VITA

JAMES A. SHYMANSKY

E. Desmond Lee Professor of Science Education

Institute for Mathematics and Science Education & Learning Technologies

University of Missouri-St. Louis

St. Louis, Missouri 63121-4499

October, 2010

VITA

JAMES A. SHYMANSKY

Personal

Birth Date: July 25, 1943

Address: 926 Country Club Drive
St. Louis MO 63121
(314) 516-5046

Present Rank: E. Desmond Lee Professor

Appointment Date: 1997

Married: Teresa

Department: Teaching & Learning

Children: Kimberlee, Bond, Katrina, Brock

Higher Education

Bloomsburg State College	1961-1965	B.S. in Sec . Education
Indiana State University	1967-1969	M.S. in Physics June 1969
Florida State University	1970-1972	Ph.D.in Science Education August 1972

Professional Experience

1997-	E. Desmond Lee Professor of Science Education	University of Missouri-St.Louis
1980-1997	Professor of Science Education	The University of Iowa
1992	Visiting Professor in Science Education	Curtin University of Technology Western Australia
1986-2010 (6 times)	Distinguished Visiting Professor in Science Education	National Taiwan Normal University, National Changhua University of Education
1986	Visiting Professor in Science Education	Program Pasca Sarjana IKIP Yogyakarta

1983-1986	Director of Science Education	The University of Iowa
1981	Lansdowne Scholar	The University of Victoria
1976-1980	Associate Professor of Science Education	The University of Iowa
1973-1975	Assistant Professor of Science Education	The University of Iowa
1972-1973	Assistant Professor of Science Education	Florida State University
1971-1972	Teacher 5th, 6th Grade	Florida State University Laboratory School
1969-1970	Teacher of Mathematics	New Providence, NJ
1968-1969	Instructor of Physics	Indiana State University
1967-1968	Teacher of Jr. High Science and Mathematics	Indiana State University Laboratory School
1966-1967	Teacher of Mathematics	Watchung Hills Regional High School, NJ
1965-1966	Teacher of Physics and Mathematics	Hellertown-Lower Saucon School District, PA

Offices/Appointments

Editorial Board of Science Education, 1976-1979.

Treasurer, Phi Delta Kappa, University of Iowa Chapter, 1978-79.

President, Phi Delta Kappa, University of Iowa Chapter, 1979-80.

Editorial Board, Science and Children, 1981-1983.

Editor, Journal of Research in Science Teaching, 1980-1985.

Research Coordinator, National Science Teachers Association, 1985-1987.

Associate Editor, Journal of Research in Science Teaching, 1990-1995.

Editor, Special Issue of Journal of Research in Science Teaching, 1992.

Editorial Consultant, Taiwanese Science Education Association, 1996.

Editorial Board, Proceedings of the National Science Council, Part D (Taiwan), 1996-2000.

Senior Editor, The International Journal of Science and Mathematics Education 2001-.

Past President, National Association for Research in Science Teaching, 2006.

Special Honors

1975 NSTA-Gustav Ohaus Award for Innovations in College Science Teaching.

1978 AETS Award--Best Paper: Interprets Theory & Research for Classroom Teachers.

1981 Lansdowne Scholar: University of Victoria.

1982 NSTA-Gustav Ohaus Award for Innovations in College Science Teaching.

1982 Outstanding Science Educator presented by the Association for the Education of Teachers in Science.

1982 Outstanding Research Paper presented to the annual meeting of The National Association for Research in Science Teaching.

1983 Outstanding Research Paper presented to the Southwest Educational Research Association (AERA).

1987 Iowa Educational Research and Evaluation Association award for the "Best Report of findings from an Educational Evaluation Study" for the paper "A Reassessment of the Effects of 60's Science Curricula on Student Performance." October, 1987.

1995 University of Iowa Excellence in Teaching Award.

2001 Faculty Performance Shares Award: University of Missouri-St. Louis

2007 Outstanding Science Educator (II) presented the Association for Science Teacher Education

Funded Projects

1981 "Operationalizing a Systematic Observation Capability to Research Behavioral Variables in Teaching, Counseling, and Related Helping Professions." Iowa Measurement Research Foundation ($14,676).

1981 "Science Meta-Analysis Project." Subcontracted through the University of Colorado (Ron Anderson, Director) ($10,440).

1982 "Field-testing A System for Observing Teaching Behaviors During Attending Rounds." Iowa Measurement Research Foundation ($5,000) (with Donn Weinholtz).

1983 "A Study of Attending Physician Teaching Behaviors During Attending Rounds." The National Fund for Medical Education ($66,994) (with Donn Weinholtz).

1985 "A Study of the Uncertainties in the Meta-Analysis of Research on the Effectiveness of 'New' Science Curricula." National Science Foundation ($31,395).

1985 "Korean Science Leadership Professional DevelopmentWorkshop." Ministry of Education, Republic of Korea ($32,685).

1985 "Strategies in Teaching Science: A Series of Videotaped Vignettes." Dean's Instructional Improvement Grant ($1,000).

1986 "Meta-Analysis of New Science Curricula: A Replication Study." (Extension to prepare a Handbook for the Application of Refined Meta-Analysis Techniques). National Science Foundation ($17,500).

1987 "Using the Computer to Overcome Misconceptions in Physics." National Science Foundation ($186,000) (with Peter Trotter [CONDUIT]), September, 1987-May, 1989.

1988 "STAR (Science Teacher As Researcher)," National Science Foundation (5 year grant) ($804,625).

1989 "Video Production Project," University of Iowa ($4,000).

1990 "The Relationship Between Biology Cognitive Preferences and Certain Variables Related to Learning Biology," National Science Council of Taiwan ($20,250), January, 1990-January, 1991 (with Yeong-Jing Cheng).

1990 "Video Production Grant," University of Iowa ($4,000), January, 1990.

1990 "Setting a Research Agenda Related to Science Curriculum Reform," National Science Foundation ($32,702), April-October, 1990.

1991 "Video Production Project," University of Iowa ($3,500), January, 1991.

1992 "Teaching and Testing to Promote Higher Order Thinking in Science and Mathematics Education," National Science Foundation ($300,306).

1994 "Science PALs" (Science: Parents/Activities/Literature) Project, National Science Foundation (4 year grant) ($1.1 million).

1998 "Hands-On Math & Science Project." ($49,932) Missouri CBHE Eisenhower Grant

1999 "Mother Goose Asks Why?" ($10,000 in Children's Books) National Science Foundation (subcontract)

1999 "Science Cooperatives" Planning Grant ($49,123). National Science Foundation

2000 "Science Cooperatives Project" ($5,890,000). National Science Foundation, 5 years

2007 “Teachers Helping Teacher Teach Inquiry Science: The Just *ASK* Project” ($2,470,000). National Science Foundation, 5 Years

Scholarly Work

Refereed

1. Shymansky, J. A. & Matthews, C. C. (1974). A comparative laboratory study of the effects of two teaching patterns on certain aspects of the behavior of students in fifth grade science. Journal of Research in Science Teaching, 11(2), 157-168.

2. Shymansky, J. A., Matthews, C. C., Good, R. G., Penick, J. E., Kolebas, P. R., & Allen, T. E. (1974). A study of self-perceptions among elementary school students exposed to contrasting teaching strategies in science. Science Education, 58(3), 331-341.

3. Shymansky, J. A., Penick, J. E., Matthews, C. C., & Good, R. G. (1975). Using macroanalytic techniques to study teacher behavior patterns. Journal of Research in Science Teaching, 12(3), 221-228.
*Reprinted in:
Flanders, N. A. (Ed.). (1974, Fall). A comparison of macroanalytic techniques in the study of teacher behavior patterns in the classroom. Classroom Interaction Newsletter, 10(1), 50-56.

4. Shymansky, J. A. (1976). Science foundations: A science program for non-science majors. Iowa Science Teachers Journal, 13(3), 24-27.

5. Penick, J. E., **Shymansky, J. A.**, Matthews, C. C., & Good, R. G. (1976). Studying the effects of two quantitatively defined teaching strategies on student behavior in elementary school science using macroanalytic techniques. Journal of Research in Science Teaching, 13(4), 289-296.

6. Good, R. G., Matthews, C. C., **Shymansky, J. A.**, & Penick, J. E. (1976). Relationships between classroom behavior and cognitive development characteristics in elementary school children. Journal of Research in Science Teaching, 13(6), 533-538.

7. Shymansky, J. A. (1976). How is student performance affected by one-to-one teacher-student interactions occurring in an activity centered science classroom? Journal of Research in Science Teaching, 13(13), 253-258.

8. Shymansky, J. A. (1976). Mum's the word: More about science and silence. Science and Children, 14(1), 26-27.

9. Shymansky, J. A., Penick, J. E., & Wortman, J. D. (1977). A computer program designed to identify behavior patterns in observational data. The Journal of Classroom Interaction, 12(1).

10. Shymansky, J. A., Penick, J. E., Matthews, C. C., & Good, R. G. (1977). A study of student classroom behavior and self-perception as it relates to problem solving. Journal of Research in Science Teaching, 14(3), 191-198.

11. Penick, J. E., & **Shymansky, J. A.** (1977). The effects of teacher behavior on student behavior in fifth grade science: A replication study. Journal of Research in Science Teaching, 14(5), 427-432.

12. Shymansky, J. A. (1978). Activity centered science. Science and Children, 15(6), 38-39.

13. Shymansky, J. A. (1978). Assessing teacher performance in the classroom: Pattern analysis applied to interaction data. Studies in Education Evaluation, 4(2), 99-106.

14. Vandenberg, E., **Shymansky, J. A.**, Lunetta, V. N., & Yore, L. D. (1979). Relationships between cognitive preferences, student classroom behavior, attitudes, field dependence, performance on a Piagetian task battery, and achievement on science process measures. Alberta Science Education Journal, 38(3).

15. Shymansky, J. A., & Penick, J. E. (1979). Do laboratory assistants exhibit sex bias? Journal of College Science Teaching, 8(4), 223-226.

16. Shymansky, J. A., Penick, J. E., & Kyle, W. C. (1979). How do science laboratory assistants teach? Journal of College Science Teaching, 9(1), 24-27.

17. Kyle, W. C., Penick, J. E., & **Shymansky, J. A.** (1979). Assessing and analyzing the performance of students in college science laboratories. Journal of Research in Science Teaching, 16(6), 545-552.

18. Shymansky, J. A., & Yore, L. D. (1979). Assessing and using readability of elementary science texts. School Science and Mathematics, 79(8), 670-676.

19. Shymansky, J. A., & Penick, J. E. (1979). Use of systematic observations to improve college science laboratory instruction. Science Education, 63(2), 195-203.

20. Kyle, W. C., Penick, J. E., & **Shymansky, J. A.** (1980). Assessing and analyzing behavior strategies of instructors in college science laboratories. Journal of Research in Science Teaching, 17(2), 131-138.

21. Shymansky, J. A., & Yore, L. D. (1980). A study of teaching strategies, student cognitive development and cognitive style as they relate to student achievement in science. Journal of Research in Science Teaching, 17(15), 369-382.

22. Shymansky, J. A. (1980). Rating your individualized program. Science and Children, 17(5), 32-34.

23. Shymansky, J. A., & Brunkhorst, H. (1980). One room schoolhouse science. The Science Teacher, 47(8), 35-36.

24. Shymansky, J. A., & Penick, J. E. (1981). Teacher behavior does make a difference in hands-on science classrooms. School Science and Mathematics, 81(5), 412-422.

25. Dustin, E. R., Engen, H. B., & **Shymansky, J. A.** (1982). The use of systematic observation in counselor training. Counselor Education and Supervision, 22(1).

26. Shymansky, J. A., Kyle, W. C., & Alport, J. M. (1982). The science curriculum development projects of the sixties: How effective were they? Educational Leadership, 40(1), 63-66.

27. Shymansky, J. A., & Aldridge, W. G. (1982). The teacher crisis in secondary school science and mathematics. Educational Leadership, 40(2).

28. Shymansky, J. A., Kyle, W. C., & Alport, J. M. (1982). How effective were the hands-on programs of yesteryear? Science and Children, 20(2).

29. Kyle, W. C., **Shymansky, J. A.**, & Alport, J. M. (1982). The alphabet soup science curricula of the sixties: How effective were they? The Science Teacher, 99(8).

30. Shymansky, J. A., Kyle, W. C., & Alport, J. M. (1983). The effects of new science curricula on student performance. Journal of Research in Science Teaching, 20(5), 387-404.

31. Alport, J. M., **Shymansky, J. A.**, & Kyle, W. C. (1984). BSCS programs: Just how effective were they? The American Biology Teacher, 46(1), 54-57.

32. Mendez, A., & **Shymansky, J. A.** (1984). Consideraciones practicas para el diseno e implementacion de sistemas objectivos de observacion. Biologia, 14.

33. Wolraich, M., Albanese, M., Stone, G., & **Shymansky, J. A.**, & Mendez, A. (1984, September). The effects of training medical students to convey distressful information. Journal of Medical Education, 59, 751-753.

34. Weinholtz, D., Everett, G., & **Shymansky, J. A.** (1985, Fall). Improving clinical teaching through extensive observation and intensive feedback. American Educational Research Association (Division I), 7(2), 4-6.

35. Mendez, A. & **Shymansky, J. A.** (1985). Verbal behavior and patterns exhibited by physicians during genetic counseling sessions. Patient Counseling and Health Education, 6(4), 165-168.

36. Yore, L. D., & **Shymansky, J. A.** (1985, November). Reading, understanding, remembering and using information in written science materials. (ERIC Document Reproduction Service No. ED 258 825)

37. Weinholtz, D., Everett, G., Albanese, M., & **Shymansky, J. A.** (1986, March). The attending round observation system. Evaluation and The Health Professions, 9(1), 75-89.

38. Wolraich, M. C., Albanese, M., Stone, G., Nesbett, D., Thomson, E., **Shymansky, J. A.**, Bartley, J., & Hanson, J. (1986). Medical communication behavior system: An interactional analysis system for medical interactions. Medical Care, 24(10), 891-903.

39. Mendez, A., **Shymansky, J. A.**, & Wolraich, M. (1986). Verbal and nonverbal behavior of doctors while conveying distressful information. Medical Education, 20, 437-443.

40. Kyle, W. C., Bonnstetter, R., Gadsden, T., & **Shymansky, J. A.** (1988). Science through discovery: Preparing elementary science students for the scientific and technological world of the 21st century. Science and Children, 25(7), 39-40, 52.

41. Shymansky, J. A., & Kyle, W. C. (1988). Summary of research in science education, 1986. Science Education, 72(3), 1-402.

42. Kyle, W. C., Jr., & **Shymansky, J. A.** (1988, November/December). What research says . . . about teachers as researchers. Science and Children, 29-31.

43. Kyle, W. C., Jr., Abell, S., & **Shymansky, J. A.** (1989, Spring). Enhancing prospective teachers' conceptions of teaching and science. Journal of Science Teacher Education, 1(1), 10-13.

44. Shymansky, J. A. (1989, April). What research says: . . . About ESS, SCIS, and SAPA. Science and Children, 26(7), 33-35.

45. Kyle, W. C., Jr. & **Shymansky, J. A.** (1989). Teachers as researchers: Collaborative efforts designed to improve science teaching through research. The Hoosier Science Teacher, 102-107.

46. Shymansky, J. A., Hedges, L. V., Woodworth, G., & Berg, C. A. (1990). A reassessment of the effects of inquiry-based science curricula of the 1960's on student performance. Journal of Research in Science Teaching, 27(2), 127-144.

47. Shymansky, J. A., Yore, L. D., & Good, R. (1991). Elementary school teachers' beliefs about and perceptions of elementary school science, science reading, science textbooks, and supportive instructional factors. Journal of Research in Science Teaching, 28(5), 437-454.

48. Yore, L. D. & **Shymansky, J. A.** (1991, Spring). Reading in science: Developing an operational conception to guide instruction. Journal of Science Teacher Education, 2, 29-35.

49. Yore, L. D., & **Shymansky, J. A.** (1992, Spring). Effective use of textual materials in elementary and middle school science classrooms. British Columbia Catalyst, 35(3), 11-18.

50. Shymansky, J. A., & Kyle, W. C., Jr. (1992). Establishing a research agenda: Critical issues of science curriculum reform. Journal of Research in Science Teaching, 29(8), 749-778.

51. Shymansky, J. A. (1992). Using constructivist ideas to teach science teachers about constructivism, or Teachers are students too! Journal of Science Teacher Education, 3(2), 53-57.

52. Shymansky, J. A., Woodworth, G., Norman, O., Dunkhase, J., Matthews, C., Liu, C. T. (1993). A study of changes in middle school teachers' understanding of selected ideas in science as a function of an in-service program focusing on student preconceptions. Journal of Research in Science Teaching, 30(7), 737-755.

53. Shymansky, J. A., (1995). How to change tellers to tillers: Needed research in science teacher education in an era of major reform. Science Education International, 5(4), 18-19.

54. Yore, L. D., Williams, R. L., **Shymansky, J. A.**, Chidsey, J. L., Henriques, L., & Craig, M. (1995). Re-focussing science assessment: Informing learners, teachers and other stakeholders. British Columbia Catalyst, 38(4), 3-9.

55. Shymansky, J. A., Jorgensen, M. A., Chidsey, J. L., Henriques, L., Dunkhase, J. A., & Yore, L. D. (1996). A professional development system as a catalyst for changing science teachers. The Journal of Science Teacher Education, 81(1), 29-42.

56. Cheng, Y. J., **Shymansky, J. A.**, Huang, C. C., & Liu, B. J. (1996). The relationship between biology cognitive preferences and science process skills. Proceedings of the National Science Council, 7(1), 38-45.

57. Lucas, K. B., **Shymansky, J. A.** & Jorgensen, M. A. (1996). The challenge of alternative assessment. Journal of Mathematics & Science in Southeast Asia, XIX(2), 38-51.

58. Shymansky, J. A., Chidsey, J. L., Henriques, L., Enger, S., Yore, L. D., Wolfe, E. W., & Jorgensen, M. A. (1997). Performance assessment in science as a tool to enhance the picture of student learning. School Science and Mathematics Journal, 97(4), 172-83.

59. Shymansky, J. A., Yore, L. D., Treagust, D. G., Thiele, R. B., Harrison, A., Stocklmayer, S. M., Venville, G. Chidsey, J., Henriques, L., & Olson, E. (1997). A study of changes in level 10 students' understanding of classical mechanics: Motion, force, work, energy. Journal of Research in Science Teaching, 34(6), 571-593.

60. Shymansky, J. A. (2000). The role of student outcome data in teacher certification. Proceedings of the National Science Council: Mathematics, Science and Technology Education, 10(1). Taipei, Taiwan: The National Science Council.

61. Shymansky, J. A. & Yore, L. D., & Hand, B. M. (2000). Empowering families in hands-on science programs. School Science and Mathematics, 100(1), 48-56.

62. Good, R. G. & **Shymansky, J. A.** (2001). Nature- of -science in benchmarks and standards: Post-modern/Relativist or Modern/Realist? Science & Education, 10, 173-185.

63. Shymansky, J. A., Kyle, W. C. & Alport, J. (2003). The effects of new science curricula on student performance. Journal of Research in Science Teaching. Special 40th Anniversary Edition.

64. Yore, L. D., **Shymansky, J. A.** & Anderson, J. O. (2004). The impact of a school district's science reform effort on the achievement and attitudes of third and fourth grade students. Journal of Research in Science Teaching, 41(8) 771-790.

65. Yore, L.D., **Shymansky, J.A.** & Anderson, J. O. (2005). Sensing the impact of elementary school science reform: A study of stakeholder perceptions of implementation, constructivist strategies and school-home collaboration. Journal of Science Teacher Education, 16, 65-88.

66. Annetta, L., **Shymansky, J.A.** (2006). Investigating science learning for rural elementary school teachers in a professional-development project through three distance-education strategies. Journal of Research in Science Teaching, 43(10) 1019-1039.

67. Shymansky, J. A., Yore, L., Annetta, L., & Everett, S. (2008). Missouri-Iowa Science Cooperative (Science Co-op): Rural Schools - Urban Universities Collaborative Project. *The Rural Educator, 29*, 1-3.

68. Annetta, L., & **Shymansky, J. A**. (2008). A comparison of rural elementary school teacher attitudes toward three modes of distance education for science professional development. *Journal of Science Teacher Education, 19,* 255-267.

69. Annetta, L.A., Minogue, J., Cook, M., Shymansky, J., & Thurmond (in press 2010). *Rural Elementary School Teacher Attitudes Toward Varying Science Teacher Professional Development Activities at A Distance.* Evidence-Based Education. New York: Nova Science

Submitted for Publication

1. **Shymansky, J.A,,** Wang, T.L., Annetta, L.A., Yore, L.D., & Everett, S.A. The impact of a multi-year, multi-school district K-6 professional development programme designed to integrate science inquiry and language arts on students' high stakes test scores. *International Journal of Science Education.*

2. **Shymansky, J.A.,** Wang, T.L., Annetta, L.A., Yore, L.D., & Everett, S.A. How much professional development is needed to effect positive gains in K-6 students' achievement on high stakes science tests? *International Journal of Science and Mathematics Education.*

3. **Shymansky, J.A.,** Annetta, L.A., Yore, L.D., Wang, T.L., & Everett, S.A. The impact of a multi-year systemic reform effort on elementary school students' achievement in science. *Journal of Science Teacher Education.*

Books

1. Hedges, L. V., **Shymansky, J. A.**, & Woodworth, G. (1989). Modern methods of meta analysis. Washington, DC: National Science Teachers Association.

Chapters and Monographs

1. Shymansky, J. A. (1978). How different strategies affect different students: Some implications for teaching science. NSTA monographs: What research says to the science teacher, I.

2. Shymansky, J. A., & Green, D. W. (1983). Valuing science content: Science is a basic we all can do. In B. W. Benson (Ed.) 1983 AETS yearbook.

3. Shymansky, J. A. (1985). Research in science education for the crisis and beyond. In R. Bybee, J. Carlson, & A. McCormack (Eds.), Redesigning science and technology education. Washington, DC: National Science Teachers Association.

4. Weinholtz, D., Albanese, M., Zeitler, R., Everett, G., & **Shymansky, J. A.** (1986). Effective attending physician teaching: The correlation of observed instructional activities and learner ratings of teacher effectiveness. In Research in medical education: 1986 Proceedings of the 25th annual conference (pp. 273⁛278). Washington, DC: Association of American Medical Colleges.

5. Shymansky, J. A., Kyle, W. C., Jr., & Alport, J. M. (1989). Research synthesis on the science curriculum projects of the sixties. In R. Brandt (Ed.) Readings on research from

Educational Leadership. Association for Supervision and Curriculum Development, Alexandria, VA, pp. 154-157.

6. Shymansky, J. A. & Kyle, W. C. (1991). Establishing a research agenda: critical issues of science curriculum reform. National Association for Research in Science Teaching.

7. Kyle, W. C., Jr., Abell, S. K., & **Shymansky, J. A.** (1992). Conceptual change teaching and science learning. In F. Lawrenz, K. Cochran, J. Krajcik, & P. Simpson (Eds.), research matters . . . To the science teacher. Manhattan, KS: National Association of Research in Science Teaching.

8. Shymansky, J. A. (1994). What do the benchmarks mean for K-6 science? In R. Good (Ed.), Blueprints for reform: Research. Washington, DC: American Association for Advancement of Science.

9. Shymansky, J. A. (1994). Assessment alternatives: Finding out what students know and can do [video]. Arlington, VA: Council of Chief State School Officers.

10. Jorgensen, M. A., & **Shymansky, J. A.** (1996). Assessment in science: A tool to transform teaching and learning. In J. Rhoton & P. Bowers (Eds.), Issues in science education (pp. 107-113). Arlington, VA: National Science Teachers Association.

11. Shymansky, J. A. (1996). Transforming science education in ways that work: Science reform in the elementary school. In J. Rhoton & P. Bowers (Eds.), Issues in science education (pp. 185-191). Arlington, VA: National Science Teachers Association.

12. Shymansky, J. A., Marberry, C. A., & Jorgensen, M. A. (1997). Science and mathematics are spoken and written here: Promoting science and mathematics literacy in the classroom. In Reform in math and science education: Issues in the classroom (CD ROM publication). Columbus, OH: Eisenhower National Clearinghouse.

13. Good, R. G., **Shymansky, J. A.,** & Yore, L. D. (1999). Censorship in science and science education. In E. Brinkley (Ed.), Caught off guard: Teachers rethinking censorship. Allyn & Bacon.

14. Good, R. G. & **Shymansky, J. A.** (2001). Nature- of -science in benchmarks and standards: Post-modern/Relativist or Modern/Realist? In F. Bevilacqua, E. Giannetto & M. Matthews (Eds.). Science education and culture: The role of history and philosophy of science. Dordrecht, Netherlands: Kluwer Academic Publishers.

Textbooks

1. Magnolia, M. A., **Shymansky, J. A.**, & Holly, J. C. (1982). Exploring matter and energy. Chicago: Laidlaw Brothers.

2. Shymansky, J. A., Beugger, P., Romance, N., & Yore, L. D. (1988). Journeys in science (A series of student texts and teacher manuals for grades kindergarten through six). New York: Macmillan.

3. Pizzini, E. L., **Shymansky, J. A.**, & Huber, R. (1988). Science odysseys: Problem solving activities for elementary school. Chicago: Laidlaw Brothers.

4. Shymansky, J.A. & Yore, L.D. Buckle Down on New Jersey Science. Iowa City, IA: Buckledown Publishing Co.

5. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (1998). Buckle Down on Tennessee Science. Iowa City, IA: Buckle Down Publishing Co,

6. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (1998). Buckle Down on Massachusetts Science. Iowa City, IA: Buckle Down Publishing Co,

7. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (1999). Buckle Down on Virginia Science. Iowa City, IA: Buckle Down Publishing Co,

8. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2000). Buckle Down on Texas Science. Iowa City, IA: Buckle Down Publishing Co,

9. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2000). Buckle Down on New York Science. Iowa City, IA: Buckle Down Publishing Co,

10. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2000). Buckle Down on Ohio Science. Iowa City, IA: Buckle Down Publishing Co,

11. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2001). Buckle Down on Michigan Science. Iowa City, IA: Buckle Down Publishing Co,

12. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2003). Buckle Down on Florida Science. Iowa City, IA: Buckle Down Publishing Co,

13. Shymansky, J.A., Yore, L.D., Clough, M., Craven, J.A., Enger, S.E., Henriques, L., Hogan, T., Monhardt, L., Monhardt, R., Ollerenshaw, J.A., Veronesi, P. (2004). Buckle Down on California Science. Iowa City, IA: Buckle Down Publishing Co,

Technical Reports/Manuals

1. Shymansky, J. A. (1974, December). Science Foundations: A science program for the nonscience student. (Technical Report No. 4). Iowa City: The University of Iowa, Science Education Center.

2. Morris, V., McCurdy, D., **Shymansky, J. A.**, & Lunetta, V. N. (1974). The status of competency based teacher education programs for secondary school science teachers, 1973-74. Association for the Education of Teachers in Science. (ERIC Document Reproduction Service No. ED 110 336)

3. Shymansky, J. A., Penick, J. E., & Wortman, J. D. (1977). A computer program designed to identify behavior patterns in observational data. (Technical Report No. 12). Iowa City: The University of Iowa, Science Education Center.

4. Kyle, W. C., Jr., Penick, J. E., & **Shymansky, J. A.** (1978). Science laboratory interaction categories (SLIC): An instrument to observe and analyze the various parameters of science classrooms. (Technical Report No. 15). Iowa City: The University of Iowa, Science Education Center.

5. Shymansky, J. A. (1982). A computerized system for analyzing observational data. Iowa City: The University of Iowa, Science Education Center.

6. Peters, H., Countryman, L., Trotter, P., & **Shymansky, J. A.** (1990). Acceleration due to gravity: Teachers' manual. CONDUIT Educational Software, Iowa City, IA.

Presentations

1. Shymansky, J. A. "The Assessment of Self-Perceptions in Science." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Detroit, MI, March 27-29, 1973.

2. Shymansky, J. A., Matthews, C. C., & Good, R. G. "A Comparative Study of Two Quantitatively Defined Teaching Strategies in Science: An Overview." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Detroit, MI, March 27-29, 1973.

3. Matthews, C. C., Good, R. G., **Shymansky, J. A.**, Penick, J. E., Kolebas, P. R., & Allen, T. E. "An Interview for Assessing Problem-Solving Ability and Confidence." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Detroit, MI, March 27-29, 1973.

4. Shymansky, J. A., & Penick, J. E. "Studying the Effects of Quantitatively Defined Teaching Strategies on Students in Elementary School Science Using Macro- Interaction Analysis Techniques." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Chicago, IL, April 15-18, 1974.

5. Shymansky, J. A. "A Comparison of Macroanalytic Techniques in the Study of Teacher Behavior Patterns in the Classroom." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Chicago, IL, April 15-18, 1974.

6. Shymansky, J. A., Penick, J. E., & Kyle, W. C. "The Role of Teaching Assistants in Upper and Lower Level Laboratories in Five Science Disciplines." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Cincinnati, OH, March 22-24, 1977.

7. Penick, J. E., & **Shymansky, J. A.** "A Comparative Study of Student Behavior in Upper and Lower Level Laboratories in Five Science Disciplines." Paper presented to the annual meeting of the National Association for Research in Science Teaching, Cincinnati, OH, March 22-24, 1977.

8. Shymansky, J. A., & Penick, J. E. "The Investigation Begins When the Student Says (Thinks) Finished!" Paper presented to the Joint International Science Educators Conference (NSTA-STAM), Winnipeg, Manitoba, Canada, October 20-22, 1977.

9. Shymansky, J. A., & Penick, J. E. "Applications of Pattern Analysis (MACRO-Analysis) in Classroom Interaction Research." Paper presented to the annual meeting of the National Association of Research in Science Teaching, Toronto, Canada, March 31-April 2, 1978.

10. Shymansky, J. A. "Teacher Behavior and Science Instruction: Is There an Effective Way to Improve One's Teaching Effectiveness?" Paper presented to the Western Area Convention of the National Science Teachers Association, Anaheim, CA, November 16-18, 1978.

11. Vandenberg, E., **Shymansky, J. A.**, & Yore, L. D. "The Relationship of Intellectual Development, Cognitive Style, Cognitive Preference, Science Attitude, Teaching Strategy and Science Achievement in Elementary Education Students." Paper presented to the annual meeting of the National Association of Research in Science Teaching, Atlanta, GA, March 21-23, 1979.

12. Shymansky, J. A., Penick, J. E., & Kyle, W. C. "A Comparative Study of Instructor and Student Behaviors and the Role of the Instructor in Introductory and Advanced Laboratories of Five Science Disciplines at the University Level." Paper presented to the annual meeting of the National Association of Research in Science Teaching, Atlanta, GA, March 21-23, 1979.

13. Shymansky, J. A. "Teacher Performance Assessment System (TPAS)." Paper presented to the annual meeting of The Association for the Education of Teachers in Science, Anaheim, CA, March 21-23, 1980.

14. Penick, J. E., & **Shymansky, J. A.** "College Science Laboratories: The Relationships Between Their Form and Function." Paper presented to the annual meeting of The National Science Teachers Association, Anaheim, CA, March 21-24, 1980.

15. Penick, J. E., & **Shymansky, J. A.** "What Research Says to the Science Teacher." Paper presented to the National Science Teachers Association Area Convention, Cleveland, OH, October 9-11, 1980.

16. Shymansky, J. A., & Penick, J. E. "Evaluating Teacher Performance in the Classroom." Paper presented to the National Science Teachers Association Area Convention, Cleveland, OH, October 9-11, 1980.

17. Shymansky, J. A. "The Use of Systematic Observation in Behavioral Research." College of Education Colloquium, The University of Iowa, Iowa City, IA, April 29, 1981.

18. Shymansky, J. A. "Assessment and Awareness: Key Ingredients in Teaching Effectiveness," and "Twenty-Five Years of New Science Curricula: A Look at Their Effectiveness." Science Curriculum Update Conference, The University of Iowa, Iowa City, IA, June 21-26, 1981.

19. Shymansky, J. A. "Quality in Secondary School Curriculum: Science." Institute for School Executives, The University of Iowa, Iowa City, IA, November 6, 1981.

20. Shymansky, J. A. "Meta-Analysis on 25 Years of Research into the Effectiveness of New Science Curricula." Paper presented to the National Science Teachers Association Regional Convention, Vancouver, British Columbia, Canada, December 3, 1981.

21. Shymansky, J. A. "What Research Says About the Success of Science Education Since 1960," and "Science Education Research" and "Science Education Research and Classroom Practice." Iowa Curriculum Update Conference, The University of Iowa, Iowa City, IA, July 18-23, 1982.

22. Shymansky, J. A., Weinholtz, D., Bonnstetter, R., Mendez, A., & Penick, J. E. "How to Analyze Physician-Patient Interactions Involving Distressful Information." Workshop presented to The Third National Conference for Generalists in Medical Education. Washington, DC, November 7-8, 1982.

23. Shymansky, J. A. "The Effects of New Science Curricula on Student Performance." Paper presented to the National Science Teachers Association, Boston, MA, April 5-8, 1984.

24. Shymansky, J. A. "Elementary Science Activities for the Classroom (workshop)." Iowa Science Teachers Section Meeting, Ames, IA, November 2, 1984.

25. Shymansky, J. A., & Yager, R. E. "Iowa Science Leadership," University of Iowa Radio Forum, WSUI/KSUI, The University of Iowa, Iowa City, IA, November 30, December 1, 1984.

26. Shymansky, J. A., Piel, E. J., & Yager, R. E. "Science Education Issues," University of Iowa Radio Forum, WSUI/KSUI, The University of Iowa, Iowa City, IA, December 7, 8, 1984.

27. Kyle, W. C., Jr., & **Shymansky, J. A.** "Science Interaction Category System (SICS): An Interaction Analysis System for Use in Science Classrooms and Laboratories." February 1985.

28. Shymansky, J. A. & Penick, J. E. "What Research Says About Effective Science Teaching." Institute for School Executives, February 15, 1985.

29. Boehlke, P. R. & **Shymansky, J. A.** "Cognitive Preferences and Science Teaching Behavior." National Association for Research in Science Teaching, French Lick Springs: April 15-18, 1985.

30. Shymansky, J. A. & Yore, L. D. "Reading Research and the Science Teacher." National Science Teachers Association, Cincinnati, OH, April 17-21, 1985.

31. Shymansky, J. A. "Getting Kids into Science--Physically? "National Science Teachers Association, New Orleans, LA, December 12-14, 1985.

32. Shymansky, J. A. "Perspectives on Improving Science Textbooks." National Science Teachers Association National Convention, San Francisco, CA, March 26-29, 1986.

33. Kyle, W. C., Jr., Bonnstetter, R. J., **Shymansky, J. A.**, & Gadsden, T., Jr. "Science Through Discovery: Preparing Elementary Students for the Scientific and Technological World of the 21st Century." A manuscript presented at the 34th NSTA National Convention, San Francisco, CA, March 26-29, 1986.

34. Kyle, W. C., Jr., & **Shymansky, J. A.** "An Analysis of Student and Teacher Behaviors in Process-Approach Vs. Traditional Elementary Science Classes." Part of a paper set presented at the 59th annual meeting of the National Association for Research in Science Teaching, San Francisco, CA, March 28-31, 1986.

35. Shymansky, J. A. Paper Set: "A Study of Uncertainties in the Meta Analysis of Research on the Effectiveness of 'New' Science Curricula." National Association for Research in Science Teaching Annual Convention, San Francisco, CA, March 28-31, 1986.

36. Shymansky, J. A. Paper Set: "What Research Says About Using Science Textbooks." National Association for Research in Science Teaching Annual Convention, San Francisco, CA, March 28-31, 1986.

37. Shymansky, J. A. Paper Set: "Implementation and Evaluation of an Exemplary Elementary Science Program." National Association for Research in Science Teaching Annual Convention, San Francisco, CA, March 28-31, 1986.

38. Shymansky, J. A. Seminar: "Preparing for State Assessment in Reading and Science." Florida Reading Association Annual Conference, Grenelefe, FL, October 15-18, 1986.

39. Shymansky, J. A. Seminar: "Preparing for State Assessment in Science Through Reading." Florida Association of Science Teachers Convention, Tampa, FL, October 16-18, 1986.

40. Shymansky, J. A. Workshop: "Revitalizing Elementary Science Through Investigation." National Science Teachers Association Area Convention, Las Vegas, NV, November 21-23, 1986.

41. Shymansky, J. A. Workshop: "Making the Most of Reading in Science." National Science Teachers Association Area Convention, Las Vegas, NV, November 21-23, 1986.

42. Shymansky, J. A. Special Reports: "Utilizing Learning Centers to Accommodate Different Learning Styles." National Science Teachers Association Area Convention, Las Vegas, NV, November 21-23, 1986.

43. Shymansky, J. A. Special Preliminary Report: "Elementary Teachers' Attitudes toward, Knowledge about and Classroom Uses of Science, Reading, and Science Textbooks." Report presented to the annual meeting of the American Educational Research Association, Washington, DC, April 22, 1987.

44. Shymansky, J. A. "Graduate Programs in Science Education: The Year 2000 and Beyond." Paper presented to the 60th Annual Meeting of the National Association for Research in Science Teaching (NARST), Washington, DC, April 23-25, 1987.

45. Shymansky, J. A. "Issues in the Analysis of Science Textbooks and the CASST Project." Paper presented to the Annual Meeting of the American Educational Research Association (AERA), Washington, DC, April 20-24, 1987.

46. Shymansky, J. A. "Every Teacher a Researcher (ETR): Science/Technology/ Society Instructional Strategies." Paper presented to the National Science Teachers Association (NSTA) Area Convention, Pittsburgh, PA, November 5-7, 1987.

47. Shymansky, J. A. "Every Teacher a Researcher: A Roundtable Discussion." Paper presented to the National Science Teachers Association (NSTA) Area Convention, Pittsburgh, PA, November 5-7, 1987.

48. Shymansky, J. A. "Making the Most of Misconceptions." Paper presented to the National Science Teachers Association (NSTA) Area Convention, Pittsburgh, PA, November 5-7, 1987.

49. Shymansky, J. A. "Research Matters . . . To the Science Teacher: Examining the Impact of the 'New' Science Curricula." Paper presented to the National Science Teachers Association (NSTA) National Convention, Washington, DC, March 26-29, 1987.

50. Shymansky, J. A. "Problem Solving: Making Textbook Science Come Alive." Paper presented to the National Science Teachers Association (NSTA) National Convention, Washington, DC, March 26-29, 1987.

51. Shymansky, J. A. "Every Teacher a Researcher." Paper presented to the National Science Teachers Association (NSTA) National Convention, St. Louis, MO, April, 1988.

52. Shymansky, J. A. "Thinking, Interacting and Inventing: An Interactive Constructive Perspective." In A Unified Perspective symposium conducted at the National Association for Research in Science Teaching (NARST) 62nd Annual Meeting, San Francisco, CA, April 1, 1989.

53. Shymansky, J. A. "Enhancing Middle School Science Teaching: STAR Project." In Towards a Unified Conception of Thinking symposium conducted at the University of Victoria, April 4, 1989.

54. Shymansky, J. A., Norman, O., Dunkhase, J. A., Woodworth, G., Matthews, C. C., Liu, C.-T., & Huang, H. J. "Constructivist Ideas as a Basis for Inservice Teacher Education: Pilot Results of the STAR/FOCIS Program." Paper presented to the Annual Meeting of the National Association for Research in Science Teaching (NARST), Atlanta, GA, April 9, 1990.

55. Shymansky, J. A., Aldridge, B. G., Rutherford, F. J., Eisenhart, M., Kyle, W. C., Jr., Hannapel, R., & Grohe, B. "Issues and Questions Related to Science Curriculum Reform: A Panel Discussion on Setting a Research Agenda." Paper presented to the National Association for Research in Science Teaching Annual Meeting, Lake Geneva, WI, April, 1991.

56. Shymansky, J. A., Norman, O., Woodworth, G., Dunkhase, J. A., & Liu, C.-T. "A Study of Changes in Middle School Teachers' Understanding of Selected Ideas in Science as a Function of an Inservice Program Focusing on Student Preconceptions." Paper

presented to the National Association for Research in Science Teaching Annual Meeting, Lake Geneva, WI, April, 1991.

57. Shymansky, J. A. "Designing Instruction to Enhance Plausible Reasoning (Scientific Thinking)." Paper presented to the National Science Teachers Association National Convention, Kansas City, MO, April 3, 1993.

58. Shymansky, J. A. "Enhancing Comprehension with Explicit Strategy Instruction." Paper presented to the National Science Teachers Association National Convention, Kansas City, MO, April 4, 1993.

59. Shymansky, J. A. "Reforming High Stakes Assessment in Science/Math." Paper presented to the National Association for Research in Science Teaching Annual Meeting, Atlanta, GA, April 15, 1993.

60. Shymansky, J. A., Treagust, D. F., Thiele, R. B., Harrison, A., Waldrip, B. G., Stocklmayer, S. M., & Venville, G. "A Study of Changes in High School Students' Understanding of Selected Concepts in Physics." Paper presented to the National Association for Research in Science Teaching Annual Meeting, Atlanta, GA, April 18, 1993.

61. Matthews, C. A., & **Shymansky, J. A.** "Focus on Children's Ideas about Science: An Integrated Program of Instructional Planning and Teacher Enhancement from the Constructivist Perspective." Paper presented at The Third International Seminar of Misconceptions and Educational Strategies in Science and Mathematics, Ithaca, NY, August 1, 1993.

62. Shymansky, J. A., & Dunkhase, J. A. "Using Children's Literature to Access and Challenge Young Children's Ideas about Science." Paper presented at The Third International Seminar of Misconceptions and Educational Strategies in Science and Mathematics, Ithaca, NY, August 2, 1993.

63. Shymansky, J. A., Henriques, L., Chidsey, J., Olson, E., & Enger, S. "Innovative Ideas for Classroom Assessment." Paper presented to the Iowa Science Teachers Section Meeting of the Iowa Academy of Science, Des Moines, IA, October 21, 1993.

64. Shymansky, J. A. "How to Change Tellers to Tillers: Needed Research in Science Teacher Education in an Era of Major Reform." Paper presented to the National Association for Research in Science Teaching, Anaheim, CA, March 26-29, 1994.

65. Yore, L. D., **Shymansky, J. A.**, Chidsey, J., Henriques, L., & Craig, M. T. "Promoting Alternative Assessment Strategies Among Elementary Preservice Teachers and Middle School Science Teachers." Paper presented at the Annual Meeting of the National Science Teachers Association, San Clemente, CA, March 30, 1994-April 2, 1994.

66. Shymansky, J. A. "What Do the Benchmarks Mean for K-6 Science? Invited Panel on Research Agenda for Project 2061, New Orleans, LA, April 8-9, 1994.

67. Shymansky, J. A. "Re-Conceptualization of the Assessment Base on an Interactive-Constructive Model of Learning." Paper presented at the National Science Teachers Association Annual Meeting, Anaheim, CA, March 30-April 2, 1994.

68. Shymansky, J. A. & Yore, L. D. "Refocusing Science Assessment: Informing Learners, Teachers, and Other Stakeholders." National Science Teachers Association Regional Meeting, Portland, OR, October 13-15, 1994.

69. Shymansky, J. A. "Converting Special Science Labs to Performance Assessments." Governor's Conference on Assessment, Des Moines, IA, December 5, 1994.

70. Shymansky, J. A. "Effective Use of Children's Literature in Hands-on Science." The University of South Dakota Eisenhower January Symposium, January 14, 1995.

71. Shymansky, J. A. "The Promise and Perils of Performance Assessment." The University of South Dakota Eisenhower January Symposium, January 14, 1995.

72. Shymansky, J. A., & Dunkhase, J. A. "Teaching Science Through Literature." Presentation at the Iowa Association for Elementary Education Annual Conference, Cedar Rapids, IA, March 4, 1995.

73. Shymansky, J. A., Chidsey, J. L., & Wolfe, E. W. "Development and Field Test of Performance Items for Grade 8-9 Science for Use in Large-scale Testing." Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 21, 1995.

74. Shymansky, J. A., Jorgensen, M., Chidsey, J., Dunkhase, J., Koballa, T., Dunkhase, D. Henriques, L., Al-Momani, E., Olson, E., & Veronesi, C. "A Strategy for Assessing Changes in Teachers Participating in an Enhancement Project." Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, San Francisco, CA, April 22, 1995.

75. Shymansky, J. A., Dunkhase, J. A., & Dunkhase, D. "Children's Literature in Hands-on Science." Presentation at the Fall Conference of the Iowa Science Teachers Section of the Iowa Academy of Science, Des Moines, IA, October 18, 1995.

76. Shymansky, J. A., & Chidsey, J. "Portfolios for Professional Growth." Presentation at the Fall Conference of the Iowa Science Teachers Section of the Iowa Academy of Science, Des Moines, IA, October 19, 1995.

77. Przekurat, D., Johnson, M., Shaw, M., Dunkhase, J. A., **Shymansky, J. A.**, & Dunkhase, D. "Finding Literature that Works." Presentation at the Fall Conference of the Iowa Science Teachers Section of the Iowa Academy of Science, Des Moines, IA, October 19, 1995.

78. Shymansky, J. A. "Using Children's Literature to Help Teachers Learn Science." Presentation at the Annual International Conference of the Association for the Education of Teachers in Science, Seattle, WA, January 12, 1996.

79. Shymansky, J. A. "Assessing Changes in Teachers' Content and Content Pedagogical Knowledge." Presentation at the Annual International Conference of the Association for the Education of Teachers in Science, Seattle, WA, January 12, 1996.

80. Shymansky, J. A., & Dunkhase, J. A. "Using Narratives in Hands-on Science Activities." Presentation at the National Science Teachers Association Convention, St. Louis, MO, March 30, 1996.

81. Shymansky, J. A., & Dunkhase, J. A., Olson, E., Henriques, L., Monhardt, R. Chidsey, J., Monhardt, L., Al-Momani, I., Varrella, G., Dunkhase, D., Dutton, B., Jones, J., & Yore, L. "Inservice Impact on Teachers' Content Knowledge, Content Pedagogical Knowledge, and Perspectives on Science Teaching: The Science Parents-Activities-Literature Project (Science PALs)." Presentation at the Annual Meeting of the National Association for Research in Science Teaching, St. Louis, MO, April 1, 1996.

82. Shymansky, J. A., Yore, L. D., Lewis, J, Chidsey, J., & Henriques, L. "Reading and Writing to Learn Science Activities for the Elementary Classroom." Presentation at the Annual International Conference of the Association for the Education of Teachers in Science, Cincinnati, OH, January 10, 1997.

83. Shymansky, J., Parke, H. & Yore, L.D. "Activity Based Science for K-8 Methods." Presentation at the Annual International Conference of the Association for the Education of Teachers in Science, Cincinnati, OH, January 11, 1997.

84. Shymansky, J. A., Yore, L. D. "Reading to Learn and Writing to Learn Science." Presentation at the Pre-Conference Research Workshop, 1997 NARST Annual Meeting, Oak Brook, IL, March 21, 1997.

85. Shymansky, J. A., Yore, L. D., Dunkhase, J. A. & Hand, B. M. "The Effect of a Teacher Enhancement Project Designed to Promote Interactive-Constructivist Teaching Strategies in Elementary School Science on Students' Perceptions and Attitudes." Presentation at the School Science and Mathematics Conference, Milwaukee, WI, November 13-15, 1997.

86. Shymansky, J. A., Yore, L. D., Dunkhase, J. A. & Hand, B. M. "Science, Parents, Activities and Literature: Overview, Results and Reflections." Presentation at the International Conference of the Association for the Education of Teachers in Science, Minneapolis, MN, January 8-11, 1998.

87. Yore, L. D., **Shymansky, J. A.,** Dunkhase, J. A., Hand, B. M., Henriques, L. & Lewis, J. O. "Students' Perceptions of Science Teaching and Attitudes toward Science Learning and Teachers' Self-Report of Using Childrens' Ideas, Applications of Science, and Use of Print Resources as Indicators of Interactive-Constructivist Teaching in Elementary Schools." Presentation at the International Conference of the Association for the Education of Teachers in Science, Minneapolis, MN, January 8-11, 1998.

88. Shymansky, J. A., Yore, L. D., Dunkhase, J. A. & Hand, B. M. "Do Students Really Notice? A Study of the Impact of a Local Systemic Reform." Presentation at the National Science Teachers Association Conference, Las Vegas, NV, April 16-19, 1998.

80. Shymansky, J. A., Yore, L. D., Dunkhase, J.A., Henriques, L. & Bancroft, J. "Students' Perceptions and Supervisors' Rating as Assessments of Interactive-Constructivist Science Teaching in Elementary School." Presentation at the Annual Meeting of the National Association for Research in Science Teaching, San Diego, CA, April 19-22, 1998.

90. Shymansky, J. A., Yore, L. D., & Hand, B. M. Emposering families in hands-on science programs. Paper presented to the Annual Meeting of the Association for Educating Teachers in Science, Austin, Texas, January 14-17, 1999.

91. Shymansky, J. A., Yore, L. D., & Anderson, J. Educational productivity of Science PALs: A study of the impact of a 4-year local systemic change project. Presentation to the Annual Meeting of the National Association for Research in Science Teaching, Boston, March 28-31, 1999.

92. Shymansky, J. A. A study of changes in students' attitudes, awareness and achievement across three years as a function of the level of implementation of interactive-constructivist teaching strategies promoted in a local systemic reform effort. Presentation at the Annual Meeting of the National Association for Research in Science Teaching, New Orleans, LA, May 28-30, 2000.

93. Yore, L. D., **Shymansky, J. A.** & Anderson, J. O. Documenting strategies for two local systemic change projects. Presentation at the International Meeting of the Association for the Education of Teachers in Science. Costa Mesa, CA, January 18-21, 2001.

94. Shymansky, J. A., Yore, L. D., Anderson, J. O. & Hand, B. M. Teachers' beliefs about, perceived implementation of and documented classroom use of science reform principles. Presentation at the Annual Meeting of the National Association for Research in Science Teaching, St. Louis MO, March 25-28, 2001.

95. Shymansky, J. A., Yore, L. D., Annetta, L. A., Olson, J. K., Hand, B. M., Everett, S. & Chung, C-J. Distance education approach to science education reform: achieving local systemic change in small, isolated school districts. Presentation to the Annual Meeting of the Association for the Education of Teachers in Science. Charlotte NC, January 10-13, 2002.

96. Yore, L. D., Anderson, J. O., & **Shymansky, J. A.** Modeling the relationships of classroom characteristics and student attributes to students' science achievement. Presentation to the Annual Meeting of the National Association for Research in Science Teaching. New Orleans LA, April 7-11, 2002.

97. Shymansky, J. A. Issues associated with using student science journals with K-6 students. Invited panelist at the International Conference of the Association for the Education of Teachers in Science. St. Louis MO, January 29-February 2, 2003.

98. Shymansky, J. A. One school district's effort to reform its elementary science curriculum and implement a plan for sustained professional development. Presentation to the Annual Meeting of the Association for the Education of Teachers in Science. Nashville, TN, January 8-11, 2004.

99. Shymansky, J. A. International science education applications and opportunities for research, scholarship, and service. Invited panelist at the Annual Meeting of the National Association for Research in Science Teaching, Vancouver, BC, April 1-3, 2004.

100. Shymansky, J.A. Science time: a chance to teach content reading and writing. Presentation to the Reading and Writing in Science Conference, UM-St. Louis, September 8-10, 2004.

101. Shymansky, J. A. Developing science literacy with writing in science and writing to learn science. Invited panelist at the International Conference of the Association for the Education of Teachers in Science. Colorado Springs, January 20-January 23, 2005.

102. McGuire, M. & **Shymansky, J.A.** The role of literacy in content area learning. Presentation to the Literacy Institute 2005: Building nonfiction literacy today. Washington, DC, July 28, 2005.

103. Shymansky, J.A., Annetta, L., & Yore, L. The impact of a five year professional development project on elementary school student achievement in 36 rural districts in the Midwest. Presentation to the Annual Meeting of the Association for the Education of Teachers in Science. Portland, OR, January 12, 2006.

104. Shymansky, J.A., Matthews, C., & Matthews, D. Making inquiry work across the curriculum. Missouri Department of Elementary and Secondary Education Interface 2006 Conference. Osage Beach, MO, February 26, 2006.

105. Shymansky, J.A., Matthews, C., & Matthews, D. Inquiry teaming with K-6 colleagues to improve MAP scores. Missouri Department of Elementary and Secondary Education Interface 2006 Conference. Osage Beach, MO, February 27, 2006.

106. Shymansky, J.A., McGuire, M.E., & Dickson, S. Kids really can learn to read and write in the content areas! Invited panelist at the National Geographic Literacy Institute 2006: Building content literacy today. Washington, DC, July 12, 2006.

107. Yore, L, Anthony, R., Anderson, J., **Shymansky, J.A.,** Annetta, L., & Czerniak, C., Making sense of professional development, teacher enhancement and local systemic project: Issues arising from complex, long-term, mixed methods, multiple measures and multiple traits data sets. Workshop at the Association for Science Teacher Education. Clearwater Beach, FL, January 4, 2007.

108. Czerniak, C., **Shymansky, J.A.,** Yore, L., Yore, S., Duncan, C., Simmons, P., Lunetta, V. Effective and efficient reporting of complex science education professional development projects and teacher education research studies in journals. Workshop at the Association for Science Teacher Education. Clearwater Beach, FL, January 5, 2007.

109. Lotter, C., **Shymansky, J.A.,** Annetta, L., Yore, L., & Everett, S. How much professional development is enough to impact student science achievement? Forum at the Association for Science Teacher Education. Clearwater Beach, FL, January 6, 2007.

110. Good, R., Yore, L., Lawson, A., Vitale, M., Romance, N. & **Shymansky, J.A.** A critical look at science education as a field of research. Symposium at the Annual Meeting of the National Association for Research in Science Teaching, New Orleans, LA, April 14, 2007.

111. Crawford, B.A., Brickhouse, N., Collins, A., McGinnis, J.R., Czerniak, C., Lederman, N., Kamen, M., **Shymansky, J.A.,** & Tobin, K. Into the Fire: Current issues of publishing science education research. Symposium at the Annual Meeting of the National Association for Research in Science Teaching, New Orleans, LA, April 17, 2007.

112. Shymansky, J. A. The Impact of a Five-Year, Externally Funded K-6 Systemic Review Effort on Elementary School Students' Achievement in Science. Annual Meeting of the Association for Science Teacher Education, St. Louis, January 11, 2008.

113. Shymansky, J.A., Annetta, L., Everett, S., & Yore, L. The Impact of a Five-Year, K-6 Systemic Reform Effort on Elementary School Students' Achievement in Science. National Association of Research in Science Teaching, Baltimore, April 2, 2008.

114. Shymansky, J. A. Providing Professional Development through On-line Communities of Practice. International Conference of Professional Development & Student Learning for Innovative Science Curricula, Taipei Taiwan, March 2009.

115. Annetta, L., Holmes, S., Cheng, M., Folta, E., **Shymansky, J. A.**, & Lamb. R. Analyzing Predictors of Learning through Student Self-Efficacy in a Technology-Based Project. National Association of Research in Science Teaching, Garden Grove, CA April 20, 2009.

116. Shymansky, J. A. & Matthews, C. Using Distance Video Technologies in Research on In-Service Teacher Development. NSF DR-K12 Conference, Washington, DC, November 9, 2009.

Invited Seminars/Addresses

1977 New York University: "Using MACRO-Analytic Techniques in Observational Studies."

1980 "Evaluating Science Teaching Effectiveness" and "What Research Says to the Science Teacher." National Science Supervisors Association Leadership Conference, Pocono Environmental Center, Keystone Junior College, Dingmans Ferry, Pennsylvania.

1981 University of Victoria (Visiting Lansdowne Scholar) in Science Education.

1981 Florida State University: "Collection and MACRO-Analysis of Observational Data in Human Behavioral Research and Training."

1984 "Trends in Elementary and Middle School Science: Looking Back Into the Future." South Carolina Department of Education meeting on State Objectives for Elementary School Science.

1987 "A Workshop on Modern Methods of Meta Analysis." Department of Graduate Studies, University of Puerto Rico, March 3-5, 1987. (with Larry Hedges and George Woodworth).

1987 "Making the Most of Misconceptions." Presented to Fourth Annual Science Staff Development Conference Ohio Department of Education, October 7, 1987.

1988 Presentation to National Science Foundation Science Education Directorate: "The Effectiveness of New Science Curricula of the Sixties." January 27, 1988.

1989 Presentation to the workshop on Science Education Research Methodology at College of Science, National Taiwan Normal University: "Issues and Methods of Observational Research." February 16, 1989.

1989 Seminar presented at National Taiwan Normal University: "Implications of Constructivist Learning Theory for Science Teacher Education." February 17, 1989.

1989 Seminar presented at College of Education, Graduate Institute of Science Education, National Taiwan Normal University: "Constructivist Views of Science Learning." February 20, 1989.

1989 Informal colloquium at National Taiwan Normal University: "Review of Research in Science Education." February 23, 1989.

1989 Seminar presented at Taipei Municipal Teachers College: "Making the Most of Misconceptions!" February 24, 1989.

1989 Colloquial discussion held by the National Science Council of Taiwan: "Recent Trends in Science Education Research." February 25, 1989.

1990 Seminar presented at the University of South Carolina: "External Funding Strategies." March 2, 1990.

1991 Seminar presented at the University of South Carolina: "Meaning Making in Earth Science." April 18-19, 1991.

1991 Seminar presented at the University of Puerto Rico: "Using Constructivist Ideas to Teach Teachers about Constructivism or, Teachers Are Students Too!" September 20, 1991.

1992 Seminar presented at Queensland University of Technology: "Teacher Enhancement Through Research: An Overview of a Middle School Science Teacher Enhancement Program." February 10, 1992.

1992 Seminar presented at The University of Tasmania (Launceston): "Using Student Ideas to Teach Science." April 8, 1992.

1993 Keynote Address to The North Carolina Science Educator's Conference: "Old and New Science Curricula: Shift to Constructivism." October 14, 1993.

1994 Elementary Science Leadership Institute, National Science Resource Center, Smithsonian Institute, Washington, DC: "Assessment of Hands-on Learning: Issues and Strategies." June 30 and July 28, 1994.

1995 Opening Address of The University of South Dakota Eisenhower January Symposium: "Telling vs. Tilling: Paradigm Problems in Curriculum Reform." January 13, 1995.

1995 Martin County Community College Invited Talk: "Telling vs. Tilling: Paradigm Problems in Instructional Reform." March 6, 1995.

1995 Science Division Multicultural Workshop, Baldwin Wallace College, Berea, OH. May 23, 1995.

1996 Columbus Junction School District. "Teaching Science Across the Curriculum." December 11, 1996.

1997 Seminar presented to the National Research Council (Republic of China) at National Taiwan Normal University: “Implications of Constructivist Ideas for Teaching Science, Learning Science, Learning How to Teach Science, and Doing Research.” September 22-26, 1997.

1997 Seminar presented at the National Taipei Teachers College (NTTC): “Constructivist Science Teaching in Elementary Schools.” September 30, 1997.

2002 Keynote address to the National Science Council of Taiwan Workshop on Publishing Research in Science and Mathematics Education: "The Art and Craft of Publishing Your Research." Kenteng, Taiwan. February 21-23, 2002.

2005 "Countdown to MAP Science" Teachers' Workshops, University of Missouri-St. Louis. January 12, 2005, February 10, 2005, September 21, 2005.

2005 "Incubator Forum A-2" Chair of Panel at Science Education at the Crossroads Conference, University of Connecticut. October 10, 2005.

2006 Workshop presented to The Association for the Education of Teachers in Science. "Helping Educators Apply Appropriate Writing-in and Writing-to Learn Science Strategies." Portland, OR., January 12, 2006.

2006 "Middle School Science and the English Language Learner," Teachers' Workshops, University of Missouri-St. Louis. January 31, 2006, February 14, 2006, February 28, 2006, March 9, 2006.

2007 Faculty and graduate student presentation, "Cooperative learning: the sum is greater than the whole of the parts. National Taiwan Normal University and National Chang Hua University of Education. March, 2007.

2007 Faculty and graduate student presentation, "The impact of a five year professional development project on student achievement." National Taiwan Normal University and National Chang Hua University of Education. March, 2007.

2007 Faculty and graduate student presentation, "Making the most of assessments." National Taiwan Normal University and National Chang Hua University of Education. March, 2007.

2007 "Making the Most of Assessments." National Taiwan Normal University, September, 2007.

2007 "Cooperative Learning: The Whole is Greater Than the Sum of the Part." National Hualien University of Education, September, 2007.

2007 "A Research Publication Primer." National Changhua University of Education. October, 2007.

2007 "The Impact of a Five-Year, K-6 Systemic Reform Effort on Elementary School Students' Achievement in Science." National Kaohsiung Normal University. October, 2007.

2009 Keynote Address: "Providing Professional Development through On-line Communities of Practice," International Conference of Professional Development & Student Learning for Innovative Science Curricula, Taipei Taiwan, March 2009.

2009 Presentations at IPN, Kiel Germany, University of Jordan, Amman, and at the Weitzman Institute, Tel Aviv, September and October 2009.

2009 Academic Writing Workshop: "Manuscript Rejected! - To revise or not to revise? A case study of how to analyze, evaluate and use reviewer comments." Taipei, Taiwan.

Dissertations Directed

1. Hoyle, Classie G. The Effects of Experimentally Induced Affective States of Self-Dissatisfaction on Values Held by Science Teachers (1977).

2. Kyle, William C., Jr. A Meta-Analysis of the Effects on Student Performance of New Curricular Programs Developed in Science Education Since 1955 (1982).

3. Mendez, Antonio M. A Descriptive Study of Physician Verbal and Nonverbal Behaviors While Conveying Stressful Information (1983).

4. Boehlke, Paul R. A Study of the Relationship Between Cognitive Preference and Teaching Behavior Among High School Science Teachers (1984).

5. Cheng, Jing-Yeong. The Development and Validation of a Teaching Competency Evaluation Battery (1985).

6. Hill, Lon Clay. Spatial Thinking and the Astronomical Endeavor: Theoretical Issues and Pedagogical Implementations (1989).

7. Miller, Robert Raymond. An Evaluation of Selective Criteria Used in Identifying Gifted Elementary School Science Students (1989).

8. Hrecz, Rita A. A Study of the Impact of An In-service Video and Role Playing Strategies on Student Learning and Attitudes about Substance Abuse as Taught by Preservice Teachers (1990).

9. Nelson, Donald James. Children's Explanations for Phenomena Related to Manned Space Exploration Gravity, Orbit, and Weightlessness: An Interview Study (1991).

10. Norman, Obed. An Investigation of the Effect of Using Explicit and Implicit Algorithmic Teaching Strategies on the Problem Solving Performance of High School Students on a Selected Chemistry Topic (1992).

11. Countryman, Lyn Le. The Effects of Spacing a Science Unit on Sound on the Conceptual Understanding of Eighth Grade Students as Evaluated Through Concept Maps (1992).

12. Chin, Chi Chin. A Study of Environmental Knowledge, Attitudes, and Behavior of Secondary Students and Pre- and In-Service Teachers in Taiwan (1993).

13. Chang, Wen Hua. The Effects of Using Concept Mapping to Supplement Class Notes on the Biology Test Scores of Seventh Grade Students in Taiwan, R.O.C. (1994).

14. Lien, Chi Jui. A Study of the Alternative Ideas of College Students' about Chemical Equilibrium and the Effectiveness of Using these Ideas to Focus Instruction (1993).

15. Pellens-Meinhard, Sandra. The Use of Developmental Theory in a Study of the Cognitive Development of Freshmen and Senior Medical Students Using Piagetian-type Tasks (1995).

16. Keng, Hsiao-Tseng. A Comparative Study of Note-Taking, Outlining and Concept Mapping Learning Strategies on National Taipei Teachers College Students' Understanding of Heat and Temperature (1996).

17. Olson, Eric. Six Complementary Case Studies of Parents and Children Completing Hands-On Activities at Home Which Were Tied to the Science Education the Child Was Receiving at School (1996).

18. Al-Momani, Ibrahim. A Study of Teacher Inservice in Jordan Using an Inservice Approach Developed for Teachers in the United States (1997).

19. Enger, Sandra. The Relationship between Science Learning Opportunities and Ninth Grade Students' Performance on a Set of Open-Ended Science Questions (1997).

20. Henriques, Laura. A Study to Define and Verify a Model of Interactive-Constructive Elementary School Science Teaching (1997).

21. Monhart, Leigh. The Effect of a Teacher Enhancement Project Focusing on Student Ideas, Parent Partnerships, and Children's Literature on Elementary Students' Perceptions about and Attitudes Toward Science (1998).

22. Ollerenshaw, JoAnne. A Study of the Impact of a Supplemental Storytelling (Oral Narrative) Strategy on Fourth Grade Students' Understanding of the Physics of Sound (1998).

23. Annetta, Leonard. A Compartive Study of Three Distance Education Strategies on the Learning and Attitudes of Elementary School Teachers Participating in a Professional Development Project (2003).

Other Professional Service

NSTA Workshop: "Inquiry Investigations." Minneapolis, 1976

University of Iowa Faculty Welfare Committee (1978-1981)

Program Committee, National Association for Research in Science Teaching, 1978-1981

Elementary Education Planning Committee (Chair) (1978-1981)

NSTA Workshop: "What Research Says to the Science Teacher." Washington, DC, 1978, St. Louis, MO, 1978, Anaheim, CA, 1979

College of Education Research Committee (1980-1982)

NSTA Workshop: "Make & Take Energy Materials." Dallas, 1983

Iowa Department of Public Instruction Task Force on Science Education, 1984

Chair: Iowa Science Leadership Conference. Fort Dodge, Iowa: March 7-8, 1985

Chair: Iowa Science Leadership Conference. Iowa City, Iowa: December 2-3, 1985

Reviewer: United States Office of Education, 1985
National Science Foundation, 1977, 1992

Iowa Science and Education Conference (Chair) (1984,1986)

University of Iowa Task Force on Teaching Science and Mathematics (Chair) (1984-1986)

Contributor/Reviewer: National Teachers Examination in Physics, Chemistry, and General Science. Educational Testing Service, Princeton, New Jersey, 1986, 1989, 1992

University of Iowa Museum Review Committee, 1988

Journal Advertising and Corporate Support Committee (Chair). National Association for Research in Science Teaching, 1985-1987

Director of Research: National Science Teachers Association, 1985-1987

University of Iowa Computer Based Education Committee, 1988-91

Reviewer: American Educational Research Association (Committee C, Section 2); 1992

Member, Outstanding Research Publication Committee, National Association for Research in Science Teaching, 1995-1997

Guest on Close-up on Education, March 1995 (University of Iowa and Public Access cable television)

Thesis evaluator for the University of Mysore (India), June 1995

Member, ad hoc committee to nominate faculty members to stand for election to Graduate Council, 1996

Reviewer: American Educational Research Association (Committee C, Section 3): 1996

Editorial Board: Chinese Journal of Science Education. Published by the National Taiwan Normal University and the National Science Council of Taiwan.

Reviewer: National Association for Research in Science Teaching (Teacher Education) for the Annual Meeting held in Boston, March 28-31, 1999.

Reviewer: National Research Council for the Commission on Behavioral and Social Sciences and Education (Special Publication on Assessments in Science).

Advisory Board Member: Mother Goose Asks Why Project for the Vermont Center for the Book.

Literacy Advisory Council Member: School Publishing, National Geographic Society, 2000-2010.

Science Consultant: "Windows on Literacy Series," National Geographic Society, 2000-.

Advisory Board Member: National Assessment, Harcourt Educational Measurement, 2000-.

Proposal Reviewer: Canadian Research Council, 2001.

Senior Editor: The International Journal of Science and Mathematics Education (IJSME), 2002-

Science Consultant: "Forces of Nature," IMAX Film and Teacher's Guide, National Geographic Society, 2004-2005.

College of Education Committee: NCATE Assessment and Evaluation, 2005-2006.

Committee Member: University of Missouri-St. Louis Assessment and Evaluation Committee, 2006.

Science Consultant: The National Geographic Society's "Four Book Theme Sets," a series of supplementary science materials for students in grades four through eight, 2006.

External evaluator: Teacher enhancement and educational technology projects at the North Carolina State University and the University of Alabama at Huntsville, 2006.

Advisory Board Member: Spegnet, 2008- . Focusing on applications of technology in education.

External evaluator: CHEM Bond project. Florida Atlantic University, 2008.

External evaluator: HI-FIVES project. North Carolina State University, 2008.

Post script: Personal Comments RE: DCA Criteria

Continuing contributions: My ~40 year research career in science education represents an evolution of thought and action that divides into two distinct stages. My first 10 or so years after completing my work at Florida State University focused almost entirely on studies of teacher classroom behavior, described in the literature as "interaction analysis." Indeed, almost all 35 refereed journal articles and research grants dealt with systematic studies of classroom behaviors--studies that extended into the fields of counselor education and medical education when colleagues at Iowa saw the power and potential of my interaction analysis work. But two things happened in about 1981 that caused me to change my research focus. Classroom interaction analysis studies abruptly fell out of favor with journal editors and reviewers and I had an opportunity to join a large "meta-analysis" study of the previous 25 years of science education research directed by Ron Anderson and Gene Glass. Because of the waning interest in interaction analysis work and that meta-analysis opportunity, I began to shift my attention to ways to get K-6 teachers to teach more science and my research focus to studying how that teaching impacts student learning. My grants over the past 20 years afforded me the chance to both impact how K-6 teachers teach science and study the effects of the strategies on student learning. I continue that work today!

Leadership through research: I feel that I have exerted leadership through research in two ways: (1) in my terms as editor of JRST and senior editor for IJSME and, (2) in my many collaborations with graduate students and colleagues throughout my career. As editor or JRST between 1980 and 1985 I initiated a special feature called the "research forum." This feature was started in response to the need (request by several researchers at the time) to explore research methods other than the experimental and quasi-experimental that dominated the JRST pages, if not all of education at the time. I am convinced that several of the articles in this forum helped to

promote alternative research paradigms with articles by authors such as Gene Glass, Mary Lee Smith, Rodger Bybee, Jack Easley, Jon Miller,...to name a few.

My work as senior editor with IJSME since 2001 may well have impacted research more than my editorship of JRST because IJSME provides special support for researchers whose first language is not English. David Treagust, Larry Yore, Yeong-Jing Cheng and I designed and launched IJSME in 2001 with the support of the National Science Council of Taiwan. Since its inception, IJSME has grown to be recognized as one of the top international science and mathematics education, expanding recently to 6 issues (1000 pages) per year, an acceptance rate of 15% and an increasing impact factor (0.58 for the science education articles in 2009).

My work as a journal editor for 15 years (and counting) has certainly allowed me to exert leadership in research, but I consider my work with graduate students and junior faculty as important if not more. I have co-authored research publications or delivered presentations with >50 colleagues and >50 graduate students and directed 23 doctoral dissertations (22 in my first 25 years at Iowa and 1 in my 13 years at UMSL). Many of these collaborations resulted in multiple co-authored publications and presentations.

Impact on science education research: I consider the 1983 JRST meta-analysis article with Bill Kyle and Jenny Alport and my efforts in the last 20 years to link professional development to student achievement as my most important contributions to our field. The 1983 JRST article was recognized in 2003 as one of the most influential publications in the 40 year history of JRST. While my work in professional development has not received recognition similar to the meta-analysis work, I have been able to convince the NSF to support my research in this area with $9M+ in the past 18 years.