college]

Dissertation Abstracts

This final section of the listing contains 343 dissertations.

Adi, Helen. The Interaction Between the Intellectual Developmental Levels of College Students and Their Performance on Equation Solving when Different Reversible Processes Are Applied. (The Florida State University, 1976.) DAI 38A: 1950-1951; October 1977. [77-22,098]

Reversal equation solving was easier than formal equation solving, which in turn was easier than the two simultaneously. Eighty-four per cent of the students were at the concrete operational state; differences in equation solving were found by level. (college)

Aldridge, Wanda Scott. Effects of Electronic Calculators on Achievement of Middle School Remedial Mathematics Students. (University of Georgia, 1976.) DAI 37A: 4078; January 1977. [76-29,502]

The non-calculator group scored significantly higher on a basic skills test than did a group using calculators. (grades 6-8)

Alexander, John Taylor. Attitudes of Selected Male Industrial Arts Teachers in Missouri Toward Metrication and the Use of Constructional Activities to Teach Metric Units. (University of Missouri-Columbia, 1976.) DAI 37A: 5652; March 1977. [77-5585] [secondary teachers]

Allen, Frances Ruth. An Experimental Study of Teacher Behaviors and Student Achievement in Selected Basic Mathematics Concepts. (University of Southern Mississippi, 1976.) DAI 37A: 5658-5659; March 1977. [77-5922]

Classes in which four teacher behaviors were used did not score higher than classes in which those behaviors were not stressed. (secondary, college)

Allen, Harold Don. The Teaching of Trigonometry in the United States and Canada: A Consideration of Elementary Course Content and Approach and of Factors Influencing Change, 1890-1970. (Rutgers University The State University of New Jersey (New Brunswick), 1977.) DAI 37A: 7588-7589; June 1977. [77-13,452]

Trends were analyzed from historical source documents and from textbooks. While trigonometry had a diminished role as a separate subject, the importance of trigonometric topics in school mathematics appeared evident. (secondary)

Altizer, Carol Jane. The Role of Manipulatives in Learning to Multiply and Factor Polynomials. (Virginia Polytechnic Institute and State University, 1977.) DAI 38A: 1951; October 1977. [77-22,048]

Retention scores favored one group using manipulatives over a non-manipulative group; no significant differences were found on the immediate posttest. (grade 8)

Andersen, Lyle Eugene. The Effects of Using Restricted and Unrestricted Modes of Presentation with Electronic Calculators on the Achievement and Attitude of Seventh Grade Pupils. (University of Denver, 1976.) DAI 37A: 6321-6322; April 1977. [77-7399]

Except for problem-solving scores, no changes in achievement were found among groups which used or did not use calculators; however, attitude scores improved when calculators were used without restriction. (grade 7)

Anderson, William Charles. A Survey of Programs for the Gifted and Talented in Texas Public Schools. (Baylor University, 1977.) DAI 38A: 2434-2435; November 1977. [77-24,839] [grades K-12]

Anderson, William Clarence. The Development and Evaluation of a Unit of Instruction Designed to Teach Second Grade Children the Concept of Mathematical Equality. (The Florida State University, 1976.) DAI 37A: 6322; April 1977. [77-8566]

An experimental unit including instruction on names for numbers and a pan balance to develop the concept of equality improved understanding of the nine pupils involved. (grade 2)

Anderson, William Lee, Jr. A Study to Determine the Correlation Between Academic Achievement and Field Dependence-Independence in Third, Fourth, Fifth, and Sixth Grade Pupils. (Brigham Young University, 1976.) DAI 37A: 5584; March 1977. [77-4814] [grades 3-6]

Armah, Kwaku. Acquisition of Conservation by Ghanaian Children. (Rutgers University The State University of New Jersey (New Brunswick), 1976.) DAI 37A: 7621; June 1977. [77-13,257] [ages 6-11]

Armstrong, Sharon Lee Johnson. A Program for Constructing a Competence Theory of Mathematical Reasoning Capacities. (University of Delaware, 1977.) DAI 38A: 1985; October 1977. [77-22,185]

An approach to constructing a theory of mathematical reasoning capabilities is proposed. (grades K-12 ?)

Arsanam, Prayoon. The Development and Investigation of a Mathematics Methods Course for Prospective Elementary Teachers in Thailand. (The Pennsylvania State University, 1976.) DAI 37A: 7004-7005; May 1977. [77-9523] [elementary preservice]

Ashby, Steven James. The Development of the Ability to Combine Responses in Problem Solving. (The University of Connecticut, 1976.) DAI 38B: 331; July 1977. [77-14,445] [grades K, 1]

Auton, Sylvia Cada. The Application of Rules in Simple Mathematical Systems. (University of Maryland, 1976.) DAI 38A: 142; July 1977. [77-9487]

Number of problem steps, age, and sex had varying effects on ability to apply rules to novel content. (secondary, college)

Ayers, Sharon Whitton. The Effects of Situational Problem-Solving and Electronic Calculating Instruments in a College Level Introductory Statistics Course. (Georgia State University - School of Education, 1976.) DAI 37A: 6322-6323; April 1977. [77-9305]

Classes having access to calculators achieved significantly higher than classes not using calculators. Emphasis on problem-solving heuristics resulted in higher attitude scores, but achievement scores did not differ. (college)

Bachor, Patricia Angelica C. The Interaction of Learner Characteristics and Degree of Learner Control in CAI. (University of Toronto (Canada), 1976.) DAI 38A: 3149; December 1977.

Learner-control groups used less time than computer-control groups for CAI programs in business mathematics. (community college)

Bagley, Sandra Lee (Hinman). A Comparison Study of Seventh Grade Student Achievement and Attitude Under Two Different Junior High School Organizational Patterns. (The University of Nebraska-Lincoln, 1977.) DAI 38A: 1321-1322; September 1977. [77-18,720] [grade 7]

Baker, Beverly Elizabeth. The Effect of Sequencing Levels of Representation on the Learning and Retention of Place Value Skills. (University of South Florida, 1977.) DAI 38A: 2623; November 1977. [77-21,926]

No significant differences between pupils given up to 60 minutes of instruction on place-value skills using enactive, iconic, or symbolic modes were found. It appeared that use of the enactive level first was most successful. (grade 1)

Baldwin, James John. The Interaction of Field Dependence and Field Independence with Method of Instruction in Mathematics. (Hofstra University, 1977.) DAI 38A: 1271-1272; September 1977. [77-18,896]

Working in groups or independently did not affect scores for the two types of students in this three-day study. (community college)

Baltz, Bernard Louis. Computer Graphics as an Aid to Teaching Mathematics. (The Ohio State University, 1977.) DAI 38A: 679; August 1977. [77-17,074]

Use of computer graphics or videotape lectures each resulted in higher scores than regular instruction. (secondary)

Baltzell, Dora Catherine. A Longitudinal Analysis of Reading and Arithmetic Achievement and Court-Ordered Desegregation (with "Forced" Busing) in a Large Urban School District in the South. (The University of Florida, 1976.) DAI 37A: 3991-3992; January 1977. [77-1103] [grades 3-5]

Barco, Ella Hamilton. Children's Understanding of Addition with One-, Two-, and Three-Digit Numbers. (The Florida State University, 1977.) DAI 38A: 3348; December 1977. [77-26,972]

The developed assessment instrument was sensitive enough to detect variances and similarities in children's understanding and to detect specific strengths and weaknesses. (grade 3)

Behne, Charlene Herberta. A Study of the Mathematical Literacy of Selected Groups of Elementary and Junior High School Students. (University of Northern Colorado, 1976.) DAI 37A: 7005; May 1977. [77-11,047]

Significant growth in basic skills, problem solving, deductive reasoning, and algebra was found between successive grades, but the percentage meeting a criterion level in basic skills declined from grade to grade. (grades 3, 5, 7, 9)

Bencsik, Gabriella Catherine. Evaluation of a Percent Unit for Improving One Formal Operations Characteristic for Adult Remedial Students. (Fordham University, 1977.) DAI 38A: 142-143; July 1977. [77-14,859]

A unit on percents affected achievement on both percents and proportions. (college)

Benedict, Martha Gail. Identification of Characteristics Which Differentiate Between the Most Effective and Least Effective Student Teachers of Elementary School Mathematics. (East Texas State University, 1977.) DAI 38A: 3419-3420; December 1977. [77-27,536]

Most and least effective student teachers could be distinguished on the basis of ratings by supervisors and by GPA, but not by variables related to mathematics. (elementary preservice)

Benson, James Edwin. The Use of Computer Simulation and Biomathematical Models for Mathematical Instruction of Undergraduate Biology Students. (New York University, 1977.) DAI 38A: 1951; October 1977. [77-20,734] [college]

Benton, Sister Eileen Rosabel. The Relationship Between the Number of Attributes and the Number of Moves in Conjunctive Concept Teaching Strategies. (Texas A&M University, 1976.) DAI 37A: 4927; February 1977. [77-2591]

Gain scores were significantly higher for two-attribute concepts than for three-attribute concepts. Differences for sequence and number of examples were also found. (elementary preservice)

Bickerstaff, Douglas D., Jr. The Effect of Computer Assisted Instruction Drill and Practice Used to Obtain Homework Credit on Achievement and Attitudes of College Level Intermediate Algebra Students. (Kansas State University, 1976.) DAI 37A: 5659; March 1977. [77-5528]

No significant differences in achievement were found among groups receiving no or partial or exclusive CAI treatment. (college)

Blake, Rick Nelson. The Effect of Problem Context upon the Problem Solving Processes Used by Field Dependent and Independent Students: A Clinical Study. (The University of British Columbia (Canada), 1976.) DAI 37A: 4191-4192; January 1977.

Problem context was unrelated to the heuristics used to solve a problem. Field independent students used a greater variety of heuristics. (grade 11)

Blankenship, Colleen Susan. Reduction of Systematic Inversion Errors in the Subtraction Algorithm. (University of Washington, 1976.) DAI 37A: 4273-4274; January 1977. [77-553]

Demonstration-plus-feedback improved achievement of the nine learning-disabled students, with eight able to generalize to some non-instructed types of examples. (grades 3-5)

Boldt, Christian Earl. An Analysis of the Attitudes of Three Community College Groups Regarding the Components Necessary for Developing a Technical Mathematics Course. (East Texas State University, 1976.) DAI 37A: 4807-4808; February 1977. [77-474]

For each of four hypotheses investigated, no significant difference was found in attitudes of administrators, mathematics instructors, and technical-occupational instructors regarding components involved in developing a technical mathematics course. (community college)

Bolesky, Edward Michael. The Influence of Electronic Hand-Held Calculators on Cognitive Achievement in Chemistry. (Boston College, 1977.) DAI 38A: 1319-1320; September 1977. [77-18,622] [grade 11]

Boling, Mary Ann Neaves. Some Cognitive and Affective Aspects of the Use of Hand-Held Calculators in High School Consumer Mathematics Classes. (The Louisiana State University and Agricultural and Mechanical College, 1977.) DAI 38A: 2623-2624; November 1977. [77-25,370]

No significant differences in attitude or achievement were found between calculator and non-calculator groups. (grade 12)

Borden, Virginia Lee. Teaching Decimal Concepts to Sixth Grade Students Using the Hand-Held Calculator. (University of Northern Colorado, 1976.) DAI 37A: 4192; January 1977. [76-29,734]

Groups using or not using calculators both gained on tests of decimals. A decimal-fraction sequence was as effective as a fraction-decimal sequence. (grade 6)

Bowling, John Michael. Three Scales of Attitude Toward Mathematics. (The Ohio State University, 1976.) DAI 37A: 4927-4928; February 1977. [77-2354]

A three-factor scale was developed and tested with various groups. (elementary pre- and in-service, college)

Bowser, John Dee. Toward a Theory of Sequencing: Study 3-7: The Specification and Evaluation of a Learning Hierarchy for Use in Teaching Selected Principles of Conditional Logic and an Exploration of Special Transfer Properties. (The Pennsylvania State University, 1976.) DAI 37A: 7092; May 1977. [77-9531]

Mixed results on some subordinate behaviors and on transfer effects were found. (grade 10)

Brace, Rita Rose. Relationships of Teaching Method, Visual-Motor Functioning and Intelligence in Attainment of a Mathematical Concept. (The University of Toledo, 1976.) DAI 37A: 6358-6359; April 1977. [77-9288]

Students taught a 25-minute lesson on area with five embodiments attained significantly higher scores than those taught with one embodiment. (elementary ?)

Brames, Thomas John. The Status of Metric Conversion in Industrial Education Programs in Utah with Recommendations for Statewide Training Programs. (Utah State University, 1976.) DAI 37A: 4919; February 1977. [76-25,600] [secondary teachers]

Brennan, Charles Martin. Toward a Theory of Sequencing: Study 4-3: The Development and Investigation of a Canonical Teaching Procedure for Aspects of Mathematical Proof. (The Pennsylvania State University, 1976.) DAI 37A: 7093; May 1977. [77-9647]

The canonical teaching procedure did not consistently facilitate the attainment of proof strategy concepts significantly more than any of the other three procedures with which it was compared. (college)

Brophy, Beverley Isabel. Semestering and the Teaching-Learning Situation. (University of Toronto (Canada), 1975.) DAI 38A: 3163-3164; December 1977. [grades 9-12]

Broughton, Samuel Fewell, Jr. Direct and Collateral Effects of Positive Reinforcement, Response-Cost, and Mixed Contingencies for Academic Performance. (University of Georgia, 1976.) DAI 37B: 4131; February 1977. [77-4102] [grades 4, 5]

Brumfield, Robert Dudley. A Comparison of the Achievement, Estimating Skills and Retention of Third Grade Students on an Introductory Unit in Linear Metric Measurement Taught Independent of and in Conjunction with Conversion to Linear English Measurement. (The University of Mississippi, 1976.) DAI 37A: 4113; January 1977. [77-1400]

It was concluded that the metric system should be taught as a separate system, without conversions to the English system. (grade 3)

Buckley, Charles John, O.S.B. Method in Mathematics: Bernard Lonergan's Theory of Cognition and Its Application to Mathematical Education. (Columbia University, 1977.) DAI 38A: 2624; November 1977. [77-24,077]

Lonergan's theory of knowing is related to strategies for teaching topics in a junior college mathematics program. (junior college)

Buckley, Edward Albert. The Effects of Teaching Selected Topics in Elementary Algebra from Concrete Referents in the Form of Related Physical Science Applications in a Community College Developmental Program. (State University of New York at Albany, 1977.) DAI 38A: 2624-2625; November 1977. [77-24,875]

Students taught by a procedure emphasizing related topics in algebra and physical science achieved significantly higher than students having the traditional separated courses. (community college)

Bunch, Austin Warren. Differences in Academic Achievement and Learner Self-Concept of Black and White Pseudo-Retarded Students Served in Classes for the Educable Mentally Retarded. (The University of Mississippi, 1976.) DAI 37A: 4274; January 1977. [77-1401] [ages 10-12 (EMRs)]

Bunch, Michael Brannen. The Use of Biographical Data in a Path Analytic Model of Performance in a Freshman Mathematics Course. (University of Georgia, 1976.) DAI 37B: 3577; January 1977. [76-29,507]

Student use of a tutorial program was determined primarily by ability and socioeconomic status for males and by maturity and conformity for females. (college freshmen)

Calarco, James Francis. The Effects of Student Awareness of Classroom Climate and Classroom Verbal Interactions on Student Achievement. (Texas A&M University, 1977.) DAI 38A: 1952; October 1977. [77-20,358]

A significant difference in interaction patterns was found between students in college algebra taught or not taught about climate and interactions, but no significant difference in mathematics achievement was found. (college)

Campbell, Patricia Forsythe. The Role of Pictures in First Grade Children's Perception of Mathematical Relationships. (The Florida State University, 1976.) DAI 37A: 6323; April 1977. [77-8574]

Neither drawing style nor number of pictures had a significant effect on assimilation, perception of motion, or ability to write number sentences for the pictures. (grade 1)

Candler, Ann Clifford. The Difference Between Field Independent and Field Dependent Individuals in Their Tendencies to Acquire Information Through Observational Learning. (University of Houston, 1976.) DAI 37A: 5050; February 1977. [77-150.]

No significant difference was found between field independent and dependent teachers in ability to model a videotaped lesson on a linear mathematics concept. (elementary in-service)

Carlen, Alberta. Differential Impact of Traditional Scheduling and Modular-Flexible Scheduling on Learning and School Behavior of Adolescents. (California School of Professional Psychology, San Francisco, 1976.) DAI 37B: 6299; June 1977. [77-12,284] [secondary]

Carr, Dawson Verdery. A Comparison of a Traditional Approach and a Systems Approach in Remedial Mathematics Instruction at a Community College. (The University of North Carolina at Chapel Hill, 1976.) DAI 38A: 604; August 1977. [77-17,306]

No significant difference between treatments was observed with respect to either mathematics achievement or attitude toward mathematics. (secondary)

Carrier, Carol Ann. An Exploratory Study of the Effects of Modes of Presentation, Teaching Strategies and Student Aptitudes on the Learning of a Geometry Task by Fourth Graders. (Syracuse University, 1976.) DAI 38A: 2625; November 1977. [77-24,528]

No significant aptitude-treatment interactions were found on verbal or spatial abilities, although a significant main effect favoring modeling over activation strategies was found. (grade 4)

Carter, Alice Marie Powers. The Effects of Directions Regarding Guessing and Formula Scoring on Multiple-Choice Test Scores.

(Northeast Louisiana University, 1976.) DAI 37A: 6948; May 1977. [77-10,680] [grades 10-12]

Causey, Matthew. An Empirically Derived Hierarchy of Intraconcept Relationships: Rational Number Multiplication. (University of Houston, 1976.) DAI 37A: 4928; February 1977. [77-1503]

A hierarchy was developed and confirmed using Walbesser's techniques. (grades 5-7)

Chanoine, Janet Rae. Learning of Elementary Students in an Individualized Mathematics Program with a Computer Assisted Management System. (Wayne State University, 1977.) DAI 38A: 2626; November 1977. [77-23,955]

When whole-class instruction was replaced by diagnostic-prescriptive instruction, "growth rate" increased. (grades 4-6)

Chartoff, Barton Toby. An Exploratory Investigation Utilizing a Multidimensional Scaling Procedure to Discover Classification Criteria for Algebra Word Problems Used by Students in Grades 7-13. (Northwestern University, 1976.) DAI 37A: 7006; May 1977. [77-10,012]

Four classification criteria were determined: recognition of how a problem is solved, contextual setting, comparison with genetic problem, and question posed. (grades 7-13)

Chen, Ta-Wei David. Analogical Reasoning, Learning, and Problem Solving with Application to Theorem Proving and Construction in Plane Geometry. (State University of New York at Buffalo, 1976.) DAI 37B: 4052; February 1977. [77-3525]

Modes of analogical reasoning were identified and a heuristic for one constructed. An implementation for geometry was programmed for a computer. (grade 10)

Chenault, George Simon. The Impact of Court-Ordered Desegregation on Student Achievement. (The University of Iowa, 1976.) DAI 37A: 7426; June 1977. [77-13,068] [grades 4, 5]

Cheng, Shiu Ching. Development of a Procedure for Analysis of the Cognitive Level of Elicited Student Responses in Whole Class Instruction in Secondary School Mathematics. (University of Pittsburgh, 1976.) DAI 38A: 88; July 1977. [77-15,177]

A list of 27 verbs was found to be adequate to describe cognitive behaviors of mathematics students. Students tended to use few levels, with higher-level skills rarely used. (secondary)

Cheng, Wan-Lee. An Analysis of the Effectiveness of Alternative Systems Approaches and Instructional Methods for Teaching the Metric System. (Iowa State University, 1976.) DAI 37A: 4919-4920; February 1977. [77-1452] [college]

Chumbley, Ralph Bryant, III. Factors Which Predict Academic Achievement for Micronesian Community College Graduates. (The Florida

State University, 1976.) DAI 38A: 1885-1886; October 1977. [77-22,105] [community college]

Cleary, Marilyn Florence. A Study to Investigate Areas of Algebraic Deficiency Among College Students and the Effectiveness of a Program of Remediation Concurrent with a Beginning College Mathematics Course. (University of Maryland, 1976.) DAI 37A: 7006; May 1977. [77-9496]

Students in an individually prescribed program of remediation demonstrated significantly higher achievement than those who received remedial assistance through class participation only. (college)

Clement, John Jeffrey. Quantitative Problem Solving Processes in Children. (University of Massachusetts, 1977.) DAI 38A: 1952-1953; October 1977. [77-21,992]

Children's approaches to problem solving were analyzed and considered in relation to models of cognitive processes. (grades 3-4)

Clifton, Charles Russell, Jr. Figurative Versus Operative Cues in the Acquisition of Conservation of Number. (The University of Florida, 1976.) DAI 38B: 872-873; August 1977. [77-17,009] [ages 3-7]

Cohen, Lawrence J. An Experimental Study of the Ability of Non-Mathematics Oriented Students to Learn and Recapture Selected Topics in Probability Theory. (New York University, 1976.) DAI 37A: 5770-5771; March 1977. [77-5293]

At the conclusion of a unit on probability, students taught without a set-theory approach showed significantly higher achievement than those taught with such an approach; however, this difference disappeared after subsequent presentation of a "self-relearning" lesson. (college)

Cohen, Martin Paul. Interest and Its Relationship to Problem-Solving Ability Among Secondary School Mathematics Students. (The University of Texas at Austin, 1976.) DAI 37A: 4929; February 1977.

It was not possible to predict the problem context in which students will be most successful based on knowledge of students' interests or arithmetic reasoning. (grade 8)

Cole, Robert Edward. The Effects of Placement and Alternative Methods of Instruction in a Community College Developmental Algebra Course. (North Carolina State University at Raleigh, 1976.) DAI 37A: 7006-7007; May 1977. [77-11,140]

Placement of students in alternative instructional treatments resulted in a significant increase in the success ratio (from 51.8% to 68.3%) compared with previous instructional practice. (community college)

Colvin, Dan Jack. A Model for the Implementation of a Continuous Progress Mathematics Program. (University of Northern Colorado, 1976.) DAI 37B: 5696; May 1977. [77-11,055]

An individualized, non-graded, continuous progress program was described. (grades 6-12)

Compton, Crystal Stewart. Comparative Achievement of Eighth Graders With and Without a Multimedia Cognitive Style Mapping Approach to Instruction. (The University of Florida, 1975.) DAI 37A: 4093-4094; January 1977. [77-63] [grade 8]

Connatser, Larry Allen. A Study of the Effect of an Academic Program on the Moral Development of Incarcerated Young Adults in the Bland Correctional Center, Bland County, Virginia. (Virginia Polytechnic Institute and State University, 1977.) DAI 38A: 1175-1176; September 1977. [77-20,231] [adults]

Cranford, Howard Roland. A Study of the Effects of Computer-Assisted Instruction in Mathematics on the Achievement and Attitude of Pupils in Grades Five and Six in a Rural Setting. (University of Southern Mississippi, 1976.) DAI 37A: 5660; March 1977. [77-5932]

The groups using a computer drill-and-practice program achieved "at a faster rate" on computation and applications subtests; little difference was found in understanding. (grades 5, 6)

Crouse, Richard James. An Investigation of the Relationship Between Teacher Knowledge and Student Achievement on Selected Probability Tasks. (University of Delaware, 1977.) DAI 38A: 1953; October 1977. [77-22,186]

Higher pupil achievement was associated with greater teacher knowledge. (elementary preservice)

Cummins, Charles Allen. The Effects of Sequencing Manipulative Activities on the Concept Learning of Adolescents. (State University of New York at Albany, 1977.) DAI 38A: 2626; November 1977. [77-24,877]

No significant achievement difference was found between groups taught by a manipulative or symbolic presentation. Those at the formal operational stage had significantly better achievement than those at the concrete operational stage. (grade 10)

Dadas, John Evangelos. A Study of the Effects of Assigning Spiral Exploratory Homework upon Achievement in and Attitude Towards Mathematics. (New York University, 1976.) DAI 37A: 5771; March 1977. [77-5344]

No significant differences were found between spiral exploratory and standard textbook homework assignments. (grade 9)

Dahl, Richard John. The Attainment of Conservation of Mass and Verbal Synthesis Between Latin-American Children Who Speak One or Two Languages. (University of Southern California, 1976.) DAI 38A: 1285-1286; September 1977. [ages 5-7]

Damarin, Suzanne Kidd. An Inquiry into the Use of Logic in Mathematical Contexts by Preservice Elementary Teachers. (The Ohio State University, 1976.) DAI 37A: 4929; February 1977. [77-2383]

Translating from logical to mathematical statements was extremely difficult for the students. Over 50 per cent treated the disjunctive as if it were conjunctive; more than 95 per cent treated conditional and biconditional statements incorrectly. (preservice elementary teachers)

Damuth, Judith Ellen Sanzen. The Relationship Between Entrance Age and Achievement in Mathematics and Reading for Primary Level Children in Dade County, Florida. (University of Miami, 1976.) DAI 38A: 99; July 1977. [77-13,396] [grade 3]

Deep, Ronald. The Relative Effects of Translating from Mathematics to English and from English to Mathematics on Verbal Problem Solving in Algebra 2. (The Florida State University, 1976.) DAI 37A: 6323-6324; April 1977. [77-8578]

Writing algebraic equations and a combination treatment were more effective than interpreting given equations. (secondary)

D'Errico, Albert Pasquale, Jr. The Relationships Among Conservation, Academic Achievement, and Nonverbal Intelligence in Children During the Concrete Operational Period. (University of Georgia, 1976.) DAI 37A: 4224-4225; January 1977. [76-29,517] [grades 2-7]

Devies, Theresa Marie. Metric Attitudes and Achievement: Relationships Between Stated and Perceived Teacher Attitudes Toward the Metric System and Student Achievement and Retention. (Kent State University, 1976.) DAI 37A: 7589; June 1977. [77-12,424]

No significant relationships were found between teachers' attitudes and student achievement with the metric system. (grade 7)

DeWitt, Dorinda Donohoe. A Comparison of Self-Contained and Resource Room Programs by Per Capita Expenditures, Student Achievement and District Size in South Carolina. (University of South Carolina, 1976.) DAI 38A: 199; July 1977. [77-13,901] [ages 8-12 (EMRs)]

Duckett, Jane Maurine. Idiot Savants: Super Specialization in Mentally Retarded Persons. (The University of Texas at Austin, 1976.) DAI 37A: 5032; February 1977. [77-3894]

Edwards, Allan Arthur. The Development of the Mathematics Program of the Livonia Public Schools from 1944 to 1975 (Volumes I and II). (The University of Michigan, 1976.) DAI 37A: 6324; April 1977. [77-7848]

Changes in courses, the relationship of textbook and program changes, and innovations were among the topics considered, with the focus on secondary school mathematics. (secondary)

Edwards, Leo, Jr. The Effects of a Problem Solving Model as an Alternative in the General Mathematics Curriculum. (Utah State University, 1976.) DAI 37A: 6239; April 1977. [77-8468]

Performance on most topics favored use of the diagrammatic module over the usual program. (grade 9)

Eisenhardt, William Baldwin. A Search for the Predominant Causal Sequence in the Interrelationship of Interest in Academic Subjects and Academic Achievement. (Duke University, 1976.) DAI 4225-4226; January 1977. [77-1065] [grades 6-11]

Elder, Donna Deems. Two-Group Theory and Outerdirectedness on a Battery of Piagetian Tasks in Mentally Retarded and Normal Children. (Virginia Commonwealth University, 1976.) DAI 37B: 3604; January 1977. [77-425] [elementary (EMRs) ?]

Eschenburg, William F. Computerized Prescription Mathematics in Support of Group Instruction. (Wayne State University, 1976.) DAI 37A: 7007; May 1977. [77-9394]

Use of the drill-and-practice program seemed more effective in some classes than others. (grades 9, 10, 12)

Evans, Mirl Ray. An Analysis of the Effect of Title VII in Lessening Academic Disparities Among Minority and Non-Minority Students. (Illinois State University, 1976.) DAI 37A: 4011; January 1977. [76-30,352] [elementary]

Fafard, Mary-Beth. The Effects of Instructions on Verbal Problem Solving in Learning Disabled Children. (University of Oregon, 1976.) DAI 37A: 5741-5742; March 1977. [77-4713]

Extraneous information and extra numbers made problems more difficult; telling children that there were extra numbers reduced errors. (elementary)

Farrah, Aloysius Hoff. An Investigation of the Relationship of Specifically Stated Behavioral Objectives to Mathematics Achievement Within Teacher-Paced and Self-Paced Instructional Modes. (New York University, 1977.) DAI 38A: 1953-1954; October 1977. [77-20,761]

Group-directed teacher-paced instruction that utilized behavioral objectives produced no significant differences in achievement and attitude compared with group-direct teacher-paced instruction that utilized no behavioral objectives. (two-year college)

Feingold, Herbert. Aspects of Academic Achievement and Teacher Rated Behaviors. (Yeshiva University, 1976.) DAI 37A: 6398-6399; April 1977. [77-8901] [ages 7-14]

Ferguson, Helen Louise. An Auto-Tutorial Audio-Visual Aid Related to Teaching Basic Mathematical Skills to Nursing Students. (Indiana University, 1976.) DAI 37B: 3869-3870; February 1977. [77-3286] [college]

Fernando, Rex Winston Godfrey. A Comparative Study of the Remedial Mathematics Programs of Two-Year and Four-Year State Supported Colleges in the Metropolitan East St. Louis Area. (Saint Louis University, 1976.) DAI 37A: 7589-7590; June 1977. [77-12,097]

One-quarter mathematics courses at five institutions, with nature and length of remedial components not controlled, were judged to

have limited effect on students' improvement from pre- to post-test. (college)

Fitts, Ruby Tyler. The Relationship of Kindergarten Attendance and Later School Achievement of Children. (The University of Alabama, 1975.) DAI 37A: 7617-7618; June 1977. [77-12,259] [grade 3]

Fleming, Paul James. A Study of the Development of Conservation of Number. (University of Waterloo (Canada), 1977.) DAI 38B: 2339; November 1977. [elementary]

Ford, Carolyn Brown. A Study of the Relationships Among Pupil Perception of Teacher Social Power Base Teacher Pupil Control Ideology and Teacher Concern Level in Teachers of Secondary Mathematics. (University of Houston, 1976.) DAI 37A: 5051-5052; February 1977. [77-1507]

Teachers with high levels of concern were found to be more humanistic in pupil-control ideology and were perceived as having more power than teachers at lower levels. (secondary)

Forseth, Sonia Daleki. The Effects of Art Activities on Attitudes and Achievement in Fourth Grade Children Pertinent to the Learning of Mathematics and Art. (University of Minnesota, 1976.) DAI 37A: 7590; June 1977. [77-12,803]

No relationship was found between use of art in mathematics class and children's achievement or creative thinking, but a significant relationship with attitudes toward mathematics was found. (grade 4)

Frazer, Colleen Doane. Abilities of College Students to Involve Symmetry of Equality with Applications of Mathematical Generalizations. (The Florida State University, 1976.) DAI 37A: 4192-4193; January 1977. [76-29,439]

A significant difference in performance on an applications test was observed among three groups of students: those who studied unspecified generalizations in one direction, in the reverse direction, or in both directions. (college freshmen)

Friedman, Peter Cutler. The Effects of Teacher vs. Pupil Applied Reinforcement of Arithmetic Response Rates in Upper Elementary Behavior Disordered and Regular Class Children. (The University of New Mexico, 1976.) DAI 38A: 725; August 1977. [77-16,097]

Behavior-disordered children achieved higher rates on addition skills with pupil-applied reinforcement, while regular children performed equally under both conditions. (elementary)

Friesen, Vernon Eugene. The Relationship of Affective and Cognitive Variables to Achievement and Attitude Under Lecture-Discussion and Computer-Assisted Instruction. (Kansas State University, 1976.) DAI 37A: 4095; January 1977. [76-29,997]

Good students achieved well under both methods. Predictors of attitudes were noted. (preservice elementary)

Fryman, Johnnie Gaylord. Application of the Rasch Simple Logistic Model to a Mathematics Placement Examination. (University of Kentucky, 1976.) DAI 37A: 5626; March 1977. [77-5689]

Recommendations were made for the use of the Rasch model in the calibration and interpretation of tests used for placement of students in freshman mathematics courses. (college freshmen)

Gage, Rita Lena. A Study of the Effects of Positive and Negative Instances on the Acquisition of Selected Algebra Concepts as a Function of Cognitive Style. (University of Houston, 1976.) DAI 37A: 4929-4930; February 1977. [77-1508]

Students having both positive and negative instances achieved higher than students having only positive instances. (grade 9)

Gallicchio, Angela. The Effects of Brainstorming in Small Group Mathematics Classes. (University of Maryland, 1976.) DAI 38A: 1954; October 1977. [77-21,352]

Brainstorming did not enhance mathematical creativity, achievement, or attitudes, nor reduce test anxiety. (preservice elementary)

Gates, Mary Jane. Activity Learning as an Antidote for Attitude Problems: The Treatment of Geometry in a CUPM Level I Mathematics Course for Elementary Education Majors. (The Florida State University, 1976.) DAI 37A: 4193; January 1977. [76-29,440]

No meaningful difference in achievement was found between activity and non-activity approaches. Some attitude differences were found. (preservice elementary)

Gathright, Carolyn Hicks. An Investigation of Children's Abilities to Reason with Conditional Statements. (University of Houston, 1976.) DAI 37A: 4930; February 1977. [77-1509]

Conditional reasoning scores over grade levels were significantly different and sequential. There seemed to be supporting evidence that they may be a result of educational development rather than an age-related ability. (grades 4-6)

Genrich, Carol Jean. The Evaluation of a Partially Standardized Group Test Based on Piagetian Theory Developed for Kindergarten and First-Grade Children. (University of Southern California, 1976.) DAI 37A: 5585-5586; March 1977.

The instrument might be useful with other predictors of mathematics achievement, but correlations rarely exceeded .5. (grades K, 1)

Gimmestad, Beverly Jane. An Exploratory Study of the Processes Used by Community College Students in Mathematical Problem Solving. (University of Colorado at Boulder, 1976.) DAI 37A: 7590; June 1977. [77-11,300]

It was recommended that more time and greater emphasis be placed on teaching students to translate word problems into appropriate equations. (community college)

Glavach, Matthew Jason. An Investigation of the Learning Potentialities of Educationally Differentiated Students Via Programed Materials. (United States International University, 1976.) DAI 38A: 1289; September 1977. [77-16,381]

Use of the programmed materials on addition benefited pupils in the three groups studied. (grades K-4)

Gobbel, Gertrude Gustafson. A Developmental Study of the Effects of Representation Mode on Memory for Rotational Transformations of Graphic Forms. (Temple University, 1977.) DAI 37B: 6366-6367; June 1977. [77-13,557]

Children at both grade levels performed most accurately under enactive representation. Ikonic-recall was easier than ikonic-recognition for first graders; ikonic-recognition was easier for fourth graders. (grades 1, 4)

Golden, Brother Neal. Student Involvement in the Discovery of Geometric Knowledge and in the Organization of That Knowledge into a Deductive System. (The Florida State University, 1977.) DAI 38A: 2626-2627; November 1977. [77-24,763]

The groups using the developed program had significantly better achievement and attitudes than groups using the SMSG course. (grade 10)

Golightly, Madelyn Gray. Construction of a Culture-Fair Primary Grade Geometry Test-Kindergarten to Grade Three. (Georgia State University-School of Education, 1976.) DAI 37A: 4931; February 1977. [77-1544]

The non-verbal group test was found to have content validity and a reliability of .86. (grades K-3)

Gonyo, Marilyn E. The Relationship Between Visual Perception and Arithmetical Computation Skills Among Learning Disabled Second and Third Grade Children. (Rutgers University The State University of New Jersey (New Brunswick), 1976.) DAI 37A: 7591; June 1977. [77-13,268]

Significant correlations were found between various subtests; a significant relationship was found between visual perception and computational ability. (grades 2, 3)

Goodman, Terry Allen. The Effects of Advance Organizers and Generative Processing Cues on the Learning of Selected Mathematics Concepts. (The University of Texas at Austin, 1977.) DAI 38A: 2627; November 1977. [77-22,958]

No significant differences were found between four treatments. (grades 9, 10)

Gray, Lou Allen Ann Bell. A Study of the Effects of the Remedial Mathematics Program at the University of Southern Mississippi on Achievement in College Algebra in the Presence of Selected Predictor Variables. (University of Southern Mississippi, 1976.) DAI 37A: 5660-5661; March 1977. [77-5943]

It was concluded that a particular developmental course engendered adequate algebraic skills needed by students in a subsequent algebra course. (college)

Greenstein, Jane Gordon. An Analysis of the Performance of Learning Disabled Adolescents on the Key Math Diagnostic Arithmetic Test. (The American University, 1976.) DAI 37A: 4279-4280; January 1977. [77-310]

Performance of learning disabled students was distinctive from that of the normal students. (adolescents)

Grogan, Rachel Bishop. A Comparative Study of the Openness of the Learning Environment, Student Achievement, and Student Self-Concept as a Learner in an Open Space School and a Non-Open Space School. (Georgia State University-School of Education, 1976.) DAI 37A: 4115; January 1977. [76-30,366] [ages 7-9]

Guthrie, Vallie Williams. Prediction of the Successful Completion of the Science Major at a Predominantly Black University from Selected Academic Variables. (The American University, 1976.) DAI 37A: 6299-6300; April 1977. [77-8277] [college]

Guymon, Vernon Melvin, Jr. Faculty Rating Policies Used by Community College Mathematics Students. (Arizona State University, 1977.) DAI 38A: 1272; September 1977. [77-17,869]

Within the context of the institution involved, findings "severely challenged current use of student evaluations of faculty". (community college)

Hagan, Anastasia Mary. The Development and Evaluation of an Individually-Prescribed Instructional Program in Geometry for Tenth-Grade Students Who Are Low Achievers in Mathematics. (University of Pennsylvania, 1975.) DAI 37A: 5561-5562; March 1977. [77-4674]

The program was judged successful in helping students attain mastery since no students needed teacher instruction on 70 of 84 objectives. (grade 10)

Hall, William Dudley. A Study of the Relationship Between Estimation and Mathematical Problem Solving Among Fifth Grade Students. (University of Illinois at Urbana-Champaign, 1976.) DAI 37A: 6324-6325; April 1977. [77-9014]

The better estimators were also better problem solvers. No significant difference in problem-solving ability was found between students given or not given estimation instruction, but those having instruction were significantly better in estimating. (grade 5)

Halpin, Stanley Arthur. A Comparison of Trainable Mentally Retarded and Normal Children at the Preoperational Reasoning Level on Grade-Sequenced Mathematics Tasks. (University of California and California State University, Los Angeles, 1976.) DAI 38A: 726-727; August 1977. [77-16,170] [preschool, grade K (TMRs)]

Hamadanizadeh, Javad. Medieval Interpolation Theory. (Columbia University, 1976.) DAI 38A: 679; August 1977. [77-17,647]

Hamrick, Anna Katherine Barr. An Investigation of Oral Language Factors in Readiness for the Written Symbolization of Addition and Subtraction. (University of Georgia, 1976.) DAI 37A: 4931-4932; February 1977. [77-4125]

Children's readiness did not affect ready students' meaningful learning of symbols. Learning of not-ready students was facilitated by delaying symbolization. (grade 1)

Handler, Janet Rae. An Exploratory Study of the Spatial Visualization Abilities and Problem Solving Processes Exhibited by High School Mathematics Students While Solving a Set of Geometric Problems. (The University of Tennessee, 1976.) DAI 37A: 7008; May 1977. [77-10,770]

Clinical-mode analyses provided information on spatial problem-solving processes. (grades 11, 12)

Haque, Janet Easton Antcliff. Secondary Classroom Teachers' Awareness, Perception, and Attitude Toward Reading in the Content Areas. (Michigan State University, 1976.) DAI 37A: 5562; March 1977. [77-5813] [secondary teachers]

Harris, Ruby Taylor. An Evaluation of Computer Assisted Instruction in Mathematics Using Test-and-Practice Method for Third and Sixth Grade Students. (United States International University, 1976.) DAI 38B: 1245-1246; September 1977. [77-16,383]

Achievement was better for the group using CAI than for the non-CAI group; no difference in attitudes was found. (grades 3, 6)

Harrison, Guy Troy. A Comparison of the Academic Achievements of Seventh Grade Students in the Semester Unit Plan with Those in the Quarter Unit Plan. (North Texas State University, 1977.) DAI 38A: 1149; September 1977. [77-19,669] [grade 7]

Hart, Kathleen Mary. Mathematics Achievement and Attitudes of Nine and Ten-Year Olds, Effects of Mathematical Games and Puzzles. (Indiana University, 1976.) DAI 37A: 4932; February 1977. [77-3343]

Achievement was significantly related to attitudes, self-concept, and interest. No significant difference was found for treatment (mathematical games or reading games and computation practice). (ages 9-10)

Hartfield, Freddie Davis. A Comparison of Mathematical Programs of Predominantly Black Colleges with Recommendations of the Committee on Undergraduate Programs in Mathematics. (Kansas State University, 1976.) DAI 37A: 4098; January 1977. [76-30,001]

Eight major findings were identified from a questionnaire investigation involving 36 institutions having programs for the preparation of high school mathematics teachers. (college)

Harvey, Clinnon Oneal. A Study of the Achievement and Transfer Effects of Additive Subtraction and Class Inclusion Training. (University of Houston, 1976.) DAI 37A: 4932-4933; February 1977. [77-1512]

Training on additive subtraction and class inclusion had a significant effect on immediate achievement, but not on transfer. (grade 1)

Hatfield, Mary Morozzo. A Longitudinal Study Comparing the Effects of Two Instructional Methods on Attitudes Toward and Achievement in Mathematics. (University of Kansas, 1976.) DAI 37A: 4841-4842; February 1977. [77-2222]

No significant differences in attitudes were found between groups using or not using contracts. The group using contracts for three years had significantly higher achievement. (grades 4-6)

Hazekamp, Donald Wayne. The Effects of Two Initial Instructional Sequences on the Learning of the Conventional Two-Digit Multiplication Algorithm in Fourth Grade. (Indiana University, 1976.) DAI 37A: 4933; February 1977. [77-3345]

The group taught multiplication with emphasis on the use of grouping and base ideas achieved significantly higher than the group taught with emphasis on place-value representations. (grade 4)

Heimbuch, Bonnie Lee Aufenkamp. Cognitive Preferences in Mathematics of Elementary Teachers: Identification and Relationships. (The University of Texas at Austin, 1977.) DAI 38A: 2628; November 1977. [77-22,965]

In-service teachers had a significantly higher preference for memory and application than did non-teaching majors. Preservice teachers were closer to in-service teachers than to non-teaching majors. (pre- and in-service elementary teachers, college)

Heinz, Rebecca Susan. Teacher Self Concept and Verbal and Non-Verbal Behavior. (Kansas State University, 1976.) DAI 37A: 4116-4117; January 1977. [76-30,002]

No significant relationships were found between self-concept and teachers' behaviors in two mathematics lessons. (grade 1 teachers)

Hernandez, Carmela. Prediction of First Grade Mathematics Achievement from Selected Structure-of-Intellect Factors. (The University of Texas at Austin, 1977.) DAI 38A: 2521; November 1977. [77-22,967]

Several factors were predictive of scores on a mathematics achievement test. (grade 1)

Hildebrandt, Martha Elizabeth. Parental Attitudes About Mathematics Education: New Math in Winnetka. (Northwestern University, 1976.) DAI 37A: 4193-4194; January 1977. [77-1269]

Over half of the responding parents had attempted to learn about "new math". About 70 per cent felt their children had received a good foundation in mathematics. (grade 7 parents)

Hill, Daniel Seymour. Cognitive Controls and Their Relations to the Development of Conservation. (New York University, 1976.) DAI 37B: 4649; March 1977. [77-5309] [ages 6-11]

Hill, Johnny Ferguson. The Doctorate in Mathematics Education: A Study of Graduates. (Indiana University, 1976.) DAI 37A: 6325; April 1977. [77-3346]

Among the findings from the survey of persons recently receiving the doctorate was information on the amount of mathematics, practicum experiences, and research in programs. (mathematics educators)

Hill, Tommie Ann. An Empirically Deprived Hierarchy of Intraconcept Relationships: Whole Number Division. (University of Houston, 1976.) DAI 37A: 4933-4934; February 1977. [77-1513]

Nine variables were ordered and a hierarchy developed. (grades 5, 7, 9)

Hinders, Duane Curtis. An Explanation of Sex Differences in Student Effort in Mathematics: The Impact of Differences in Social Influence, Articulation to Future Work, and Relating Grades to Ability. (Stanford University, 1977.) DAI 37A: 7591-7592; June 1977. [77-12,720]

Particular ways in which boys were more positively oriented toward mathematics were determined. (secondary)

Hirst, William Charles. Memory for Proofs. (Cornell University, 1976.) DAI 38B: 1440; September 1977. [77-18,168]

The structure of a proof helps students recall it. It was concluded that remembering is the active construction of past events, not the retrieval of traces from a storehouse. (?)

Hoerbelt, Bernard George. The Role of Beliefs, Doubts and Conflicts in the Teaching and Learning of Mathematical Problems. (State University of New York at Buffalo, 1976.) DAI 37A: 5564-5565; March 1977. [77-6138]

A typology of beliefs about problem solving, a rationale for posing problems, a discussion of social conflict, and a model for teaching quadratic equations are included. (secondary)

Hollman, Doy Ott. Relationships of Mathematics GPA to Types of Institutions, Scores on ACT, and Other Variables for Recipients of Baccalaureate Degrees in Mathematics. (The University of Mississippi, 1976.) DAI 37A: 6977; May 1977. [77-11,187]

With the exception of number of semesters of high school mathematics, each predictor variable correlated significantly with the criterion of GPA in mathematics. (college)

Hollowell, Kathleen Ann. A Flow Chart Model of Cognitive Processes in Mathematical Problem Solving. (Boston University School of Education, 1977.) DAI 37A: 7666-7667; June 1977. [77-11,363]

The model was found to be a satisfactory descriptor of actual sequences for problem solving. Differences between algebraic and geometric problems were noted. (grade 11)

Hoogheem, Leonard Allan. A Comparative Study of the Effectiveness of Two-Dimensional Vector Space as an Advance Organizer on Student Abilities to Perform Mathematical Operation on the Set of Integers. (University of Minnesota, 1976.) DAI 37A: 6244; April 1977. [77-7043]

No significant difference in achievement was found between vector or topological space games as advance organizers. (grade 7)

Hopkins, Clyde L., Jr. A Discussion of Some Consequences of Contemporary Mathematics for Philosophy: A Historical Approach. (The Pennsylvania State University, 1976.) DAI 37B: 5129; April 1977. [77-8886]

Trends in mathematics and philosophy are discussed "to gain access to the basic issues of philosophy of mathematics".

Huber, John Charles. A Comparative Study of Traditional and Transformational Approaches to Selected Topics in Trigonometry. (University of Houston, 1977.) DAI 38A: 2628; November 1977. [77-24,431]

No significant difference was found between the two approaches, but achievement on identities was better with the transformational approach, while the traditional approach was better for angle reduction problems. (secondary)

Hughes, Robert James. An Experimental Study in Teaching Mathematical Concepts Utilizing Computer-Assisted Instruction in Business Machines. (North Texas State University, 1976.) DAI 37A: 6911-6912; May 1977. [77-11,110] [community college]

Hutton, Lucreda Ann Williams. The Effects of the Use of Mini-Calculators on Attitude and Achievement in Mathematics. (Indiana University, 1976.) DAI 37A: 4934; February 1977. [77-3347]

No significant differences in achievement and attitudes were found between groups using or not using calculators. (grade 9)

Israel, David Oliver. The Effect of Two Types of Background Music on the Comprehension of Selected Recorded Instructional Mathematics Programs for Senior High School Students in Two Selected School Districts on Long Island, New York. (New York University, 1976.) DAI 37A: 5541; March 1977. [77-5310] [secondary]

Jackson, Gary Manuel. Facilitation of Performance on an Arithmetic Task with the Mentally Retarded as a Result of the Application of a Biofeedback Procedure to Decrease Alpha Wave Activity. (Southern Illinois University, 1977.) DAI 38B: 933; August 1977. [77-16,627] [adult]

Jackson, Otis Ansara. The Relationship Between Selected School Inputs and Standardized Achievement Test Scores of Seventh Grade Students. (Washington University, 1977.) DAI 38A: 1785; October 1977. [77-21,011] [grade 7]

Jacob, Jasmine Fernando. The Effects of Individualizing Instruction by the Use of Multi-Sensory Multi-Media Learning Centers on Reading and Arithmetic Achievement of Inner-City Children. (Michigan State University, 1976.) DAI 37A: 5586; March 1977. [77-5830] [grades 5, 6]

Jacobson, Vivienne S. The Effect of Bilingualism on the Development of the Concept of Space. (Purdue University, 1976.) DAI 37A: 4988; February 1977. [77-1730] [ages 6-9]

Jamski, William Donald. The Effect of Hand Calculator Use on the Achievement of Seventh Graders Learning Rational Number-Decimal-Percent Conversion Algorithms. (Indiana University, 1976.) DAI 37A: 4934-4935; February 1977. [77-3349]

Conversion from simplified rational to decimal was better with the calculator, but no significant differences were found on retests. (grade 7)

Johnson, Burnis Lee Wilson. The Relationship Between Performance Using Individualized Instruction in Mathematics and Teacher Attitude and Dogmatism. (University of Houston, 1976.) DAI 38A: 91-92; July 1977. [77-13,955]

Open-mindedness and positive attitudes did not seem to affect behaviors and attitudes toward individualized instruction. (elementary preservice)

Johnson, Donald Roger. The Influence of Race in the Assigning of Marks to Students by Teachers. (University of South Carolina, 1977.) DAI 38A: 1959; October 1977. [77-22,412]

Marks in mathematics assigned by teachers to black students were significantly biased in a favorable direction as compared to those assigned to white students. (secondary)

Johnson, Guy W. A Study of Cognitive and Attitudinal Interactions in Seventh Grade Mathematics. (The Louisiana State University and Agricultural and Mechanical College, 1976.) DAI 37A: 7008-7009; May 1977. [77-10,376]

About half of the students reported favorable attitudes. Teachers had more favorable attitudes than parents. Relationships among attitudes were found, but achievement was not significantly related to attitude. (grades 6, 7)

Johnson, Janice Kay. The Effects of Two Types of Cognitive Conflict Training upon Students' Acquisition of the Concept of Conservation of Area. (Syracuse University, 1976.) DAI 38A: 2685-2686; November 1977. [77-24,384] [grade 5]

Johnson, Kerry Adams. A Survey of Mathematics Programs, Materials & Methods in Schools for the Deaf. (Syracuse University, 1976.) DAI 38A: 2704; November 1977. [77-24,546]

Little systematic effort has been devoted to developing programs for the deaf. Data were collected on a wide variety of practices. (grades K-12)

Kane, Bruce J. The Comparison of Peer Tutor Implementors to LD Teacher Implementors, in Implementing a Computational Mathematics Program for Incarcerated Juvenile Delinquents Identified as Learning Disabled in Computational Mathematics Ability. (University of Kansas, 1976.) DAI 37A: 5037-5038; February 1977. [77-2240]

No significant difference in achievement was found between students taught by peer tutors or LD teachers. (ages 12-17)

Keefauver, Linda Williams. The Effects of a Program of Coaching on Scholastic Aptitude Test Scores of High School Seniors Pretested as Juniors. (The University of Tennessee, 1976.) DAI 37A: 5063; February 1977. [77-3651]

No significant difference in achievement on the SAT was found between coached and non-coached groups. (grade 12)

Keils, William Hubert. The Relationship of Drawing Ability to Selected Variables in Three-Dimensional High School Geometry. (The University of Texas at Austin, 1976.) DAI 37A: 4935; February 1977. [77-3930]

Some findings indicated that drawing ability is related to success in three-dimensional geometry. (grade 10)

Kelly, John Charles. The Judgment of the Logical Connective "If... Then..." in a Mathematical Context by College Students. (The Florida State University, 1977.) DAI 38A: 2628-2629; November 1977. [77-24,773]

Subjects judged causal conditionals more accurately than non-causal ones. (college)

Kerns, Carl Melvin. A Study of the Effects of Two Different Methods for Incorporating Application Problems into College Algebra. (University of Northern Colorado, 1977.) DAI 38A: 1954-1955; October 1977. [77-22,374]

Method of instruction did not significantly affect achievement. (college)

Kincaid, William Arthur. A Study of the Effects on Children's Attitude and Achievement in Mathematics Resulting from the Introduction of Mathematical Games into the Home by Specially Trained Parents. (University of Cincinnati, 1976.) DAI 37A: 4194; January 1977. [76-30,403]

Training parents to present games did not significantly affect pupils' achievement, but did result in better pupil and parent attitudes. (grade 2)

King, Rosemary. The Theory of Denominator Sets as a New Mode in the Presentation and Explanation of Fractions. (Saint Louis University, 1976.) DAI 37A: 7592; June 1977. [77-12,111]

Students made significant gains when taught with denominator sets rather than the traditional method. (grades 7, 9)

Kirshner, Cyrus. Use of Feedback in a Systems Approach Instructional Design. (The Florida State University, 1976.) DAI 37A: 7619; June 1977. [77-13,324] [?]

Kleinhaus, Sister Rosemarie. A Development of Materials to be Used in a Laboratory Approach to a Mathematics Content Course for Pre-Service Elementary Teachers and the Effects of This Approach on Achievement and Attitude. (Oklahoma State University, 1976.) DAI 37A: 5758; March 1977. [77-5121]

Forty activities using manipulative materials were developed; use resulted in significant achievement gains but no difference in attitudes. (elementary preservice)

Korth, Louis Mark. The Effects of Formative Evaluation Methods on Achievement in Individualized Seventh-Grade Mathematics. (University of Southern California, 1976.) DAI 37A: 5568-5569; March 1977.

On 16 of 20 comparisons, no significant difference was found between self-testing or regular testing. (grade 7)

Kossack, Sharon Wall. A Mathematical Reading Inventory. (University of Georgia, 1976.) DAI 37A: 4923; February 1977. [77-4136]

The inventory results were not consistent with other readability criteria. (grades 3-5)

Koukeyan, Berjouhi B. Evaluation of a Vertical-Horizontal Enrichment Program for the Math-Gifted Students Fourth, Fifth and Sixth Grades. (Brigham Young University, 1976.) DAI 37A: 5587; March 1977. [77-4835]

Significant gains in achievement and attitude were found at the fourth-grade level, but not at grades 5 and 6. (grades 4-6)

Kraft, Rosemarie Harper. An EEG Study: Hemispheric Brain Functioning of Six to Eight Year Old Children During Piagetian and Curriculum Tasks with Variation in Presentation Mode. (The Ohio State University, 1976.) DAI 37A: 5587-5588; March 1977. [77-2435] [ages 6-8]

Kurtz, Barry Lloyd. A Study of Teaching for Proportional Reasoning. (University of California, Berkeley, 1976.) DAI 38A: 680; August 1977. [77-15,747]

Substantial improvement on ratio and proportion was made by all treatment groups. (secondary)

Laird, Pearl Mincemoyer. Formative Evaluation of Computer Assisted Instruction Mathematics Material. (The Pennsylvania State University, 1976.) DAI 37A: 7009; May 1977. [77-9565]

Examination of three variables--programming errors, readability, and visual material--helped to improve course material. (?)

Lamb, Raymond Lee. A Study on the Coordination of Graph Theory and Computer Science at the Secondary Level. (Georgia State University-School of Education, 1976.) DAI 37A: 4935-4936; February 1977. [77-1549]

Students with access to computer terminals scored significantly higher in achievement of graph theory content than students without such access. (secondary)

Lawson, James Richard. Processes in Implementing the Metric System in Eight Local Public School Districts. (Michigan State University, 1977.) DAI 38A: 2715-2716; November 1977. [77-25,254]

Five diffusion strategies were described. Significant differences favored the metric treatment groups. (grades K-6)

LeCuyer, Edward J., Jr. Teaching a Survey of Mathematics for College Students Using a Programming Language [with] Part II: The Textbook. (University of Massachusetts, 1977.) DAI 37A: 6325-6326; April 1977. [77-8697]

General content and chapter titles of the APL textbook are identified; seven implications from its small-scale exploratory use (along with a computer) in a "mathematics in the modern world" course are suggested. (college)

Lee, Hyoja Sue. The Effects of Type of Postadjúnct Question and Review on Vertical and Lateral Transfer of Learning from a Mathematical Text. (The Florida State University, 1977.) DAI 38A: 2656-2657; November 1977. [77-24,777]

Postadjunct questions facilitated retention of clock arithmetic content on multilevel problems. (grade 7)

Lekskul, Sompon. Mathematics Content Guidelines for the Collegiate Training of Elementary and Secondary Mathematics Teachers in Thailand. (University of Northern Colorado, 1976.) DAI 37A: 7009-7010; May 1977. [77-11,068] [elementary and secondary preservice]

Lenhard, Rodger William. Hand-Held Calculators in the Mathematics Classroom at Stuart Public School, Stuart, Nebraska. (Montana State University, 1976.) DAI 37A: 5661; March 1977. [77-4974]

No significant differences were found between calculator and non-calculator groups on most measures. (grades 7-12)

Levitt, Marc Lawrence. Former Special Education Pupils in the Mainstream: A Descriptive Follow-Up Study. (University of California, Los Angeles, 1976.) DAI 37A: 5039; February 1977. [77-1644] [elementary (EMRs)]

Lieblich, Gerald Stewart. Comparing the Effects of Student Tutorial Instruction and Programmed Instruction on the Ability of Low-Achieving College Students to Learn and Self-Relearn Arithmetic Skills. (New York University, 1976.) DAI 38A: 680-681; August 1977. [77-16,436]

Subjects taught by "student tutorial instructors" made significantly greater gains in arithmetic achievement than students who were "self-taught" using programmed texts. (community college)

Lockhart, Mildred. Attitude Changes of Elementary School Teachers Toward the Metric System of Measurement. (Michigan State University, 1976.) DAI 37A: 7663; June 1977. [77-11,678]

Attitudes toward the metric system changed positively when knowledge increased. (elementary in-service)

Locksley, Norman. The Personalized System of Instruction (PSI) in a University Mathematics Class. (University of Maryland, 1976.) DAI 37A: 4194-4195; January 1977. [76-28,194]

Statistically significant findings were observed in connection with two of the seven questions investigated. PSI students showed a higher attitude toward their method of instruction; within the PSI class, review questions improved performance on a unit test. (college sophomores)

Lopez, Richard. A Concurrent Validation of the Instructional Styles Inventory Using Community College Math and Social Science Teachers. (Florida Atlantic University, 1977.) DAI 38A: 92-93; July 1977. [77-15,324] [community college]

Love, Maurice Lee. A Comparative Study of Two Methods of Teaching Metrication to Selected Seventh, Eighth and Ninth Grade Pupils Relative to Effectiveness on Metric Measure Estimation. (The University of Tulsa, 1977.) DAI 38A: 1344-1345; September 1977. [77-18,742]

A "meaningful difference" in estimation achievement was found between groups taught with and without comparison to the customary system. (grades 7-9)

Lowman, Bertha Pauline. F. Lynwood Wren: His Contributions to the Field of Mathematics Education. (George Peabody College for Teachers, 1977.) DAI 38A: 2629; November 1977. [77-25,115]

Wren's The Teaching of Secondary Mathematics (co-authored with Butler) was deemed to be his "single, most influential" contribution to mathematics education. (secondary)

Lukasevich, Ann. A Study of Relationships Among Instructional Style (Open vs. Non-Open), Architectural Design (Open Space vs. Non-Open Space) and Measures of Self Concept and Reading and Mathematics Achievement of Third Grade Children. (The University of British Columbia (Canada), 1976.) DAI 38A: 102-103; July 1977. [grade 3]

Maffei, Anthony C. Causes of Recent Decline in the Mathematics Achievement of Public High School Students: A National Survey of High School Mathematics Teachers. (University of South Carolina, 1977.) DAI 38A: 2030; October 1977. [77-22,420]

Seventy-nine per cent of the sampled teachers believed there was a decline in the mathematics achievement of students in their schools. Five reasons were hypothesized. (secondary)

Malak, Mohammad Ali. The Relationship Between Certain Piagetian Tasks and Arithmetic Ability of the First Grade Saudi Male Children. (University of Northern Colorado, 1976.) DAI 37A: 6929-6930; May 1977. [77-11,076] [grade 1]

Malouf, David Baker. The Effect of Color-Cueing Critical Words in Training EMR Children to Solve Verbal Arithmetic Problems Containing Extraneous Information. (University of Oregon, 1976.) DAI 37A: 5746; March 1977. [77-4740]

No significant effects were found for color-cueing. (age 12, EMRs)

Mangru, Matadial. A Comparative Study of the Nature of Verbal Arithmetic Problems, Grades Three Through Six, from Four Periods: The Mid-30's, The Mid-50's, The Mid-60's, The Early 70's. (The University of Iowa, 1976.) DAI 37A: 7533; June 1977. [77-13,107]

Trends pre- and post-Sputnik were traced. (grades 3-6)

Marine, James Alan. An Experimental Comparison of Example-Only vs. Example-and-Nonexample Strategies and of Inductive vs. Deductive Strategies of Presenting Concepts from School Geometry. (University of Illinois at Urbana-Champaign, 1976.) DAI 37A: 6326; April 1977. [77-9087]

Differences were found favoring each type of example strategy for various content. Deductive strategies may have been better than inductive. (grade 7)

Marquez, Angel Antonio. The Effect of Individualized Instruction on Academic Growth and Attitudes Toward School in Low Achieving Sixth Grade Students. (The University of Alabama, 1976.) DAI 37A: 7641-7642; June 1977. [77-12,223] [grade 6]

Marshall, General Garwood. A Study of Training and Transfer Effects of Comparison Subtraction and One-To-One Correspondence. (University of Houston, 1976.) DAI 37A: 4936; February 1977. [77-1516]

No significant differences were found between three treatments; significant differences in ability to solve comparison subtraction problems were found. (grade 1)

Matlow, Robert Harvey. The Effects of Token Reinforcement and a Task Analyzed Program on the Acquisition of the Place Value Concept for Learning Handicapped Children with Low Mathematical Abilities. (University of Southern California, 1976.) DAI 37A: 7076-7077; May 1977.

Significant differences favored the task-analyzed method; no difference was found on reinforcement procedures. (elementary)

McClung, Kenneth Austin, Jr. The Effects of Type and Amount of Practice on the Learning of a Mathematical Concept. (University of Southern California, 1976.) DAI 37A: 5706-5707; March 1977.

No significant difference in performance on equivalent fractions was found between written and mental practice. (grade 6)

McGillicuddy-De Lisi, Ann Virginia. Children's Strategies in Imagining Spatio-Geometrical Transformations. (The Catholic University of America, 1977.) DAI 37B: 5815-5816; May 1977. [77-11,041]

Rates of success on transformational tasks decreased with "operative level". (ages 6-13)

McKnight, Curtis Claude. The Identification and Classification of Experiences Presented in Elementary Mathematics Curricular Materials. (University of Illinois at Urbana-Champaign, 1976.) DAI 37A: 6326; April 1977. [77-9095]

Five classification schemes for PLATO materials are described.

McManus, James Richard. Poincare's Model for Non-Euclidean Geometry and Its Application to Hyperbolic Space. (Columbia University, 1977.) DAI 38A: 2630; November 1977. [77-24,336] [college]

Melvin, Mary Pauline. Instructional Programming for Individual Students in the Multiunit School: A Case Study. (The University of Wisconsin-Madison, 1976.) DAI 37A: 5588; March 1977. [76-28,159] [elementary]

Meyer, Patricia Ann. The Relationship Between Creativity and the Ability to do Certain Selected Piagetian Classification Tasks in Kindergarten Children. (East Texas State University, 1976.) DAI 37A: 4218; January 1977. [77-488] [grade K]

Michaels, Eugene Raymond. Acquisition Order of Number Conservation and the Arithmetic Logic of Addition and Subtraction. (Indiana University, 1976.) DAI 37B: 4116-4117; February 1977. [77-1990] [ages 5-7]

Miller, Donald Peter. Effectiveness of Using Minicalculators as an Instructional Aid in Developing the Concept and Skill of Long Division at the Fifth Grade Level. (The Florida State University, 1976.) DAI 37A: 6327; April 1977. [77-8607]

Significant differences favored the "low" group using calculators over the "low" group not using calculators. No differences were found between "high" groups. (grade 5)

Molina, Angela Lorel. An Analysis of the Effectiveness of Presenting a Topic in Technical Algebra Using Three Different Instructional Methods to Students with Three Differing Cognitive Styles. (University of Houston, 1976.) DAI 37A: 4936-4937; February 1977. [77-1518]

No support was found for the assumption that instructional method could be matched to student preference for mode of information presentation to maximize achievement. (college)

Molina, Norma Marleen. An Investigation of the Effects of Altering the Spacing and the Number of In-Service Workshop Sessions on Teacher Use of Mathematical Games in the Classroom. (University of Houston, 1976.) DAI 37A: 4937-4938; February 1977. [77-1519]

No significant difference in reported use of games was found between three groups having in-service varied in spacing and number. (elementary in-service)

Moliver, Martin. A Program in Probability for Non-College Bound Students in the Tenth Grade General Mathematics. (Temple University, 1977.) DAI 38A: 1955; October 1977. [77-21,777]

No significant difference in achievement was found between groups using or not using developed lessons, but the experimental group had a significant negative change in attitude. (grade 10)

Monier, Mohammad Ibrahim. Some Effects of an Activity Approach to Teaching Geometry in the High Schools in Afghanistan. (Oregon State University, 1977.) DAI 38A: 2630-2631; November 1977. [77-23,410] [grades 9, 10]

Moore, Edward Vernell. The Relationship Between the Creativity of Seven- and Nine-Year-Old Children and Their Ability To Do Piagetian Conservation Tasks. (East Texas State University, 1977.) DAI 38A: 3271-3272; December 1977. [77-27,561] [ages 7-9]

Moresh, Stephen Elliot. A Tenth Year Unified Mathematics Program for Average and Below Average Students. (Columbia University Teachers College, 1976.) DAI 37A: 4938; February 1977. [77-4193]

An introductory segment of Euclidean geometry based on intuitive, algebraic, and coordinate approaches seemed effective. (grade 10)

Morgan, Earnest Steve. A Comparison of the Effects of Racial Differences on the Ability of Kindergarten and First Grade Title I Children to Name Colors and Shapes. (East Texas State University, 1976.) DAI 37A: 6942-6943; May 1977. [77-9630] [grades K, 1]

Morgan, Robert Boyd. Teacher Race and Experience as Contributing Factors in the Reading and Mathematics Achievement of Majority Black Classes of Pupils in Pupil Segregated School. (University of Pennsylvania, 1976.) DAI 37A: 5501-5502; March 1977. [77-4678] [teachers in grades 2-4]

Moritt, Shirley Felman. Perceptions of Organizational Performance and Their Relationship to Academic Achievement in the Elementary School. (University of Maryland, 1976.) DAI 38A: 2545; November 1977. [77-24,139] [grade 5]

Morse, David Thomas. An Empirical Comparison of Selected Efficient Measurement Strategies in an Individualized Curriculum and Simulated Replications. (The Florida State University, 1977.) DAI 38A: 2725-2726; November 1977. [77-24,784] [grade 7]

Morton, David Sterling. The Relationship Between Teacher Perception of Elementary School Organizational Climate and Student Achievement. (Michigan State University, 1977.) DAI 38A: 2463; November 1977. [77-25,268] [elementary]

Mosely, Kenneth Don. The Effectiveness of Selected Physical Education Activities in Teaching Geometric Concepts to Trainable Mentally Retarded Children. (Indiana University, 1976.) DAI 38A: 155-156; July 1977. [77-14,367]

The activities did not enhance learning of concepts on geometric shapes. (elementary, TMRs ?)

Mowder, Barbara Hogue. The Effect of Sex Biased Mathematics Items on the Performance of Third and Sixth Grade Students. (Indiana University, 1976.) DAI 37A: 4997; February 1977. [77-1921]

Boys did not score better on male-biased items nor did girls score better on female-biased items. (grades 3, 6)

Mulholland, Timothy Martin. Component Processes in the Solution of Geometric Analogies. (University of Pittsburgh, 1976.) DAI 37B: 4193-4194; February 1977. [77-3026]

The findings suggest that an important aspect of skill in the geometric analogies task is the ability to reject false alternatives quickly. (college)

Murphey, Robert Douglas. A Curricular Framework for Program Development in Secondary School Mathematics. (Temple University, 1977.) DAI 38A: 1859; October 1977. [77-21,780]

After analysis of materials from four organizations, it was concluded that no criteria exist to direct the sequencing of content. A set of critical statements for curriculum development was then proposed. (grades 9-12)

Musick, Judith Smith. Relationship Between Motoric Activity and Cognitive Development as Manifested in Children's Notions of the Symmetrical Nature of Distance. (Northwestern University, 1976.) DAI 37B: 3583-3584; January 1977. [77-1312] [ages 3-12]

Nelson, Laurette Blakey. A Study of the Sexual and Racial Stereotyping of Elementary School Mathematics Textbooks. (University of Houston, 1977.) DAI 38A: 2631; November 1977. [77-24,435]

No significant difference in the treatment or roles of racial groups was found in six textbook series; some difference in treatment but no difference in sexual roles was found. (grades 3-6)

Nettles, William Robert, III. An Investigation of Environmental Press and Its Association with Special Studies Student

Achievement. (The Florida State University, 1977.) DAI 38A: 2594; November 1977. [77-24,788] [college]

Newton, Nancy Carolyn Shinn. The Effects of a Weight-Control Treatment Program on Percent Overweight, Self-Concept, and Math Achievement of Overweight Children. (University of Missouri-Columbia, 1976.) DAI 38A: 636-637; August 1977. [77-15,540] [grades 5, 6]

Nikolaus, Marvin Alden. A Study of the Effects of Devoting Part of the College Algebra Class Period to Partner Study. (George Peabody College for Teachers, 1977.) DAI 38A: 2631-2632; November 1977. [77-25,121]

The type of partner study investigated had no significant effect on students' course achievement. (college)

Niver, Millard B. The Effect of the Use of Concrete Materials on Achievement of the Concept of Volume in a Course of Informal Geometry for Preservice Elementary Teachers. (Kent State University, 1976.) DAI 37A: 6249; April 1977. [77-7832]

No significant difference in achievement was found, but significant differences on choice of concrete materials for lesson plans were found favoring the group taught with concrete materials. (elementary preservice)

Noone, Emeric Theadeous, Jr. A Study of the Effects of Intellective and Non-Intellective Variables upon Final Grade in Freshman Mathematics Courses. (University of Southern Mississippi, 1977.) DAI 38A: 2526; November 1977. [77-22,884]

Final grade in the prerequisite mathematics course (logical structure of "the number system") was the best single predictor of final grade in each of two subsequent courses (Consumer Mathematics and Elementary Statistics). (college freshmen)

Noval-Ambrosino, Lorraine Kathleen. A Study of Language-Thought Relationships: The Passive Voice and Conservation. (State University of New York at Albany, 1977.) DAI 38B: 1385-1386; September 1977. [77-18,751] [ages 5-8]

Nungester, Ronald Joseph. An Empirical Examination of Three Models of Item Bias. (The Florida State University, 1977.) DAI 38A: 2726; November 1977. [77-24,789] [grade 9]

O'Hare, Michael M. The Learning and Generalization of Piagetian Tasks In Mentally Retarded Students. (St. John's University, 1976.) DAI 37B: 4119; February 1977. [77-1591] [ages 7-18 (MRs)]

Ohrenberg, Robert James. The Effect of Laboratory and Simulated Activities Upon the Achievement and Retention of Sixth Grade Students Receiving Instruction on the International System of Units. (University of Missouri-Columbia, 1976.) DAI 37A: 5574; March 1977. [77-5637]

No significant difference was found between groups having laboratory or simulated activities. (grade 6)

Olson, Frederick Martin. The Effects of Specific Interest Oriented Exercises in a General Education Introductory Statistics Course. (University of Northern Colorado, 1976.) DAI 37A: 4195; January 1977. [76-29,770]

No significant difference between experimental and control groups was observed for mean change (pretest-to-posttest) in achievement or in attitude. (college)

Olson, Sandra Jean. A Study of the Effect of Two Different Procedures for Introduction of Mathematical Concepts to Preservice Elementary School Teachers. (University of Northern Colorado, 1976.) DAI 37A: 4195-4196; January 1977. [76-29,771]

In each of four criterion areas, no significant difference in "gains" was observed between experimental (concepts introduced via manipulative activities) and control (traditional lecture-discussion) treatments. (elementary preservice)

Parker, Raymond E. A Comparative Study of Academic Achievement and Environmental Press of Students in an Innovative and a Traditional Program at a Predominantly Black College. (Oklahoma State University, 1975.) DAI 37A: 5575; March 1977. [77-5157] [college]

Pate, Johnny Mack. A Comparative Analysis of the Effects of Individually Guided Education on the Teaching of Elementary Mathematics. (East Texas State University, 1976.) DAI 37A: 4118-4119; January 1977. [77-492]

No significant achievement difference was found between students in individually guided and traditional programs; the attitude difference favored the IGE group. (grade 6)

Paulos, Katherine Marie. An Historical Review of Curriculum Research, 1918-1975. (The University of Florida, 1976.) DAI 37A: 6249-6250; April 1977. [77-8210] [grades K-12]

Pearce, William Clay, III. The Characteristics of the Low-Achieving Mathematics Student Entering Selected Community Colleges of East Texas. (East Texas State University, 1976.) DAI 37A: 7061-7062; May 1977. [77-9635]

Significant differences between low- and upper-achievers were found on five of the seven criterion measures or attributes, with no significant differences between groups being associated with age or sex. (community college freshmen)

Pennington, Bruce Franklin. What Piaget's Conservation of Number Task Doesn't Tell Us About a Child's Understanding of Numerical Invariance and Arithmetic. (Duke University, 1977.) DAI 38B: 1897-1898; October 1977. [77-21,886]

It was concluded that non-conservers can learn and understand arithmetic; conservation of number was not a crucial prerequisite for early number development. (grade 3)

Perham, Faustine Louise. An Investigation into the Effect of Instruction on the Acquisition of Transformation Geometry Concepts in First Grade Children and the Transfer of Such Knowledge to General Spatial Ability. (Northwestern University, 1976.) DAI 37A: 7010-7011; May 1977. [77-10,078]

The group taught transformations scored significantly higher than the control group on some content, but was not significantly different on other content. (grade 1)

Perry, Anne Marie. The Effect of Three Noise Levels on Task Performance in Mathematics by Individuals and Small Groups of Fifth Level Children. (Texas A&M University, 1977.) DAI 38A: 1862; October 1977. [77-20,402] [grade 5]

Petersen, Charles Glenn. The Development and Cross Validation of a Predictive Model of Achievement in Introduction to Computers at Northwest Missouri State University. (Iowa State University, 1976.) DAI 37A: 4168; January 1977. [77-1033] [college]

Phillips, Grayson Daniel. An Investigation of Predicted Differences in the Acquisition of Formal Operational Thought Between Normal and Institutionalized Emotionally Disturbed Adolescents. (The University of Oklahoma, 1976.) DAI 37B: 6344; June 1977. [77-12,756] [age 14]

Pitiyanuwat, Somwung. Relationships Among Attitudes, Beliefs, Achievement Intentions and Achievement Behavior in Mathematics. (University of Minnesota, 1976.) DAI 37A: 6376; April 1977. [77-6992]

Findings suggest that normative expectations are related to intention to perform achievement behaviors. (grade 7)

Plake, Barbara Sterrett. The Comparability of Equal Raw Scores for Children at Different Grade Levels: An Issue in "Out-of-Level" Testing. (The University of Iowa, 1976.) DAI 37A: 7709-7710; June 1977. [77-13,125] [intermediate]

Rankin, Joanne Shirley. The Development and Testing of Indigenous Word Problems for Grades Four-Six in Liberia, West Africa. (The University of Michigan, 1977.) DAI 38A: 1272-1273; September 1977. [77-18,101] [grades 4-6]

Rappaport, Wanda H. The Influence of Cognitive Style on Achievement in Computer-Based Mathematics Instruction. (The George Washington University, 1977.) DAI 38B: 1863; October 1977. [77-20,831]

When IQ effect was controlled, cognitive style was found to have no significant effect on course achievement. (community college)

Reed, James Robert. The Effects of Systematic Monitoring on the Math Achievement of Fourth, Fifth, and Sixth Grade Students Who Were 1 1/2 Years or More Behind Grade Level. (Utah State University, 1976.) DAI 37A: 7691; June 1977. [77-8486]

The efficacy of using criterion-referenced and standardized tests to monitor pupil progress was studied. (grades 4-6)

Reese, Richard Lewis. A Comparative Study of the Lecture Method of Instruction with the Lecture Method Used in Conjunction with Mastery Learning in Teaching Intermediate Algebra at a Florida Junior College. (The University of Mississippi, 1976.) DAI 37A: 4904; February 1977. [77-1430]

Each treatment was judged to be effective, with the mean achievement gain being greater for the mastery learning strategy than for the traditional lecture method. (junior college)

Reesink, Carole Jeanne. The Performance of Secondary School Students on Piaget-Type Tasks Concerning Projective and Euclidean Space. (The University of Iowa, 1976.) DAI 37A: 7664-7665; June 1977. [77-13,128] [grades 8, 10, 12]

Rheinheimer, Joyce. The Relationship of Selected Preschool Skills to Piagetian Tasks. (Illinois Institute of Technology, 1976.) DAI 38B: 338; July 1977. [77-13,754] [grades K, 1]

Ribley, Thomas Joseph. The Educational Science of Cognitive Style and Its Relationship to the Success or Non-Success of Community College Students Enrolled in General Statistics. (Wayne State University, 1977.) DAI 38A: 2632; November 1977. [77-24,008] [community college]

Rich, Dorothy K. The Relationship of the Home Learning Lab Technique to First Grade Student Achievement in the Archdiocese of Washington, D.C. Schools. (The Catholic University of America, 1976.) DAI 37A: 5509-5510; March 1977. [77-4811] [grade 1]

Richard, Charley Ernest. An Analysis of the Adequacy of University of Houston Mathematics Methods Competencies as Perceived by First and Second Year Teachers Prepared at the University of Houston. (University of Houston, 1976.) DAI 37A: 5661-5662; March 1977. [77-1525]

A number of points about the graduates of the competency-based program were found. (elementary in-service)

Richardson, Terry Lee. The Development of a Body of Knowledge and a Model Instructional System in Metrication for Adult Students. (Kansas State University, 1976.) DAI 37A: 5534; March 1977. [77-5544]

Adults who learned about metric measurement via a "laboratory method" made significantly greater pretest-to-posttest gains than did students who learned by an "independent study" method. (college)

Ridge, Harold Laurence. A Study of Young Children's Developing Knowledge of Linear Patterns. (The University of Connecticut, 1977.) DAI 38A: 143; July 1977. [77-14,496] [ages 4-7]

Riley, James Douglas. An Investigation of the Effects of Reading Guides and a Directed Reading Method upon Word Problem Comprehension, Problem Solving Ability, and Attitude Toward Mathematics. (Syracuse University, 1976.) DAI 37A: 7587; June 1977. [77-9897]

No significant differences in achievement or attitude were found between the two methods. (grade 7)

Rooney, Virginia Fucich. The Efficacy of the Diagnostic-Prescriptive Model as an Alternative to Special Placement for the Mildly Handicapped. (University of New Orleans, 1976.) DAI 37A: 7691; June 1977. [77-13,155]

Diagnostic-prescriptive procedures helped students to make significant achievement gains in both reading and mathematics. (mean age 7)

Rose, Max Henry. An Evaluation of Two Methods for Teaching the Metric System to Preservice Teachers. (Brigham Young University, 1976.) DAI 37A: 5579; March 1977. [77-4851]

No significant differences were found between students taught by traditional or self-instructional methods; previous training affected achievement. (elementary preservice)

Rose, Russell Richard. The Usage of Drawing Skills by Students Possessing Different Dependency upon Visual Feedback in Their Study of Selected Geometric Concepts. (The University of Texas at Austin, 1977.) DAI 38A: 2632-2633; November 1977. [77-23,027]

No evidence was found that use of drawing skills in the study of polygons in geometric diagrams resulted in higher achievement than non-use of drawing skills. Some effects of visual feedback were noted. (grade 10)

Ross, Geraldine Anderson. Pupil Activity and Pupil Achievement in Three Title I Projects. (University of Illinois at Urbana-Champaign, 1977.) DAI 38A: 105-106; July 1977. [77-15,009] [elementary]

Ross, John E. Effect of Time-Lapse Scheduling on Mathematics Achievement. (North Texas State University, 1977.) DAI 38A: 1273; September 1977. [77-19,681]

No significant differences in achievement were found between nine schedules in a tri-semester plan. (grades 7, 8)

Rothbardt, Marlene Schwartz. The Relative Effectiveness of Two Approaches to the Teaching of a Methods Course in Mathematics for Elementary School Teachers. (Northwestern University, 1976.) DAI 37A: 4299; January 1977. [77-1339]

No significant differences in achievement or attitude were found between groups having or not having enrichment projects. (elementary preservice)

Rovet, Joanne Frances. Can Spatial Skills Be Acquired Via Film?: An Analysis of the Cognitive Consequences of Visual Media.

(University of Toronto (Canada), 1974.) DAI 37A: 7649; June 1977.

Films with three levels of completeness of rotations and manipulations both "benefited" spatial ability, but only film produced transfer effects. (grade 3)

Rozar, Robert Melvin. A Comparative Study of Attitude Toward School, Intellectual Achievement Responsibility, and Achievement in Mathematics of Fourth Grade Students in Open and Traditional Classroom Instructional Programs in Selected Schools in Dekalb County, Georgia. (Georgia State University-School of Education, 1976.) DAI 37A: 4833-4834; February 1977. [77-1558]

A significant difference favored the open classroom group on mathematics concepts; no significant differences were found on problem solving, attitude, or responsibility measures. (grade 4)

Rummel, Marion Louise. A Comparison of Two Approaches in Teaching Low Achieving Mathematics Students. (The Louisiana State University and Agricultural and Mechanical College, 1976.) DAI 37A: 7011; May 1977. [77-10,396]

One approach "seemed" to be more effective than the other in connection with an algebra course; neither approach seemed to have "a very great impact" on achievement in a trigonometry course. (college freshmen)

Russac, Randall Joseph. Class, Order, and Early Concepts of Number. (Arizona State University, 1977.) DAI 38A: 1309; September 1977. [77-17,880]

Classification by colinear correspondence was significantly more difficult than correspondence of number. Evidence indicated that counting may help children overcome perceptual distractions associated with number comparisons. (grades K-2)

Rustigian, Arsine. The Ontogeny of Pattern Recognition: Significance of Color and Form in Linear Pattern Recognition Among Young Children. (The University of Connecticut, 1976.) DAI 37A: 5662; March 1977. [77-4294] [ages 3-5]

Sadler, Walter LeVern. The Effects of Instruction in Modeling Theory on the Attitudes and Achievement of College Freshmen. (The University of Wisconsin-Madison, 1977.) DAI 38A: 3348; December 1977. [77-19,124]

Instruction on modeling theory resulted in significantly higher scores on teacher ratings and modeling items, but lower trigonometry scores. (college freshmen)

Scheer, Janet Kathy. Effects of Supplemental Diagnostic/Prescriptive Teaching on Mathematics Achievement, Attitude, and Self-Concept. (Arizona State University, 1977.) DAI 38A: 681; August 1977. [77-16,804]

Significant differences in mathematics achievement and attitude favored students having diagnostic/prescriptive teaching. (ages 8-15)

Schivley, Warren Wendell. Relationship of Teacher Candidate Measures to Student Teaching Rating and Quality Point Average. (The Pennsylvania State University, 1976.) DAI 37A: 4299-4300; January 1977. [76-30,445] [elementary preservice]

Schneider, Kenneth Charles. Effects of Ruleg and Egrule Instruction on Field Dependent Students. (Yeshiva University, 1976.) DAI 37A: 5713; March 1977. [77-5013] [grade 5]

School, Beverly Ann. Use of Scalogram Analysis to Test in Learning Disabled Children a Hierarchy of Competencies Involved in Selecting Coins for a Purchase. (University of Pittsburgh, 1976.) DAI 37A: 4290; January 1977. [77-709]

Ten hierarchies were examined; seven were found valid. (ages 7-12)

Schwartz, M. Mark. Dogmatism and Classroom Structure in Adult Remedial Mathematics Education. (State University of New York at Buffalo, 1977.) DAI 38A: 1182; September 1977. [77-19,476]

No significant difference was found between high and low dogmatic groups taught by a "new" or "old" procedure. (adults)

Schwieder, Arthur William. The Effect of Videotape Feedback on the Performance of Trainable Mental Retardates on Certain Classification Skills. (Temple University, 1977.) DAI 37A: 7692; June 1977. [77-13,524] [TMRs]

Scott, Jesse Wylie. Attitudes and Opinions of Administrators, Elementary Teachers, and Secondary Teachers Regarding the Metric System and Its Implementation in the Schools of Louisiana. (University of Southern Mississippi, 1977.) DAI 38A: 2633; November 1977. [77-22,890]

The sample had a favorable attitude toward and some general knowledge of the metric system. (elementary and secondary in-service)

Settle, Mickey Gary. The Relative Effects of Instruction in the Guess and Test Procedure on Writing Relevant Equations to Verbal Problems in Algebra I. (The Florida State University, 1977.) DAI 38A: 2633-2634; November 1977. [77-24,804]

The guess-and-test group scored significantly higher than the "traditional" group on the posttest. (grade 9)

Sexton, Larry Charles. Auditory and Visual Perception, Sex, and Academic Aptitude as Predictors of Achievement for First Grade Children. (Ball State University, 1976.) DAI 37A: 6162; April 1977. [77-7316] [grade 1]

Sharpton, Robert Earl. An Experimental Study to Measure the Effects of the English Language Grammar Method of Teaching Mathematics on the Mathematics Performance of the Visually Impaired. (Michigan State University, 1977.) DAI 38A: 1206; September 1977. [77-18,545]

Attitudes improved after sound tapes were used to present algebra problems. (grades 9-12)

Shaughnessy, J. Michael. A Clinical Investigation of College Students' Reliance upon the Heuristics of Availability and Representativeness in Estimating the Likelihood of Probabilistic Events. (Michigan State University, 1976.) DAI 37A: 5662-5663; March 1977. [77-5886]

It was concluded that course methodology "appears" to be an important factor in helping students replace heuristic principles with probability theory when estimating the likelihood of events. (college)

Sheehan, Nancy Welburn. An Examination of Selected Performance Factors and Correlates of Piagetian Logical Functioning in Elderly Women. (The University of Wisconsin-Madison, 1976.) DAI 37B: 4656-4657; March 1977. [76-28,940] [ages 62-88]

Sherman, Thomas Oscar. The Academic Achievement of Fourth Grade Normal Ability Black Students in Reading and Mathematics in Predominantly White and Predominantly Black Schools. (The University of Oklahoma, 1977.) DAI 38A: 2050; October 1977. [77-21,406] [grade 4]

Simmons, James Brent. Effects on School Work Productivity Among Emotionally Disturbed Boys with the Removal of a Level System from a Token Economy. (University of Utah, 1976.) DAI 37A: 6409-6410; April 1977. [77-7405] [elementary]

Sklar, Ronald Ira. Algebraic Coding Theory: An Exposition for Undergraduates. (Columbia University Teachers College, 1977.) DAI 38A: 1955-1956; October 1977. [77-22,301]

Based on a formative evaluation involving three students, the topic and the expository text material were deemed appropriate for undergraduate mathematics majors. (college)

Smead, Valerie Sue. Pygmalion vs. Galatea: Expectations of Eighth Grade Girls and Boys and Their Significant Others as They Relate to Achievement in Mathematics Class. (Indiana University, 1976.) DAI 37A: 7051; May 1977. [77-10,931]

Student expectations were significantly related to achievement, as were their perceptions of peer and parent expectations and sex-role stereotypes. (grade 8)

Smith, James Douglas. The Relationships of Content Area and Ability with Multiple-Choice Test Response Alterations. (Memphis State University, 1976.) DAI 37A: 5066; February 1977. [77-3154] [?]

Smith, Vernett Sublett. A Study of Achievement of Students in Reading and Mathematics in the Elementary School Program Before and After Decentralization in Selected Schools in Detroit, Michigan. (Wayne State University, 1976.) DAI 37A: 6937-6938; May 1977. [77-9451] [grades 4, 6]

Snyder, William Harold. An Investigation of Reducing Harmful Einstellung Effects in School Mathematics. (The Florida State University, 1977.) DAI 38A: 1956; October 1977. [77-22,156]

Within the context of a beginning algebra course, it was concluded that exposure to gegeneinstellungs helped to reduce harmful Einstellung effects. (junior college)

Souviney, Randall John. The Relationships Between Cognitive Operation Competencies and Computational Achievement. (Arizona State University, 1977.) DAI 38A: 2547; November 1977. [77-23,637]

Significant correlations were found between seriation and conservation of number competence and whole number concept achievement, transitivity competence and multiplication/division achievement, and conservation of area competence and fractional-part-of-a-whole achievement. (grades K, 1, 3)

Spann, Jeannine M. A Comparison of the Academic Achievements and Peer-Acceptance of Educable Mentally Retarded Students in Three Administrative Models. (The University of Alabama, 1976.) DAI 37A: 7693; June 1977. [77-12,277] [ages 6-12 (EMRs)]

Sparks, Billie Earl. Pupil Achievement in Solving Verbal Problems in Mathematics as Related to Teacher Preparation and Experience. (George Peabody College for Teachers, 1976.) DAI 37A: 5058; February 1977. [77-3119]

For a three-day unit, degree of teacher service had no effect on pupil achievement. (grade 3)

Speer, William Renwick. A Clinical Model for Diagnosing Mathematical Deficiencies Incorporating Educational Cognitive Style. (Kent State University, 1976.) DAI 37A: 6327-6328; April 1977. [77-7838]

Mathematical diagnosis, mathematical style, and educational cognitive style were combined in a model which can be used to generate a map for the individual student. (grades K-12)

Stannard, Ka[illegible]ne Inez Marcott. A Cognitive Development Survey Based on Certain Aspects of Piagetian and Brunerian Theory. (Clark University, 1976.) DAI 37A: 5714-5715; March 1977. [77-6018] [grades 1-6]

Steelman, Amelia Rose. A Comparison of the Performance of Headstart and Non-Headstart Kindergarten and First Grade Children on Selected Piagetian Classification Tasks. (East Texas State University, 1977.) DAI 38A: 1288; September 1977. [77-19,538] [grades K-1]

Steger, Clarence Donald. The Effects of Two Classes of Sensory Stimuli and Race on the Acquisition and Transfer of the Mathematics Principle Place Value. (University of South Florida, 1976.) DAI 37A: 4120; January 1977. [76-30,042]

No significant difference was found between instruction with pupil or teacher manipulation of materials. (grade 1)

Stimson, Elizabeth Ann. An Analysis of the Diets and Academic Achievement in Mathematics and Reading of Third Grade Pupils.

(The University of Toledo, 1977.) DAI 38A: 2534-2535; November 1977. [77-23,674] [grade 3]

Stotts, Richard Leo. A Comparison of Three Methods of Teaching Metrics in Drafting Technology. (East Texas State University, 1976.) DAI 37A: 4183; January 1977. [77-498] [technical college]

Strachan, Sara Lewis. An Investigation of the Effects of the Use of Management by Objectives as a Means of Improving Student Achievement in Reading and Mathematics. (University of South Carolina, 1977.) DAI 38A: 1867; October 1977. [77-22,433] [grades 4, 7]

Summers, Thomas J. The Relationship of High and Low Self-Concept and Classroom Verbal Interaction of Selected Mathematics Teachers. (University of Miami, 1977.) DAI 38A: 1812-1813; October 1977. [77-21,920]

Self-concept test scores were not found to be useful as predictors of classroom verbal interaction patterns. (secondary in-service)

Sutherlin, William Norman. The Pocket Calculator: Its Effect on the Acquisition of Decimal Estimation Skills at Intermediate Grade Levels. (University of Oregon, 1976.) DAI 37A: 5663; March 1977. [77-4762]

No significant difference in achievement was found between groups using or not using calculators. (grades 5, 6)

Swearingen, Dell Lyle. The Influence of Applied Mathematics Problems on the Achievement and Attitude of Community College Vocational Students. (Oregon State University, 1977.) DAI 38A: 1273-1274; September 1977. [77-20,013]

Career-oriented mathematics verbal problems used as advanced organizers were judged to "have the potential" of improving students' attitudes toward and achievement in vocational mathematics. (community college)

Tashjian, Kegham Samuel. Differences Among Categories of Exceptional Pupils in Mastery of Mathematics Behavioral Skills as Measured by Criterion-Referenced Tests. (University of Southern California, 1976.) DAI 37A: 5751; March 1977.

A high degree of similarity in mastery patterns was found among categories of handicap. (MRs)

Taylor, Virginia Susan Keledjian. A Longitudinal Comparison of the Effect of an Individualized Calculus Class on the Cumulative Grade-point Averages of First-Year College Students. (Boston College, 1977.) DAI 38A: 143-144; July 1977. [77-15,151]

Individualized instruction was judged to have a positive effect, although the hypothesized reasons for its effectiveness were not supported by the evidence. (college freshmen)

Temple, Herbert Leslie. Selected Topics in Trigonometry: An Instructional Guide. (Auburn University, 1976.) DAI 37A: 4196; January 1977. [77-1049]

The guide incorporates computer-oriented techniques. (secondary)

Thomas, Diane Jean. Understanding of Selected Concepts of Transformation Geometry Among Elementary and Secondary Students. (The Ohio State University, 1976.) DAI 37A: 7011-7012; May 1977. [77-10,610]

Differences in the perceptions of rotations, translations, and reflections across grade levels were reported. (grades 1, 3, 6, 9, 11)

Thomas, Roy J. The Effects of Three Methods on Test Anxiety and the Achievement Test Performance of Elementary Students: Providing Test-Taking Information, Test-Wiseness Training, and Systematic Desensitization. (The University of Wisconsin-Madison, 1976.) DAI 37A: 5717-5718; March 1977. [76-28,946] [grades 5, 6]

Thompson, Gary Eugene. A Comparative Study of the Effectiveness of Four Types of Feedback in a CAI Unit on Achievement in Mathematics of Elementary Education Majors. (The Ohio State University, 1977.) DAI 38A: 2634; November 1977. [77-24,720]

Differences in achievement between four types of feedback were slight. (elementary preservice)

Thomson, Thomas Richard. A Study on the Design and Evaluation of an Implementation Model for Acquiring Competencies Reflecting the Spirit and Uses of Mathematics. (Georgia State University-School of Education, 1976.) DAI 37A: 5764; March 1977. [76-30,374]

Results appeared to support the feasibility for secondary mathematics teachers of an in-service program that centers around the acquisition of competencies. (secondary in-service)

Threadgill, Judith Ann McPhee. The Relationship of Analytic-Global Cognitive Style and Two Methods of Instruction in Mathematical Concept Attainment. (University of Oregon, 1976.) DAI 37A: 5664; March 1977. [77-4766]

No significant difference was found between two days of discovery or didactic instruction. Analytic students performed better than global students. (grade 7)

Travis, David Logan. Experiencing Mathematics: The Development and Trial of an Eclectic Course. (University of Northern Colorado, 1976.) DAI 37A: 6987-6988; May 1977. [77-11,087]

The course was judged to be "both feasible and worthwhile," based on attitudinal measures; no achievement measures were taken. (college)

Turkel, Susan Beth. Patterns of Verbal Communication in the Mathematics Center of Open Classrooms at the Elementary School Level. (Columbia University Teachers College, 1977.) DAI 38A: 1956-1957; October 1977. [77-22,310]

Various teacher-pupil patterns were identified. The basic pattern was: teacher solicits fact, pupil responds, teacher evaluates. (elementary)

Underwood, Jacqueline Martin. An Exploratory Study of the Problem-Solving Procedures Used by Selected College Freshmen on Certain Basic Consumer Mathematics Problems. (The University of Tennessee, 1976.) DAI 37A: 4909-4910; February 1977. [77-3694]

Many detailed findings are presented. (community college freshmen)

Vance, William Rochelle. A Comparison of a Transpersonal Psychology Technique and a Lecture-Oriented Technique of Teaching General Education Mathematics. (North Texas State University, 1976.) DAI 37A: 7012; May 1977. [77-11,124]

The results from a comparison of the two treatments "were generally inconclusive". (college)

Vandever, Jan J. Multiple Matrix Sampling Techniques in the Estimation of Test Parameters and a Guttman Analysis of Learning Hierarchies on a Mathematics Criterion-Referenced Test. (The University of North Dakota, 1976.) DAI 38A: 218; July 1977. [77-14,567] [grade 6]

Van Egmond, Warren. The Commercial Revolution and the Beginnings of Western Mathematics in Renaissance Florence, 1300-1500. (Indiana University, 1976.) DAI 37A: 7278; May 1977. [77-10,932]

Van Wie, Joseph Leon. The Development and Appraisal of a Unit on Problem Solving for Engineering Technology Students. (University of Northern Colorado, 1976.) DAI 37A: 4196; January 1977. [76-29,789] [college]

Vaughn, Larry Richard. A Problem of the Effects of Hand-Held Calculators and a Specially Designed Curriculum on Attitude Toward Mathematics, Achievement in Mathematics, and Retention of Mathematical Skills. (University of Houston, 1976.) DAI 37A: 4938-4939; February 1977. [77-1529]

The group using calculators for instruction on decimals and per cent achieved significantly higher than the non-calculator group. No differences in attitude or retention were found. (grade 9)

Wagner, Jennifer Louise. The Adolescent's Conception of Combinatorics. (Northwestern University, 1976.) DAI 37A: 4197; January 1977. [77-1379]

Tenth graders performed at a higher level than sixth graders did. Neither group could work entirely in the realm of the possible; both used reflective thinking. (grades 4, 6, 10)

Wagner, Robert Joseph. Epistemological Implications of Linguistic Analysis of Mathematical Discourse. (State University of New York at Buffalo, 1976.) DAI 37A: 5731; March 1977. [77-6151]

It was concluded that Piaget's hypothesis regarding mathematical knowledge as an abstraction of human action "appears to be correct".

Walker, Sylvia Gail Pope. Mathematics Learning Among Low-Income Children: The Utility of Modular Treatment Within a Learning Resource Center. (The University of Alabama, 1976.) DAI 37A: 7592; June 1977. [77-12,249]

Use of four objective-based learning packets appeared effective. (grade 5)

Walls, Michael Walter. The Effects of Attending an Open Elementary School on Academic Achievement and Attitudes as Measured in a Traditional Junior High. (Wayne State University, 1976.) DAI 37A: 6938-6939; May 1977. [77-9463] [grade 7]

Wang, Kou-Ling. A Study of the Ten Classical Manuals of Ancient Chinese Mathematics (Suan-Ching Shih-Shu) and Their Significance on Further Developments of Mathematical Learning. (George Peabody College for Teachers, 1976.) DAI 37A: 4939-4940; February 1977. [77-3124]

Watson, James Otis. A Comparison of Two Treatments of Limits and Continuity at the High School Senior and College Freshman Levels. (The University of Michigan, 1976.) DAI 37A: 6328; April 1977. [77-8068]

The control treatment (a conventional delta-epsilon approach) produced significantly higher achievement test scores for college freshmen and for both groups combined. (grades 12, 13)

Wearne, Diana Catherine. Development of a Test of Mathematical Problem Solving Which Yields a Comprehension, Application, and Problem Solving Score. (The University of Wisconsin-Madison, 1976.) DAI 37A: 6328-6329; April 1977. [76-29,945]

Reliabilities of the test were found to be .79 and .84. Degree of agreement between intended and judged classifications was .78. (elementary ?)

Weddington, Joyce Brown. The Effects of Racial Classroom Composition on Academic Achievement. (Memphis State University, 1976.) DAI 38A: 106-107; July 1977. [77-14,305] [grade 6]

Wedin, Ralph William. The Effects of Stress, Sex Differences, and Neuroticism on Piagetian Measures of Intelligence. (Long Island University, The Brooklyn Center, 1977.) DAI 38B: 1428; September 1977. [77-19,215] [ages 9-10]

Wescott, Jack William. A Comparative Analysis of Activity Versus Non-Activity Approaches to Metric Inservice Teacher Education. (University of Maryland, 1976.) DAI 37A: 7581-7582; June 1977. [77-13,039] [in-service teachers]

Whitaker, Donald Ray. A Study of the Relationships Between Selected Noncognitive Factors and the Problem Solving Performance of Fourth

Grade Children. (The University of Wisconsin-Madison, 1976.) DAI 37A: 6329; April 1977. [76-29,947]

Both pupils and teachers had favorable attitudes toward problem solving. "Rather stable" and significant positive correlations were found between attitudes and achievement. (grade 4)

Whitaker, William Howard. A Study of Change in Achievement, Interest, and Attitudinal Variates Accompanying the Use of Electronic Calculators in a First Grade Mathematics Curriculum. (University of Southern California, 1977.) DAI 38A: 97-98; July 1977.

Students using calculators achieved better on computation and problem-solving subtests than students not using calculators. (grade 1)

White, Edwin Phillip. The Relationship Between Selected Characteristics of Regional USMES Resource Teams to Differences in Levels of Implementation and Diffusion of the USMES Program. (University of Virginia, 1976.) DAI 37A: 4108-4109; January 1977. [77-213] [elementary]

Wiebe, James Henry. A Comparison of the Effects of Two Levels of Pupil Verbalization on Learning a Concrete Mathematical Concept. (Arizona State University, 1977.) DAI 38A: 107; July 1977. [77-14,542]

Verbalization appeared to have no effect on learning of place value taught at the concrete level. (grade 2)

Wilburn, Kenneth Tarvan. A Comparison of the Effects of Criterion-Referenced Evaluation Versus Norm-Referenced Evaluation in Selected Middle School Mathematics Classes. (The Florida State University, 1976.) DAI 37A: 4109-4110; January 1977. [76-29,497]

Students achieved higher scores when evaluated by criterion-referenced tests. (grades 6, 7)

Willans, Arthur Edward. Evaluation of an Elementary-Level Metrics Program. (University of Kansas, 1976.) DAI 38A: 619-620; August 1977. [77-16,307]

The programmed text was effective at both grade levels, but more effective for sixth graders. (grades 5, 6)

Williams, Alvin W. An Investigation of Relationships Among Selected Disciplinary Problems, Achievement Grades Assigned by Teachers, Attendance, and Achievement as Measured by Standardized Tests in Mathematics. (University of Houston, 1976.) DAI 38A: 189; July 1977. [77-13,958]

Between students having or not having discipline problems, no significant differences were found on (1) standardized achievement tests or (2) attendance rates. Teacher-assigned grades reflected attendance rates. (grade 8)

Wilson, Louis Leon. Effects of Two Instructional Methods in Remedial Arithmetic on Selected Community College Populations. (University of Southern California, 1976.) DAI 37A: 5664; March 1977.

Each method (traditional lecture-discussion and semi-independent self-paced procedure) resulted in a significant increase in knowledge and skills pertaining to common fractions, with neither treatment superior to the other. (community college)

Wimbush, George Washington. A Study of the Prediction of Academic Achievement in Fifth-Grade Mathematics "For Certain" Intellectual and Nonintellectual Variables Measured in Grades One and Three Within Selected Ethnic Groups. (University of Houston, 1976.) DAI 38A: 144-145; July 1977. [77-13,954]

Some predictors of achievement were found. (grade 6)

Wintergalen, Patricia Ann. Achievement and Selected Related Variables in Relation to Participation in a Program of Early Childhood Education. (University of Denver, 1976.) DAI 37A: 4219; January 1977. [77-457] [grades K-3]

Wolff, Leslie Simon. The Influence of Two Types of Classroom Examinations on Level of Learning and Test Anxiety in Tenth Year Mathematics. (New York University, 1976.) DAI 38A: 748-749; August 1977. [77-16,450]

No significant difference in achievement or anxiety was found between use of the two types of tests. (grade 10)

Woodson, Marvin Clarence, Jr. The Effects of Diagnostic-Prescriptive Teacher Inservice Training on the Academic Achievement and Self-Concept of Educable Mentally Handicapped Students. (University of South Carolina, 1976.) DAI 37A: 6212-6213; April 1977. [77-6791] [elementary (EMRs)]

Wozniak, Paul Henry. The Measurement of Certain Aspects of Critical Thinking in a Mathematical Context. (The Ohio State University, 1976.) DAI 37A: 4940; February 1977. [77-2538]

Reliability of the instrument was found to be .74. Differences in scores across levels were noted. (grades 8-12)

Wright, Edward B. Investigation of Selected Decision-Making Processes for Aspects of a Computer-Assisted and Mastery Learning Model in Basic Mathematics. (The Pennsylvania State University, 1977.) DAI 38A: 2634-2635; November 1977. [77-23,292]

No significant differences were found between four treatments varying the type of drill and practice. (junior high)

Yelton, Ann Rubinsohn. The Influence of Choice of Materials and Prompts and Feedback upon the Arithmetic Performance of First-Grade Children. (The University of North Carolina at Greensboro, 1976.) DAI 37B: 6310-6311; June 1977. [77-13,409]

Giving feedback was found to be effective, but allowing choice did not affect achievement between groups. (grade 1)

Zakkour, Ibrahim Diab. Interaction of Cognitive Organizers and Student Personality Types in the Learning and Retention of

Mathematics. (The University of Oklahoma, 1977.) DAI 38A: 1957; October 1977. [77-21,420]

No significant differences were found in achievement and retention test scores that could be attributed to an interaction between treatments and personality types. (college)

Journals Searched

The following journals were searched in developing this listing. An asterisk indicates that the journal was searched page by page; articles from those without asterisks were located through an index such as ERIC's *CIJE*. The number in parentheses indicates the number of references listed.

Alberta Journal of Educational Research (6)
American Educational Research Journal (9)
American Journal of Mental Deficiency (3)
American Journal of Physics (1)
American Mathematical Monthly (9)
Arithmetic Teacher (4)
AV Communication Review (1)
British Journal of Educational Psychology (3)
Child Development (6)
Clearing House (1)
Colorado Journal of Educational Research
Contemporary Education
Educational Administration (1)
Educational and Psychological Measurement (7)
Educational Research
Educational Researcher
Educational Studies in Mathematics (3)
Educational Technology (2)
Elementary School Journal (1)
Exceptional Children (4)
Genetic Psychological Monographs
Harvard Educational Review (1)
International Journal of Mathematical Education in Science and Technology (4)
Journal of Biology Education (1)
Journal of Educational Measurement (3)
Journal of Educational Psychology (14)
Journal of Educational Research (6)
Journal of Experimental Child Psychology (3)
Journal of Experimental Education (6)
Journal of Genetic Psychology (5)

*Journal for Research in Mathematics Education (32)
*Journal of Research in Science Teaching (3)
*Journal of School Psychology (4)
*Journal of Social Psychology
Journal of Teacher Education (1)
*Mathematics in School (1)
*Mathematics Teacher (2)
*Mathematics Teaching
*MATYC Journal (5)
*Psychological Reports (2)
*Psychology in the Schools (4)
Reading Improvement (1)
*Review of Educational Research (2)
*School Science and Mathematics (17)
*Science Education (3)
*Two-Year College Mathematics Journal (1)

INDEX

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 source (J, journal; D, dissertation); level is indicated by *E*, elementary; *S*, secondary; and *C*, college and other postsecondary.

	Marco	S
	Mellon and Crano	E
	Michaels and Forsyth	S
	Musser and Thompson	C
	Whyte	E
D	Barco	E
	Bowling	E/C
	Carter	S
	Fryman	C
	Genrich	E
	Golightly	E
	Greenstein	S
	Haque	S
	Keefauver	S
	Kossack	E
	Lopez	C
	Mowder	E
	Nungester	S
	Pitiyanuwat	S
	Reed	E
	Smith, J.	
	Tashjian	
	Thomas, R.	E
	Vandever	E
	Wearne	E
	Wilhurn	E/S
	Wolff	S
	Wozniak	S

Attitudes

J	Beck	E/S
	Campbell and Schoen	S
	Fennema and Sherman	S
	Gilbert	E
	Hogan	E/S
	Kulm	S
	Marjoribanks	E/S
	McBride and Rollins	C
	McIntire and Drummond	E
	Michaels and Forsyth	S
	Oanh and Michael	E
	Rubin et al.	E
	Scott and Fensham	C
	Sherman and Fennema	S
	Starr	S
	Stedman and Breen	E
	Zimmerman et al.	C
D	Calarco	C
	Cheng, S.	S
	Ford	S
	Forseth	E
	Gaymon	C
	Harris	E
	Hinders	S
	Israel	S
	Johnson, G.	E/S
	Pitiyanuwat	S
	Smead	S
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Calculators and Computers

J	Macnah et al.	C
	Rohitaille et al.	S
D	Aldridge	E/S
	Andersen	S
	Ayers	C
	Bachor	C
	Baltz	S
	Benson	C
	Bickerstaff	C
	Bolesky	S
	Boling	S
	Borden	E
	Chen	S
	Cranford	E
	Eschenburg	S
	Friesen	E
	Harris	E
	Hughes	C
	Hutton	S
	Jamski	S
	Laird	
	Lamb	S
	LeCuyer	C
	Lenhard	S
	McKnight	
	Miller	C
	Olson	C
	Petersen	C
	Rappaport	C
	Sutherlin	E
	Temple	S
	Thompson	E
	Vaughn	S
	Whitaker, W.	E
	Wright	S

Geometry

J	Carroll	S
	Guay and McDaniel	E/S
	Keim-Abbott and Abbott	E
	McMurray et al.	E
	Nelson and Kieren	E

	Pereira-Mendoza and Robbins	S
D	Carrier	E
	Chen	S
	Gobbel	E
	Golden	S
	Golightly	E
	Hagan	S
	Handler	S
	Hollowell	S
	Keils	S
	Marine	S
	McGillicuddy-DeLisi	E
	McManus	C
	Monier	S
	Moresh	S
	Morgan, E.	E
	Mosely	E
	Mulholland	C
	Musick	E
	Niver	E
	Perham	E
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	Rose, R.	S
	Rovet	E
	Rustigian	E
	Thomas, D.	E/S

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J	Arzi and Amir	E
	Barstis and Ford	E
	Beck	E/S
	Becker	E
	Blaney et al.	E
	Borakove and Cuvo	S
	Bowser and Robinson	S
	Brekke et al.	S
	Coulson and Howe	E
	Engelhardt	E
	Fennell and Trueblood	E
	Fennema and Sherman	S
	Gaylord-Ross	C
	Ghodsian and Calnan	E
	Gordon	E
	Greenstein and Strain	S
	Gregory	E
	Hall and Kaye	E
	Hall et al.	E
	Kagan et al.	E
	Kellaghan	E
	Kepner and Koehn	E/S
	Kerlin and Latham	E
	Lindholm et al.	E
	Marjoribanks	E/S
	Mayes et al.	C
	McSpadden and Strain	E
	Merrifield and Hummel-Rossi	S
	Miller, D.	E/S
	Morello et al.	E
	Murray	S
	Oanh and Michael	E
	Ohlson and Mein	C
	O'Leary and Schneider	E
	Pascarella	C
	Peluso and Baranchik	C
	Salvia et al.	E
	Shapiro	C
	Sherman and Fennema	S
	Sheehan and Marcus	E
	Strauch	E/S
	Stromer	E
	Thornell	E
	Tobin and Bonner	E
	Touliatos et al.	E
	Ullman	E
	Weinstein	E
	Witkin et al.	C
	Worner et al.	E/S
D	Aldridge	E/S
	Anderson, W. Charles	E/S
	Anderson, W. L.	E
	Bachor	C
	Baldwin	C
	Baltzell	E
	Blake	S
	Blankenship	E
	Bunch, A. W.	E
	Chenault	E
	Cleary	C
	Cranford	E
	DeWitt	E
	Duckett	E
	Elder	E
	Evans	C
	Farrah	E/S
	Feingold	E
	Friedman	E
	Gonyo	S
	Greenstein	S
	Hagan	E
	Halpin	C
	Hartfield	S
	Hinders	C
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Keefauver	S
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Lieblich	C
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Molina, A.	C
Morgan, E.	E
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Mowder	E
Nelson	E
Nettles	C
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O'Hare	E/S
Parker	C
Pearce	C
Perry	E
Phillips	S
Reed	E
Rich	E
Rooney	E
Rose, R.	S
Ross, G.	E
Rothbardt	E
Rummel	C
Scheer	E/S
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Sexton	E
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Thomas, R.	E
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Zakkour	C

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J	Catanzano and Godwin	C
	Cotton et al.	
	Eastman	S
	Greenwood et al.	E
	Groh and Groh	E
	Hall and Kaye	E
	Hall et al.	E
	Kagan et al.	E
	Karplus et al.	S
	Lashier and Wren	S
	Lehrer and Hieronymus	S
	McMurray et al.	E
	McSpadden and Strain	E
	Michaels	E/S/C
	Miller, D.	E/S
	Morello et al.	E
	Pascarella	C
	Ronning	E/S
	Thornell	E
	Vaillant and Choquette	E
	Zammarelli and Bolton	E
D	Armstrong	E/S
	Ashby	E
	Auton	S/C
	Blankenship	E
	Bowser	S
	Broughton	E
	Buckley, C. J.	C
	Causey	E/S
	Chen	S
	Cheng, S.	S
	Clement	E
	Compton	S
	Eisenhardt	E/S
	Ford	S
	Frazer	C
	Friedman	E
	Gallicchio	E
	Goodman	S
	Hamadanizadeh	
	Handler	S
	Hernandez	E
	Hill, T.	E/S
	Hirst	
	Hoerbelt	S
	Hollowell	S
	Hoogheem	S
	Kirshner	
	Lee	S
	Matlow	E
	Meyer	E

	Moore	E
	Schneider	E
	School	E
	Schwieder	
	Simmons	E
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	Vandever	E
	Wagner, R.	
	Wozniak	S
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	Zakkour	C

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J	Allen and Ross	S
	Dudley	S
	Ensey and Cooney	S
	Hudson and McIntire	C
	Kepner and Koehn	E/S
	Knifong and Holtan	E
	McCann	C
	Schiller	E
	Uprichard and Collura	E
	Zammarelli and Bolton	E
D	Altizer	S
	Baker	E
	Brace	E
	Buckley, E. A.	C
	Campbell	E
	Cummins	S
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	Hamrick	E
	Hart	E
	Kincaid	E
	Kirshner	
	Kleinhaus	E
	Kossack	E
	Molina, N.	E
	Nelson	E
	Niver	E
	Olson, S.	E
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	Rovet	E
	Sharpton	S
	Steger	E
	Wagner, R.	
	Wiebe	E

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J	Borakove and Cuvo	S
	Kren and Huntsberger	E
	Rozek et al.	E
D	Alexander	S
	Brace	E
	Brames	S
	Brumfield	E
	Cheng, W.	C
	Devies	S
	Lawson	E
	Lockhart	E
	Love	S
	Ohrenberg	E
	Richardson	C
	Rose, M.	E
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	Scott	E/S
	Stotts	C
	Wescott	S
	Willans	E

Number and Numeration

J	Groh and Groh	E
	Johnson	E
	Maertens et al.	E
	Mayer	C
	Ronning	E/S
	Sekuler and Mierkiewicz	E/S/C
	Vinner	C
D	Anderson, W. Clarence	E
	Baker	E
	Hazekamp	E
	Lee	S
	Matlow	E
	Pennington	E
	Ridge	E
	Russac	E
	Steger	E
	Wiebe	E

Operations with Whole Numbers

J	Bana and Nelson	E
	Bourgeois and Nelson	E
	Brown and Kuchemann	E
	Hunkler	E
	Pike and Olson	E
	Uprichard and Collura	E
	Wheatley and McHugh	E/S
D	Anderson, W. Clarence	E
	Barco	E
	Blankenship	E
	Glavach	E
	Gonyo	E

	Hamrick	E
	Harvey	E
	Hazekamp	E
	Hill, T.	E/S
	Kane	S
	Marshall	E
	Miller	E
	Wright	S

Organizing and Grouping

J	Armstrong	E/S
	Arzi and Amir	E
	Becker	E
	Blaney et al.	E
	Brechting and Hirsch	C
	Chang	C
	Eastman and Behr	S
	Gemignani	C
	Hirsch	S
	Keim-Abbott and Abbott	E
	Kerlin and Lathan	E
	Kloppenstein	C
	Kulm	S
	Leinhardt	E
	Macnab et al.	C
	Mayer	C
	McGinty	E
	Mellon and Crano	E
	O'Brien and Shapiro	E/S
	O'Leary and Schneider	E
	Pascarella	C
	Peluso and Baranchik	C
	Price et al.	E
	Rubillo	C
	Scott	S
	Shaughnessy	C
	Starr	S
	Struik and Flexer	C
	Talmage and Hart	E
	Walton et al.	S
	Weinstein	E
	Weissglass	E
	Wiggins	C
D	Bagley	S
	Baldwin	C
	Baltz	S
	Brophy	S
	Carlen	S
	Carr	S
	Carrier	E
	Chanoine	E
	Cleary	C
	Cole	C
	Colvin	E/S
	DeWitt	E
	Eschenberg	S
	Friesen	E
	Grogan	E
	Hagan	S
	Harrison	S
	Hatfield	E
	Jacob	E
	Johnson, B.	E
	Johnson, K.	E/S
	Kerns	C
	Kleinhaus	E
	Korth	S
	Kurtz	S
	Lawson	E
	LeCuyer	C
	Locksley	C
	Lukasevich	E
	Marine	S
	Marquez	E
	Melvin	E
	Molina, A.	C
	Monier	S
	Moritt	E
	Morse	S
	Morton	E
	Nikolaus	C
	Ohrenberg	E
	Olson, F.	C
	Olson, S.	E
	Parker	C
	Pate	E
	Reese	C
	Rich	E
	Richardson	C
	Ross, J.	S
	Rozar	E
	Schneider	E
	Schwartz	C
	Shaughnessy	C
	Smith, V.	E
	Spann	E
	Stotts	C
	Taylor	C
	Threadgill	S
	Turkel	E
	Vance	C
	Walker	E
	Walls	S
	Wilson	C
	Wintergalen	E

Problem Solving

J	Bana and Nelson	E
	Bourgeois and Nelson	E
	Hollander	E
	Kantowski	S
	Knifong and Holtan	E
	Nelson and Kieren	E
	Shann	E
	Suydam and Weaver	E
D	Ashby	E
	Blake	S
	Boling	S
	Chartoff	S/C
	Clemen	E
	Cohen, M.	S
	Deep	S
	Edwards, L.	S
	Fafard	E
	Gimmestad	C
	Hall	E
	Hoerbelt	S
	Hollowell	S
	Kerns	C
	Malouf	E
	Mangru	E
	Rankin	E
	Riley	S
	Sparks	E
	Swearingen	C
	Underwood	C
	Van Wie	C
	Wearne	E
	Whitaker, D.	E

Sequencing and Structure

J	Catanzano	E
	Hall et al.	E
	Hushak	E
	Johnson and Byars	S
	Kren and Huntsberger	E
	Pereira-Mendoza and Robbins	S
	Upriehard and Phillips	E/S
D	Boldt	C
	Borden	E
	Bowser	S
	Brennan	C
	Causey	E/S
	Edwards, A.	S
	Golden	S
	Hamrick	E
	Hartfield	C
	Laird	
	Moresh	S
	Murphey	S
	Ross, J	S
	Sklar	C
	Temple	S
	Travis	C
	Vandever	E
	Van Wie	C
	Wintergalen	E

LETTERS TO THE EDITOR

Dear Sir:

Your articles reporting ATI studies generally do not include the regions of significance for disordinal interactions such as can be computed using the Johnson-Neyman technique. (Cronbach and Snow [Cronbach, L. J., & Snow, R. E. *Aptitudes and instructional methods: A handbook for research on interactions.* New York: Irvington Publishers, 1977] suggest the Johnson-Neyman technique as one alternative for validly determining regions of significance in ATI studies.)

Consider the Becker and Young report in the January 1978 issue of the *JRME*. When only one aptitude variable is used as a predictor (see Figures 2 and 3), optimal assignment of student to treatment is presumably based on the relationship of the aptitude score to the projection of the intersection of the regression lines. For example, the graph shown in Figure 3 indicates that students whose time on the Introductory Program is less than 40 minutes should be assigned to the Meaningful Didactic treatment, whereas students whose time on the Introductory Program is greater than 40 minutes should be assigned to the Guided Discovery treatment. Theoretically, the treatments should be equally effective for those students whose time is exactly 40 minutes. What about those students whose times are "close" to 40 minutes? The need for some type of confidence interval about the point 40 seems apparent. Such a confidence interval gives rise to a region of significance.

The same reasoning applies in the two-predictor case (see Figures 4 and 5). Becker and Young state that assignment of student to treatment should be based on the position of the data point above or below the projection of the line of intersection of the regression planes. A data point lying on the line predicts equally effective treatments for the corresponding student. Can we really infer that one treatment is superior for a student whose data point lies "close" to the line? Regions of significance seem needed in the two-predictor case as well as in the one-predictor case, especially when one considers the manner in which the subjects were chosen. Despite the authors' comments in Final Note 2 concerning the future use of their design and methodology, the use of matched pairs seems to me to be outdated.

Patricia A. Semmes
San Antonio, Texas

Dear Sir

The *Journal for Research in Mathematics Education* is now nine years old and, I think, well established as a high-quality journal. I am well aware of the tremendous efforts and work put in by the editors, reviewers, and authors in making *JRME* what it is today, but I am disturbed by the large number of articles that have to be revised before appearing in print.

Starting with the January 1977 issue, this journal began listing the dates on which an article was submitted, revised, resubmitted, and so on. In general this seems to be a good idea, for one gets a feeling for the amount of lag time in publication. But starting in February 1977 and continuing to the present, November 1977, only one of the eighteen major articles that have appeared in this journal did not have to be revised; 94.4% of the major articles had to be revised, and many were revised more than once. (The *JRME* arrives in Israel anywhere from six to eight months after its publication in the United States. The November 1977 issue is the most recent issue at my disposal. Hence, the ratios cited might change slightly if more current issues were included.) I assume this problem has been around since the inception of the journal, but it has only recently been brought to my attention by the policy started in January 1977. (The score card for the Brief Reports and Educational Forum sections is only slightly better.) Why is it that other journals that list submission and revision dates seem to have a

much higher first-round acceptance/revision ratio?

Two possibilities come to mind. First, the articles for *JRME* are sound in approach but are not written in an acceptable manner. Revision for style and format helps smooth out the overall appearance of the journal. Second, the articles need substantial changes, which include reanalysis of data and research design, and are only slightly better than those that were rejected. Although the answer probably lies somewhere in between, it is disturbing to note the staggering percentage of articles needing some form of revision. It appears to me that when submitting an article to *JRME*, the best one should realistically hope for is to have it accepted, with revision.

Theodore Eisenberg
Northern Michigan University
(currently at the Weizmann
Institute of Science, Rehovot, Israel)