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Education

1977	Ed.D./Mathematics Education	Teachers College, Columbia University
1977	M.S./Mathematics	Teachers College, Columbia University
1973	M.A./Mathematics Education	Teachers College, Columbia University
1970	B.A. (magna cum laude)/Mathematics	Iona College

Professional Experience

2000 – present University of Michigan
- Professor, School of Education
- Professor (courtesy appointment), Mathematics Department
- Chair, Educational Studies Program (July 2003–August 2005)
- William A Brownell Collegiate Professor (December 2004–November 2019)
- Associate Dean for Academic Affairs (September 2005–August 2008)
- Dean, School of Education, University of Michigan-Dearborn (July 2010–June 2013)
- Interim Dean College of Education, Health & Human Services, University of Michigan-Dearborn (July 2013–December 2013)
- Senior Associate Dean for Research & Graduate Studies (July 2016–August 2019)

Fall 2015 University of Alberta
- Fulbright Canada Visiting Research Chair, Faculty of Education

2008 - 2009 Michigan State University
- Lappan-Phillips-Fitzgerald Visiting Professor (Fall 2008)

1987 - 2000 University of Pittsburgh
- Senior Scientist, Learning Research & Development Center
- Professor, Department of Instruction & Learning, School of Education

1979 - 1987 San Diego State University
- Assistant Professor, Department of Mathematical Sciences (1979-81)
- Associate Professor, Department of Mathematical Sciences (1981-84)
- Professor, Department of Mathematical Sciences (1984-87)
- Director, Center for Research in Mathematics & Science Education (1985-87)

1977 - 1979 Northern Illinois University
- Assistant Professor, Department of Mathematical Sciences

1971 - 1977 Angela Merici School (NY)–Teacher, grades 6-8 (1971-74); Asst Principal (1974-75)
LaGuardia Community College (NY)-Adjunct Instructor of Mathematics (1974-75)
Bronxville (NY) High School -Mathematics Teacher, grades 7-12 (1974-77)

Selected Professional Appointments/Activities

Organizing Team member, Topic Study Group 39: Large scale assessment and testing in mathematics education, 13th International Congress on Mathematical Education 2016 (Hamburg, Germany)
Member, Conference Planning Committee, Michigan School Testing Conference, 2015-2017
Keynote Lecturer, Association for Mathematics Education of South Africa (AMESA) annual national congress, South Africa, Summer 2015
External Faculty Expert, Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE) Research School, South Africa, Summer 2015
External Dissertation Examiner, Addis Ababa University, Ethiopia, 2015
Member, Study Committee on Defining Deep Learning and 21st Century Skills, a study committee convened by the National Research Council, Division of Behavioral and Social Sciences and Education, 2011-2012
Co-editor, *Elementary School Journal,* 2008-2010
Editor, Research Commentary section, *Journal for Research in Mathematics Education*, 2008-2010
Chair, Research Advisory Committee, Association of Mathematics Teacher Educators, 2009-2010
Co-PI, Center for Proficiency in Teaching Mathematics, NSF Center for Learning and Teaching, 2002-09
Chair. Research Task Force, Association of Mathematics Teacher Educators, 2008
Chair, Adult Numeracy Technical Working Group, U.S. Department of Education, Office of Vocational and Adult Education (OVAE), 2008
Co-chair, Research Committee for *TODOS: Mathematics for ALL*, 2004-06
Editor, *Journal for Research in Mathematics Education*, 2000-04

Member, Editorial Board for

- *Cognition and Instruction*, 1995-2009
- *Mathematical Thinking and Learning: An International Journal*, 1998-2004
- *American Educational Research Journal*; section on Teaching, Learning and Human Development, 1998-2004

National Academy of Sciences/National Research Council Appointments:

- Member, Study Committee on Defining Deep Learning and 21st Century Skills, a study committee convened by the National Research Council, Division of Behavioral and Social Sciences and Education, 2011-2012
- Member, Study Committee on Teacher Preparation Programs, National Academy of Sciences, 2005-09
- Member, Committee on the Foundations of Educational and Psychological Assessment; a study committee convened by the NRC's Center on Behavioral and Social Sciences, 1998-2001
- Member, Mathematical Sciences Education Board (MSEB); a standing committee within the NRC's Center for Science, Mathematics, and Engineering Education, 1998-2000
- Report Coordinator for National Research Council (2001). *Improving mathematics education: Resources for educational decision making*. Washington DC: National Academy Press

National Council of Teachers of Mathematics Appointments/Activities:

- Editor, *Journal for Research in Mathematics Education* (2000-2004)
- Writing Group Leader (Grades 6-8), NCTM *Principles and Standards* Project (1996-2000)
- Member, Task Force on Mathematics Teaching and Learning in Poor Communities (1997-98)
- Project Director, *NCTM Interpretive Reports for the 5th, 6th, and 7th NAEP Mathematics Assessments* (1995-99)
- Member, Editorial Panel for *Journal for Research in Mathematics Education* (1995-98)
- Member, Task Forces on the 5th and 6th National Assessments of Educational Progress (1992-94), the 4th National Assessment of Educational Progress (1986-87), and the 3rd National Assessment of Educational Progress (1982-83)
- Mentor, *Standards* Research Catalyst Project Policy Research Group (1991-92)
- Member, Study Group on Student Assessment in Mathematics (1990)
- Member, Research Advisory Committee (1986-89)
- Co-organizer and Program co-chair, conference on *Teaching and Assessing Problem Solving*, NCTM Research Agenda Project, San Diego, CA, January 1987

Association of Mathematics Teacher Educators Appointments/Activities:

- Chair, Research Task Force (2007-2009)
- Judith E, Jacobs Lecturer (2008)
- Chair, Research Advisory Committee (2009-2011)
- Member at large, Board of Directors (2013-2016)

College Board Appointments:

- Member, Academic Assembly Council, 2003-06
- Member, Mathematical Sciences Academic Advisory Committee, 1994-2003

Member, Advisory Board for

- Research Advisory Board, Pearson Publishing Company, 2007-present
- Teacher Education Development Study in Mathematics (US TEDS; IEA-sponsored international study; William H. Schmidt, Director), 2007-11
- Center for the Education of Latinos/as (CEMELA; NSF Center for Learning & Teaching; Marta Civil, University of Arizona, Director), 2004-09
- Project MIDDLE (Carol Malloy, Judith Meece, and Jill Hamm, University of North Carolina, co-PIs), NSF Project, 2002-06
- CLT-West (Elisabeth Swanson, Montana State University, Director). NSF Center for Learning & Teaching, 2001-05
- Diversity in Mathematics Education Center (Thomas P. Carpenter, University of Wisconsin, Director). NSF Center for Learning & Teaching, 2001-05
- Show-Me Center. (Barbara Reys, University of Missouri, Director), NSF Middle School Curriculum Implementation Center, 1997-2002; Phase 2, 2002-05

Selected Other Appointments

- Member, American Statistical Association Working Group on *Statistics in Mathematics Education Research*, 2005-2006
- Vice-President, Michigan Council of Teachers of Mathematics, 2005-07
- Member, AERA Nominating Committee, 2001-2003
- Member, RAND/OERI Mathematics Study Panel, 2000-02

Awards & Distinctions

- *Member,* National Academy of Education, March 2017
- *AERA Fellow,* American Educational Research Association, April 2016
- Fulbright Canada Visiting Research Chair in Education, University of Alberta, Fall 2015
- *Senior Scholar award*, American Educational Research Association Special Interest Group for Research in Mathematics Education (SIG/RME), April 2011
- *Distinguished Alumnus Award*, Department of Mathematics, Science, & Technology, Teachers College, Columbia University, November 2009
- *Lifetime Achievement Award*, National Council of Teachers of Mathematics, April 2009
- *Judith Jacobs Lecturer*, Association for Mathematics Teacher Educators, January 2008
- *Iris Carl Memorial Leadership and Equity Award* from TODOS-Mathematics for All, April 2007
- *William A. Brownell Collegiate Professorship* from the University of Michigan, December 2004 & December 2009
- *Outstanding Contributions of Educational Research to Practice* award from the American Educational Research Association, April 2004
- *Mathematics Distinguished Service* award (inaugural recipient) from Iona College, April 1998.
- *Meritorious Performance and Professional Promise* awards from San Diego State University, 1984-85 and 1986-87.

Publications

Silver, E. A. (1976). Relations among Piagetian grouping structures: A training study. *Journal for Research in Mathematics Education, 7*, 308-314.

Silver, E. A. (1977). If at first they don't succeed, let them try again. *New York State Mathematics Teachers Journal, 27*, 91-93.

Silver, E. A. (1979). Student perceptions of relatedness among mathematical verbal problems. *Journal for Research in Mathematics Education, 10,* 195-210.

Silver, E. A., & Smith, J. P. (1980). Think of a related problem. In S. Krulik (Ed.), *Problem solving in school mathematics* (pp. 146-156). Reston, VA: National Council of Teachers of Mathematics.

Silver, E. A., Branca, N. A., & Adams, V. M. (1980). Metacognition: The missing link in problem solving? In R. Karplus (Ed.), *Proceedings of the Fourth International Conference for the Psychology of Mathematics Education* (pp. 213-221). Berkeley, CA: University of California.

Behr, M. J., Post, T. R., Silver, E. A., & Mierkiewicz, D. B. (1980). Theoretical foundations for instructional research on rational numbers. In R. Karplus (Ed.), *Proceedings of the Fourth International Conference for the Psychology of Mathematics Education* (pp. 60-67). Berkeley, CA: University of California.

Branca, N. A., Adams, V. M., & Silver, E. A. (1980). Problem-solving processes of ten- and eleven-year-olds. In R. Karplus (Ed.), *Proceedings of the Fourth International Conference for the Psychology of Mathematics Education* (pp. 222-230). Berkeley, CA: University of California.

Silver, E. A. (1981). Recall of mathematical problem information: Solving related problems. *Journal for Research in Mathematics Education, 12*, 54-64.

Silver, E. A. (1981). Review of G. A. Goldin & C. E. McClintock (Eds.), *Task Variables in Mathematical Problem Solving*. In *Journal for Research in Mathematics Education, 12*, 234-238.

Silver, E. A. (1981). Young adults' thinking about rational numbers. In T. R. Post & M. P. Roberts (Eds.), *Proceedings of the Third Annual Meeting of the North American Chapter of IGPME* (pp. 149-159). Minneapolis, MN: University of Minnesota.

Silver, E. A., & Smith, J. P. (1981). Random digits and simulation. In A. Shulte (Ed.), *Teaching statistics and probability* (pp. 70-73). Reston, VA: National Council of Teachers of Mathematics.

Silver, E. A. (1982). Problem perception, problem schemata, and problem solving. *Journal of Mathematical Behavior, 3*, 169-181.

Silver, E. A. (1982). Knowledge organization and mathematical problem solving. In F. Lester & J. Garofalo (Eds.), *Perspectives on mathematical problem solving* (pp. 15-25). Philadelphia, PA: Franklin Institute Press.

Silver, E. A. (1982). The average of 60 and 100 is not always 80: The harmonic mean in first-year algebra. *School Science and Mathematics, 82*, 682-686.

Davis, R. B., & Silver, E. A. (1982). Children's mathematical behavior. In H. F. Mitzel (Ed.), *Encyclopedia of educational research* (5th Edition). New York: The Macmillan Company.

Silver, E. A. (1983). A mathematics educator views recent research on human memory and information processing: On a clear day I can see implications. In M. Zweng, T. Green, J. Kilpatrick, H. Pollak, & M. Suydam (Eds.), *Proceedings of the Fourth International Congress on Mathematical Education* (pp. 429-432). Boston: Birkhauser Boston, Inc.

Silver, E. A. (1983). *The mathematics teacher shortage: An analysis of the problem and some possible solutions* (A report to the Teacher Education and Computer Center Policy Board). San Diego: Author.

Silver, E. A. (1983). Probing young adults' thinking about rational numbers. *Focus on Learning Problems in Mathematics, 5*, 105-117.

Behr, M. J., Lesh, R. A., Post, T. R., & Silver, E. A. (1983). Rational number concepts. In R. Lesh & M. Landau (Eds.), *Acquisition of mathematics concepts and processes* (pp. 91-126). New York: Academic Press.

Carpenter, T. P., Lindquist, M. M., Silver, E. A., & Matthews, W. (1983). Results of the Third NAEP Mathematics Assessment: Secondary school. *The Mathematics Teacher, 76*, 652-659.

Carpenter, T. P., Lindquist, M. M., Silver, E. A., & Matthews, W. (1983). *The Third National Mathematics Assessment: Results, trends and issues* (Report No. 13-MA-01). Denver, CO: National Assessment of Educational Progress.

Lindquist, M. M., Carpenter, T. P., Silver, E. A., & Matthews, W. (1983). The Third National Mathematics Assessment: Results and implications for elementary and middle schools. *The Arithmetic Teacher, 31,* 14-19.

Silver, E. A., & Thompson, A. G. (1984). Research perspectives on problem solving in elementary school mathematics. *The Elementary School Journal, 84*, 529-545.

Carpenter, T. P., Lindquist, M. M., Silver, E. A., & Matthews, W. (1984). Achievement in mathematics: Results from national assessment. *The Elementary School Journal, 84*, 485-495.

Matthews, W., Carpenter, T. P., Lindquist, M. M., & Silver, E. A. (1984). The Third National Assessment: Minorities and mathematics. *Journal for Research in Mathematics Education, 15,* 165-171.

Silver, E. A. (1985). Problem solving, proof and process aspects of mathematics: Background paper. In A. Bell, B. Low, & J. Kilpatrick (Eds.), *Theory, research & practice in mathematical education* [Working group reports and collected papers; ICME 5, Adelaide, Australia] (pp. 441-445). Nottingham, England: Shell Centre for Mathematical Education.

Silver, E. A. (1985). Research on teaching mathematical problem solving: Some underrepresented themes and needed directions. In E. A. Silver (Ed.), *Teaching and learning mathematical problem solving: Multiple research perspectives* (pp. 247-266). Hillsdale, NJ: Lawrence Erlbaum Associates.

Silver, E. A. (1985). Review of the Kraner Preschool Math Inventory. In J. V. Mitchell (Ed.), *The ninth mental measurements yearbook* (pp. 800-801). Lincoln, NE: Buros Institute of Mental Measurements, University of Nebraska.

Silver, E. A. (1985). Review of the Mathematics Topic Tests: Elementary Level. In J. V. Mitchell (Ed.), *The ninth mental measurements yearbook* (pp. 917-918). Lincoln, NE: Buros Institute of Mental Measurements, University of Nebraska.

Silver, E. A. (Ed.). (1985). *Teaching and learning mathematical problem solving: Multiple research perspectives*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Silver, E. A., & Dupuis, C. (1985). Problem solving, proof and process aspects of mathematics: A summary. In A. Bell, B. Low, & J. Kilpatrick (Eds.), *Theory, research & practice in mathematical education* (pp. 435-439). Nottingham, England: Shell Centre for Mathematical Education.

Akers, J., & Silver, E. A. (1985). Communicating research in mathematics education to school practitioners. In T. A. Romberg (Ed.), *Using research in the professional life of mathematics teachers* (pp. 52-58). Madison, WI: Wisconsin Center for Education Research.

Silver, E. A. (1986). Using conceptual and procedural knowledge: A focus on relationships. In J. Hiebert (Ed.), *Conceptual and procedural knowledge: The case of mathematics* (pp. 181-198). Hillsdale, NJ: Lawrence Erlbaum Associates.

Silver, E. A. (1987). A window and a frame (Review of A. H. Schoenfeld, *Mathematical Problem Solving*), *Journal for Research in Mathematics Education, 18*, 53-58.

Silver, E. A. (1987). Foundations of cognitive theory and research for mathematics problem-solving instruction. In A. H. Schoenfeld (Ed.), *Cognitive science and mathematics education* (pp. 33-60). Hillsdale, NJ: Lawrence Erlbaum Associates.

Silver, E. A. (1987). Perusing the problem-solving panorama: Comments on six papers on mathematical problem solving. In J. C. Bergeron, N. Herscovics, & C. Kieran (Eds.), *Proceedings of the Eleventh International Conference for the Psychology of Mathematics Education* (Vol II, pp. 206-212). Montreal, Canada:

Silver, E. A. (1987). Problem solving in the United States of America: Some recent trends. In J. P. Becker & T. Miwa (Eds.), *Proceedings of the U.S.-Japan Seminar on Mathematical Problem Solving* (pp. 33-62). Carbondale, IL: Southern Illinois University.

Silver, E. A., & Adams, V. M. (1987). Comparing problems. *Arithmetic Teacher, 34 (8),* 38-39. [Also reprinted in P. G. O'Daffer (Ed.) (1988), *Problem solving: Tips for teachers* (pp. 58-59). Reston, VA: National Council of Teachers of Mathematics.]

Silver, E. A., & Adams, V. M. (1987). Using open-ended problems. *Arithmetic Teacher, 34 (9),* 34-35. [Also reprinted in P. G. O'Daffer (Ed.) (1988), *Problem solving: Tips for teachers* (pp. 60-61). Reston, VA: National Council of Teachers of Mathematics.]

Silver, E. A. (1988). NCTM curriculum and evaluation standards for school mathematics: Responses from the research community. *Journal for Research in Mathematics Education, 19*, 338-344. [prepared on behalf of the NCTM Research Advisory Committee]

Silver, E. A. (1988). Problem solving, proof and process aspects of mathematics. In H. Burkhardt, S. Groves, A. Schoenfeld, & K. Stacey (Eds.), *Problem solving -- A world view* (pp. 184-186). Nottingham, England: The Shell Centre for Mathematical Education.

Silver, E. A. (1988). Solving story problems involving division with remainders: The importance of semantic processing and referential mapping. In M. J. Behr, C. B. Lacampagne, & M. M. Wheeler (Eds.), *Proceedings of the Tenth Annual Meeting of the North American Chapter of the IGPME* (pp. 127-133). DeKalb, IL: Northern Illinois University.

Silver, E. A., & Kilpatrick , J. (1988). Testing mathematical problem solving. In R. Charles & E. Silver (Eds.), *Research agenda for mathematics education: Teaching and assessing mathematical problem solving*. (pp. 178-186) Reston, VA: National Council of Teachers of Mathematics (Co-published with Lawrence Erlbaum Associates, Hillsdale, NJ).

Silver, E. A., Lindquist, M. M., Carpenter, T. P., Brown, C. A., Kouba, V. L., Swafford, J. O. (1988). The Fourth NAEP Mathematics Assessment: Performance trends and results and trends for instructional indicators. *Mathematics Teacher, 81*, 720-727.

Brown, C. A., Carpenter, T. P., Kouba, V. L., Lindquist, M. M., Silver, E. A., & Swafford, J. O. (1988). Secondary school results for the Fourth NAEP Mathematics Assessment: Algebra, geometry, mathematical methods, and attitudes. *Mathematics Teacher, 81*, 337-347, 397.

Brown, C. A., Carpenter, T.P., Kouba, V. L., Lindquist, M. M., Silver, E. A., & Swafford, J. O. (1988). Secondary school results for the Fourth NAEP Mathematics Assessment: Discrete mathematics, data organization and interpretation, measurement, number and operations. *Mathematics Teacher, 81*, 241-248.

Carpenter, T. P., Lindquist, M. M., Brown, C. A., Kouba, V. L., Silver, E. A. & Swafford, J. O. (1988). Results of the Fourth NAEP Assessment of Mathematics: Trends and conclusions. *Arithmetic Teacher, 36*, 38-41.

Charles, R., & Silver, E. A. (Eds.). (1988). *Research agenda for mathematics education: Teaching and assessing mathematical problem solving*. Reston, VA: National Council of Teachers of Mathematics (Co-published with Lawrence Erlbaum Associates, Hillsdale, NJ).

Kouba, V. L., Brown, C. A., Carpenter, T. P., Lindquist, M. M., Silver, E. A., & Swafford, J. O. (1988). Results of the Fourth NAEP Assessment of Mathematics: Measurement, geometry, data interpretation, attitudes and other topics. *Arithmetic Teacher, 35*, 10-16.

Kouba, V. L., Brown, C. A., Carpenter, T. P., Lindquist, M. M., Silver, E. A., & Swafford, J. O. (1988). Results of the Fourth NAEP Assessment of Mathematics: Number, operations, and word problems. *Arithmetic Teacher, 35*, 14-19.

Lindquist , M. M., Carpenter, T. P., Brown, C. A., Kouba, V. L., Silver, E. A, & Swafford, J. O. (1988). NAEP: Results of the Fourth Mathematics Assessment. *FORUM, Education Week,* 28-29.

Silver, E. A. (1989). On making sense of number sense. In J. Sowder & B. Schappelle (Eds.), *Establishing foundations for research on number sense and related topics: Report of a conference* (pp. 92-96). San Diego, CA: Center for Research in Mathematics and Science Education.

Silver, E. A., & Carpenter, T. P. (1989). Mathematical methods. In M. M. Lindquist (Ed.), *Results of the Fourth Mathematics Assessment of the National Assessment of Educational Progress* (pp. 10-18). Reston, VA: National Council of Teachers of Mathematics.

Silver, E. A., & Mamona, J. (1989). Problem posing by middle school mathematics teachers. In C. A. Maher, G. A. Goldin, & R. B. Davis (Eds.), *Proceedings of the Eleventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 263-269). New Brunswick, NJ: Rutgers University.

Silver, E. A., & Mamona, J. (1989). Stimulating problem posing in mathematics instruction. In G. W. Blume & M. K. Heid (Eds.), *Implementing new curriculum and evaluation standards* (pp. 1-7). University Park, PA: Pennsylvania Council of Teachers of Mathematics.

Silver, E. A., & Metzger, W. (1989). Aesthetic influences on expert mathematical problem solving. In D. B. McLeod & V. M. Adams (Eds.), *Affect and mathematical problem solving: A new perspective* (pp. 59-74). New York, NY: Springer-Verlag.

Brown, C. A., & Silver, E. A. (1989). Data organization and interpretation. In M. M. Lindquist (Ed.), *Results of the Fourth Mathematics Assessment of the National Assessment of Educational Progress* (pp. 28-34). Reston, VA: National Council of Teachers of Mathematics.

Brown, C. A., & Silver, E. A. (1989). Discrete mathematics. In M. M. Lindquist (Ed.), *Results of the Fourth Mathematics Assessment of the National Assessment of Educational Progress* (pp. 19-27). Reston, VA: National Council of Teachers of Mathematics.

Smith, M. S., & Silver, E. A. (1989). Canceling cancellation: The role of worked-out examples in unlearning a procedural error. In C. A. Maher, G. A. Goldin, & R. B. Davis (Eds.), *Proceedings of the Eleventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 40-46). New Brunswick, NJ: Rutgers University.

Swafford, J. O., Silver, E. A., & Brown, C. A. (1989). Findings from the Fourth National Mathematics Assessment in the United States. In D. F. Robitaille (Ed.), *Evaluation and assessment in mathematics education* (pp. 97-104). Paris, France: UNESCO.

Silver, E. A. (1990). Contributions of research to practice: Applying findings, methods, and perspectives. In T. J. Cooney (Ed.), *Mathematics teaching and learning in the 1990s* (pp. 1-11). Reston, VA: National Council of Teachers of Mathematics.

Silver, E. A. (1990). The role of assessment in mathematics education reform in the United States. In R. Shibata (Ed.), *Proceedings of the Twenty-third Conference of the Japan Society for Mathematical Education.* Okazaki, Japan: Japan Society for Mathematical Education.

Silver, E. A., Kilpatrick, J., & Schlesinger, B. (1990). *Thinking through mathematics*. New York: The College Board.

Silver, E. A., & Marshall, S. (1990). Mathematical and scientific problem solving: Findings, issues and instructional implications. In B. F. Jones & L. Idol (Eds.), *Dimensions of thinking and cognitive instruction* (Vol. 1, pp. 265-290). Hillsdale, NJ: Lawrence Erlbaum Associates.

Silver, E. A., & Smith, M. S. (1990). Research into practice: Teaching mathematics and thinking. *Arithmetic Teacher, 37*, 34-37.

Becker, J. P., Silver, E.A., Kantowski, M. G., Travers, K. J., & Wilson, J. W. (1990). Some observations of mathematics teaching in Japanese elementary and junior high schools. *Arithmetic Teacher, 38*, 12-21.

Stein, M. K., Grover, B. W., & Silver, E. A. (1991). Changing instructional practice: A conceptual framework for capturing the details. In R. G. Underhill (Ed.), *Proceedings of the Thirteenth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 36-41). Blacksburg, VA: Virginia Tech.

Silver, E. A. (1992). Assessment and mathematics education reform in the United States. *International Journal of Educational Research, 17(5*), 489-502.

Silver, E. A., Kenney, P. A., Salmon-Cox, L. (1992). The content and curricular validity of the 1990 NAEP mathematics items: A retrospective analysis. In National Academy of Education, *Assessing student achievement in the states: Background studies* (pp. 157-218). Stanford, CA: Stanford University, National Academy of Education.

Silver, E. A., Leung, S. S., & Cai, J. (1992). The marble arrangement problem: Results of an analysis of U. S. students' solutions and a comparison with Japanese students. In J. P. Becker (Ed.), *Report of U.S.-Japan cross-national research on students' problem-solving behaviors* (pp. 3-23). Columbus, OH: ERIC/SMEAC Clearinghouse. (ED 351 204)

Silver, E. A., Mukhopadhyay S., & Gabriele A. J. (1992). Referential mappings and the solution of division story problems involving remainders. *FOCUS on Learning Problems in Mathematics, 14* (3), 29-39.

Silver, E. A., & Shapiro, L. J. (1992). Examinations of situation-based reasoning and sense-making in students' interpretations of solutions to a mathematics story problem. In J. P. Ponte, J. F. Matos, J. M. Matos & D. Fernandes (Eds.), *Mathematical problem solving and new information technologies: Research in contexts of practice* (pp. 113-124). Berlin: Springer-Verlag.

Silver, E. A., & Kenney, P. A. (1993). Expert panel review of the 1992 NAEP mathematics achievement levels. In National Academy of Education, *Setting performance standards for student achievement: Background studies* (pp. 215-281). Stanford, CA: National Academy of Education.

Silver, E. A., & Kenney, P. A. (1993). An examination of relationships between the 1990 NAEP mathematics items for grade 8 and selected themes from the NCTM standards. *Journal for Research in Mathematics Education, 24*, 159-167.

Silver, E. A., & Lane, S. (1993). Assessment in the context of mathematics instruction reform: The design of assessment in the QUASAR project. In M. Niss (Ed.), *Assessment in mathematics education and its effects* (pp. 59-70). London: Kluwer.

Silver, E. A., Shapiro, L. J., & Deutsch, A. (1993). Sense-making and the solution of division problems involving remainders: An examination of middle school students' solution processes and their interpretations of solutions. *Journal for Research in Mathematics Education, 24*, 117-135.

Kenney, P. A., & Silver, E. A. (1993). Student self-assessment in mathematics. In N. L. Webb & A. F. Coxford (Eds.), *Assessment in the mathematics classroom, K-12* [1993 Yearbook of the National Council of Teachers of Mathematics] (pp. 229-238). Reston, VA: National Council of Teachers of Mathematics.

Silver, E. A. (1994). Mathematical thinking and reasoning for all students: Moving from rhetoric to reality. In Robitaille, D. F., Wheeler, D. H., & Kieran, C. (Eds.), *Selected lectures from the 7th International Congress on Mathematical Education* (pp. 311-326*).* Sainte-Foy, Quebec: Les Presses De L'Université Laval.

Silver, E. A. (1994). On mathematical problem posing. *For the Learning of Mathematics,* 14 (1), 19-28. [Also appears in I. Hirabayashi, N. Nohda, K. Shigematsu & F-L Lin (Eds.) (1993). *Proceedings of the Seventeenth International Conference for the Psychology of Mathematics Education* (Vol. I, pp. 66-85*).* Tsukuba, Japan: University of Tsukuba.]

Silver, E. A. (1994). Treating estimation and mental computation as situated mathematical processes. In R. E. Reys, N. Nohda, D. Smith, & K. Shimizu (Eds.), *Computational alternatives: Cross-cultural perspectives for the 21st century* (pp. 147-160*).* Reston, VA: National Council of Teachers of Mathematics.

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Cai, J., & Silver, E. A. (1994). Cognitive analysis of Chinese students' mathematical problem solving: An exploratory study. In D. Kirshner (Ed.), *Proceedings of the Sixteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Volume 2, pp. 3-9). Baton Rouge, LA: Louisiana State University.

Glaser, R., & Silver, E. A. (1994). Assessment, testing, and instruction: Retrospect and prospect. In L. Darling-Hammond (Ed.), *Review of research in education,* Volume 20 (pp. 393-419*).* Washington, DC: American Educational Research Association.

Magone, M., Cai, J., Silver, E. A., & Wang N. (1994). Validating the cognitive complexity and content quality of a mathematics performance assessment*. International Journal of Educational Research*, 21 (3), 317-340.

Silver, E. A. (1995). The nature and use of open-ended problems in mathematics education: Mathematical and pedagogical perspectives*. Zentralblatt für Didaktik der Mathematik*, 95/2, 67-72.

Silver, E. A. (1995). Rethinking "algebra for all*." Educational Leadership*, 52 (6), 30-33.

Silver, E. A. (1995). Shuffling the deck to ensure fairness in dealing: A commentary on some issues of equity and mathematics education from the perspective of the QUASAR project. In D. Owens (Ed.), *Proceedings of the seventeenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (*Volume I, pp. 61-70). Columbus, OH: Ohio State University.

Silver, E. A., & Kenney, P. A. (1995). Sources of assessment information for instructional guidance in mathematics. In T. Romberg (Ed.), *Reform in school mathematics and authentic assessment* (pp. 38-86*)*. Albany, NY: SUNY Press.

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Selected Recent Presentations (since 2006)

"Formative Assessment: Unseen and Unrealized Opportunities!" Presentation at the 2017 Michigan School Testing Conference (Ann Arbor, MI) February 15, 2017. [with V. Mills]

"StoryCircles: The Collective Creation of Stories of Practice by a Professional Learning Community." Discussion session at the annual meeting of the Association of Mathematics Teacher Educators (Orlando, FL), February 10, 2017. [with A. Milewski, P. Herbst, S. Crespo, I. Horn, & E. Thanheiser]

"Enhancing the Mathematics of K-12 Teacher preparation: Multiple Perspectives across the Mathematical Sciences." Opening plenary panel session at the annual meeting of the Association of Mathematics Teacher Educators (Orlando, FL), February 9, 2017. [with E. Burroughs, C. Franklin & P. Myers]

"Improving Student Learning and Teacher Practice in Mathematics: A Focus on Formative Assessment." Panel session at National Science Foundation DRK-12 PI Meeting (Washington, DC), June 2, 2016. [with J. Confrey, A Superfine & J. Supovitz]

"Georgia on My Mind: Some Reflections on the Past 50 Years of Mathematics Education at the University of Georgia and a Glimpse into a Possible Future." Invited keynote presentation at the University of Georgia Mathematics Education 50th Anniversary Event (Athens, GA), May 20, 2016.

"From Principles to Actions: Research You Can Use." Invited presentation at the annual meeting of the National Council of Teachers of Mathematics (San Francisco, CA), April 14, 2016.

"Examining Multiple Perspectives on Effective, Problem-centered Mathematics Lessons." Poster presentation at the NCTM annual Research Conference (San Francisco, CA), April 12, 2016. [with K. Yankson]

"Two New Powerful Lenses on a Familiar Topic: Findings from the NCSM/AMTE Joint Task Force on Formative Assessment" Presentation at the annual meeting of the National Council of Supervisors of Mathematics (Oakland, CA), April 13, 2016. [with V. Mills & M. Petit]

"Two Representations of Knowledge Needed by Elementary Teachers: Shall the Twain Meet?" Poster presentation at the AERA annual meeting (Washington, DC), April 9, 2016. [with J. Mortimer]

"Keeping It Real! Some Challenges and Opportunities in Bringing the Standards for Mathematical Practice to Life." Keynote presentation at Conversations among Colleagues 2016 - the annual meeting of the Michigan Association of Mathematics Teacher Educators (Kalamazoo, MI), March 19, 2016.

"Comparing Two Specifications of Mathematics Needed by Elementary Teachers: Do the Differences Make a Difference?" Paper presented at the annual meeting of the Association of Mathematics Teacher Educators (Irvine, CA), January 28-30, 2016. [with J. Mortimer]

"Positioning Formative Assessment As A Common Theme Across Multiple Professional Development Frameworks." Panel session at the annual meeting of the Association of Mathematics Teacher Educators (Irvine, CA), January 28-30, 2016 (with T. Adams, C. Ebby, K. Karp, J. Langer-Osuna; V. Mills, & M. Smith)

"Northern Exposure: An American Views Mathematics Education in Canada." Invited colloquium, Cneter for Mathematics, Science and Technology Education, Faculty of Education, University of Alberta (Edmonton, AB Canada), December 2, 2015.

"*Terra Incognita*: Exploring the Boundary between Research and Practice in Mathematics Education." Invited colloquium, Department of Mathematics & Department of Educational Technology, Academy for Research and Engagement, Northern Illinois University (DeKalb, IL), November 9, 2015.

"The Mathematics Needed by Elementary Teachers: Do TEDS-M and MET II Agree?" Paper presented at the annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA) (East Lansing, MI), November 5-8, 2015

"Eliciting and Using Evidence of Student Thinking to Guide Instructional Decision Making." Presentation at the Joint Mathematics & Science Conference of the Mathematics Council of the Alberta Teachers Association (Edmonton, AB Canada), October 23-24, 2015.

"Reflections on Mathematics Teacher Education: Results and Implications of an International Study." Discussant of papers presented at a symposium at the annual meeting of the American Educational Research Association (Chicago, IL), April 17-21, 2015.

"Wedding Formative Assessment to Mathematics Instructional Frameworks: Something Old, Something New." Invited Major Session at the annual meeting of the National Council of Supervisors of Mathematics (Boston, MA), April 13-15, 2015.

"Positioning Formative Assessment As A Common Theme Across Multiple Professional Development Frameworks." Panel session at the annual meeting of the National Council of Supervisors of Mathematics (Boston, MA), April 13-15, 2015 (with T. Adams, , G. Devine, E. Hulbert, L. Levi, & M. Steele)

"Specifying Mathematics Knowledge Needed for Elementary Teaching: A Close Look at MET II and TEDS-M." Paper presented at the Conversations among Colleagues annual conference (Detroit, MI), March 21, 2015. [with J. Mortimer]

"PISA Problems as Resources for Mathematics Problem-solving Instruction." Paper presented at the Conversations among Colleagues annual conference (Detroit, MI), March 21, 2015. [with K. Yankson & J. Mortimer]

"Eliciting and Using Evidence of Student Thinking to Guide Instructional Decision Making." Invited presentation at the Teachers Development Group Leadership Seminar (Portland, OR), March 18-21, 2015. [with Margaret S. Smith]

"Using PISA Tasks and Results to Stimulate Teacher Learning and Student Engagement." Invited presentation at the Teachers Development Group Leadership Seminar (Portland, OR), March 18-21, 2015.

"Eliciting and Using Evidence of Student Thinking to Guide Instructional Decision Making." Invited presentation at the Project LEAD Mathematics Symposium, Supporting Increased Student Achievement in the Secondary Mathematics Classroom, at Meredith College (Raleigh, NC), March 7, 2015

"Mathematics Teacher Educators' Formative Assessment Views and Practices: Findings from a National Survey." Session at the annual meeting of the Association of Mathematics Teacher Educators (Orlando, FL), February 14, 2015.

"Toward a Knowledge Base for Improving Mathematics Teaching: Tasks, Tools and Frameworks." Invited lecture at Northeast Normal University (Changchun, China), September 23, 2014.

"Effective Instruction in Science, Technology, Engineering & Mathematics: Some Lessons Learned from Research in the U.S." Keynote lecture at the Tin Ka Ping Foundation annual School Leadership Forum for Principals (Changchun, China), September 22, 2014.

"Toward a Knowledge Base for Improving Mathematics Teaching: Tasks, Tools and Frameworks." Invited lecture at Beijing Normal University (Beijing, China), September 19, 2014.

"Looking beyond the Headlines: Learning in and through PISA." Invited presentation in the Teaching, Learning, and Curriculum Frontier Lecture Series, Texas A&M College of Education & Human Development (College Station, TX), April 22, 2014.

"The Mathematical Tasks Framework: A Vehicle for Building a Knowledge Base for Supporting Mathematics Teachers and Teaching." Session presented at the annual meeting of the National Council of Supervisors of Mathematics (New Orleans, LA), April 7, 2014. [with M. S. Smith]

"UPDATE on PISA: Using Tasks and Results to Stimulate Mathematics Teacher Learning." Keynote presentation at the Utah Association of Mathematics Teacher Educators (UAMTE) annual meeting (Provo. UT), March 1, 2014.

"Terra Incognita: Exploring the Boundary between Research and Practice in Mathematics Education." Invited colloquium, Department of Mathematics Education, Brigham Young University (Provo, UT), February 28, 2014.

"Formative Assessment: A Key Element in Fostering the Mathematical Success of All Students." Panel session at the annual meeting of the Association of Mathematics Teacher Educators (Irvine, CA), February 6, 2014. (with T. Adams, J. Confrey, M. Franke, K. Karp, & M. S. Smith)

"Approaches to Analyzing Qualitative Data in Mathematics Education: Looking Back, Looking Around, and Looking Ahead." Symposium presentation at the annual meeting of the American Educational Research Association (San Francisco, CA), April 29, 2013.

"Supporting High-quality Mathematics Teaching: (How) Can We Scale up to Version 2.0?" Invited Mathematics Education Colloquium, Michigan State University (East Lansing, MI), November 6, 2012.

"PISA as an Eye Opener for Teachers: The Case of the Apples Task." Paper presented at the 36th annual meeting of the International Group for the Psychology of Mathematics Education (PME) (Taipei, Taiwan), July 18-20, 2012. (with H. Suh, R. Snider & P. Kenney)

"Reflection on Recursion: Teachers Examine Students' Solutions for a PISA Task." Interactive poster presentation at the International Congress on Mathematics Education (Seoul, Korea) July 8-15, 2012. (with H. Suh, R. Snider & P. Kenney)

"Exploring the Learning Power of PISA." Session presented at the annual meeting of the National Council of Supervisors of Mathematics (Philadelphia, PA), April 21-23, 2012.

"Using Teaching and Learning Trajectories to Achieve Greater Focus and Coherence within and across Courses." Session presented at the annual meeting of the National Council of Supervisors of Mathematics (Philadelphia, PA), April 21-23, 2012. (with V. Mills, D. Gosen, & G. Devine)

"Using PISA to Focus on Algebraic Thinking: The Case of Apples and Recursion." Interactive poster presentation at the Research Presession to the annual meeting of the National Council of Teachers of Mathematics (Philadelphia, PA), April 21-23, 2012. (with H. Suh & R. Snider)

"Examining NCTM's Practitioner Journals as Research-Practice Linking Tools." Interactive poster presentation at the Research Presession to the annual meeting of the National Council of Teachers of Mathematics (Philadelphia, PA), April 21-23, 2012. (with C. Lunsford)

"Confronting Another Gathering Storm: Mathematics Teacher Retention in an Era of Increased Expectations and Diminished Respect." Invited plenary session at the Mathematics Teacher Retention Symposium (Los Angeles, CA), March 22-24, 2012.

"On the Shoulders of Useful Metaphors and Giant ideas: Building on the Work and Example of Judith Sowder to Link Research and Practice in Mathematics Education." Invited plenary session at the Linking Research and Practice in Mathematics Education conference (San Diego, CA), January 13-14, 2012.

"Learning from the Program for International Student Assessment (PISA): Challenging Tasks, Informative Results." Session presented at the regional meeting of the National Council of Teachers of Mathematics (Albuquerque, NM), November 2-4, 2011.

"Learning from the Program for International Student Assessment (PISA): Challenging Tasks, Informative Results." Session presented at the regional meeting of the National Council of Teachers of Mathematics (St. Louis, MO), October 27-29, 2011.

"Making Educational Research Useful and Useable: An Example from the QUASAR Project." Keynote lecture, Mathematics Education: Connecting Research to Practice Conference, University of California – Bakersfield, September 10-11, 2010.

"Common Core State Standards and the Preparation of Teachers of Mathematics." Panel presentation at the annual meeting of the Association of Mathematics Teacher Educators (Irvine, CA), January 29, 2011.

"Reflections on the relationship of research and practice from the perspective of mathematics education as a profession." SIG/RME Senior Scholar Award lecture at the annual meeting of the American Educational Research Association (New Orleans, LA), April 9, 2011.

"A multilevel cross-national comparison of secondary school characteristics associated with differences in achievement between low- and high-SES students." Paper presented at the annual meeting of the American Educational Research Association (New Orleans, LA), April 9, 2011. [with R. J. Waddington & V. E. Lee]

"Strengthening connections & coherence: Using learning trajectories, anchor tasks, and analyses of student work to enhance teachers' practice." Session presented at the annual meeting of the National Council of Supervisors of Mathematics (Indianapolis, IN), April 12, 2011. (with V. Mills, D. Gosen, & G. Devine)

"Hit me with your best shot: Examining what teachers do when teaching mathematics for understanding." Invited lecture, Mathematics, Science and Technology Colloquium, Teachers College, Columbia University (New York, NY), November 16, 2009.

"Confronting the 'Algebra for All' Problem: Constants, Variables, Inequalities, and Unknowns." Invited lecture, Warner Graduate School of Education, University of Rochester (Rochester, NY), March 16, 2009.

"Making Mathematics Education a Knowledge-driven Profession: Continuing the Conversation." Presentation at the annual meeting of the Association of Mathematics Teacher Educators (Orlando, FL), January 2009. [with H. Ghousseini & C. Charalambous]

"Researchers and Practitioners in Mathematics Education: Two Communities Divided by a Common Interest?" Invited lecture (Lappan-Phillips-Fitzgerald annual lecture), Division of Science and Mathematics Education, Michigan State University (East Lansing, MI), December 3, 2009.

"A Brief Look at a Recent Professional Development and Research Project: Something Old, Something New, and Something Borrowed, Too." Invited presentation to the Division of Research on Learning, National Science Foundation (Washington, DC), February 27, 2008.

"Mathematics Teacher Education in Dodge City: Desperately Seeking Wyatt Earp and Henri Poincaré." Keynote presentation [Judith E. Jacobs Lecture] at the annual meeting of the Association of Mathematics Teacher Educators (Tulsa, OK), January 25, 2008.

"Educating Teachers of Mathematics: Some Enduring Challenges and Promising Directions." Invited lecture at the Institute for Education, Division of Social Science, National Sun Yat-sen University (Kaohsiung, Taiwan), November 30, 2007.

"Joining Research & Practice in Mathematics Education: Is Theory a Friend or Foe." Keynote presentation at the Mid-Atlantic Center for Mathematics Teaching and Learning Research Symposium (Newark, DE), August 15, 2007.

"Show Me the Mathematics: Opportunities to Learn Mathematics in Practice-Based Professional Development." Presentation at the annual meeting of the American Educational Research Association (Chicago, IL), April 9-13, 2007 [with L. Clark, H Ghousseini, B. Strawhun, C. Charalambous, & J. Sealy].

"Exploring the Curriculum Implementation Plateau." Presentation at the Research Presession of the annual meeting of the National Council of Teachers of Mathematics (Atlanta, GA), March 19-21, 2007 [with V. Mills, H Ghousseini, & C Charalambous].

"Joining Research & Practice in Mathematics Education: Changing the Discourse." Keynote presentation at the CEMELA research symposium (Tucson, AZ), January 11-14, 2007.

"The Uses of Theory in Mathematics Education Scholarship: Retrospect and Prospect." Invited presentation at the CEMELA research symposium (Tucson, AZ), January 11-14, 2007.

"Joining Research & Practice: Asking Hard Questions, Questioning Easy Answers." General session keynote address at the annual meeting of the National Council of Teachers of Mathematics (St. Louis, MO), April 2006.

"Conceptualizing the Integration of Two Practice-Based Approaches to Teacher Professional Development." Presentation at the annual meeting of the American Educational Research Association, (San Francisco, CA) April 2006. [with A. Castro]

"Integrating Case Analysis and Lesson Study in Mathematics Teacher Professional Development: Design Principles and Implementation Features." Presentation at the annual meeting of the American Educational Research Association, (San Francisco, CA) April 2006. [with L. Clark,, D. Gosen,, & V. Mills]

"Examining the Efficacy of Using Case Analysis and Lesson Study in Synchrony." Presentation at the annual meeting of the American Educational Research Association, (San Francisco, CA) April 2006. [with H. Ghousseini., C. Charalambous, & G. Stylianides]

"Some Comments on the Role of Theory in Mathematics Education Scholarship." Invited lecture at the National Science Council Workshop on Improving Research in Mathematics Education in Taiwan (Hualien, Taiwan, ROC), January 2006.

"Moving From Rhetoric to Practice." Invited lecture at National Sun Yat-Sen University (Kaohsiung, Taiwan ROC), January 2006.

Grants & Contracts

Current

Bosch/SOE K-12 STEM Education Planning and Development, funded by the Bosch Community Fund, December 31, 2016 – December 31, 2017 (award amount $249,877)

Improving Students' Mathematical Proficiency through Formative Assessment: Responding to an Urgent Need in the Common Core Era, funded by the National Science Foundation, Division of Research & Learning, DRK-12 Program, June 15, 2014 – May 31, 2017 (award amount $184,499).

Usable Scholarship in Education (USE) Initiative, funded by University of Michigan Provost's Office & School of Education, September 1, 2010 – August 31, 2017 (award amount $210,000).

Selected Prior Grants/Contracts

Using PISA to Develop Activities for Teacher Education (UPDATE), funded by the National Science Foundation, Division of Research & Learning, DRK-12 Program, September 1, 2010 – August 31, 2015 (award amount $449,476).

Developing Excellence in Learning & Teaching Algebra (DELTA), funded by Michigan Department of Education, Mathematics & Science Partnership program, September 1, 2009 – August 31, 2012 (award amount to Oakland Schools approx $1,350,000; subaward for 2009-2010 to University of Michigan $57,532) {co-PI with Valerie Mills, Oakland Schools}

Michigan Mathematics and Science Teacher Leadership Collaborative. Funded by the U. S. Department of Education Mathematics and Science Partnership via Michigan Department of Education, February 1, 2007 - August 31, 2009 (award amount est $3 million) {co-PI with Stephen Best, Judith Flowers, Mary Ann Sheline, & Walter Rathkamp}

Studying the Enactment of Teacher Professional Development for Experienced Users of Innovative Mathematics Curriculum Materials: The Case of the BIFOCAL Project. Michigan State University Mathematics Education Endowment Fund, July 1, 2002 - October 30, 2009 (award amount $399,831).

Center for Proficiency in Teaching Mathematics. Funded by the National Science Foundation via University of Georgia, October 1, 2002 - September 31, 2010 (award amount ≈$4,000,000 to UM of $10 million total) {co-PI with Deborah Ball & Hyman Bass].

Editorship of the *Journal for Research in Mathematics Education*, NCTM award to the University of Michigan, 2000-01 ($111,591), 2001-02 ($120,621), 2002-03 ($154,360), 2003-04 ($122,238).

COMET: Cases of Mathematics Instruction to Enhance Teaching, NSF award #ESI-9731428, 1998-2002 <approx $400,000>. {co-PI with Mary Kay Stein & Margaret Schwan Smith, University of Pittsburgh}

Exploring the Portfolios of NBPTS Candidates in Middle School Mathematics and Science, NSF, April 1, 2000 – October 31, 2001{co-PI with Gail P. Baxter, Educational Testing Service}

Interpretive Reports for the Fifth, Sixth, and Seventh NAEP Mathematics Assessments, NSF-funded subcontract awarded to the National Council of Teachers of Mathematics (NCTM), 1995-98 <approx $300,000>. {Patricia Ann Kenney, co-PI}

Benchmarks of Student Understanding, a subcontract from the University of Wisconsin (as part of the OERI Student Achievement Center), 1996-1998.

Use of Cases in Mathematics Teacher Education, Exxon Foundation award, 1998. {Mary Kay Stein and Margaret Schwan Smith, co-PI's}

QUASAR Project Data Analysis and Dissemination, (QUASAR Project Extension), the Ford Foundation, 1995-2001 <approx $2.8 million>. {Extension of original award for the QUASAR Project.}

QUASAR Project (Quantitative Understanding: Amplifying Student Achievement and Reasoning), Ford Foundation, 1989-1995 <approx $10 million>.

A Study of the Content and Validity of the 1992 NAEP Mathematics Items, National Academy of Education, 1992-93.

An Evaluation of the 1992 Mathematics Achievement Levels, National Academy of Education, 1992-93.

The Content and Curricular Validity of the 1990 NAEP Mathematics Items: A Retrospective Analysis, National Academy of Education, 1991.

Cross-Cultural Study of Japanese and American Students, subcontract from Southern Illinois University (Jerry P. Becker, Director) NSF Grant #8950546, 1989-1991.

Generative Aspects of Mathematical Thinking: Formulating Conjectures and Posing Problems, NSF grant MDR-8850580, 1988-92.

NCTM Interpretive Reports of the Fourth NAEP Mathematics Assessment, NSF award to NCTM. [Co-PI with M. Lindquist, T. Carpenter, C. Brown, & J. Swafford].

NCTM Research Agenda Project: Conference on Teaching and Assessing Mathematical Problem Solving, sub-award from San Diego State University (J. Threadgill-Sowder, Director) of a NSF grant, 1986-88.

The San Diego Mathematics Teacher Enhancement Project, award from the California Post-secondary Education Commission, 1986-87.

California Assessment Program Secondary Analysis Project, award from the California State Education Department, 1986.

Synthesis of Research Related to Mathematics Problem-Solving Instruction, NSF-RISE award #SED80-19328, 1981-84.