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EDUCATION

- Ph.D.** Science Education, Syracuse University, Syracuse, NY. May, 1991.
M.S. General Science, Syracuse University, Syracuse, NY. May, 1988.
M.S. Science Education/Biology, Syracuse University, Syracuse, NY. May, 1988.
B.S. Education/Biology, Niagara University, Niagara Falls, NY. May, 1981.

Teacher Certification (NY): Biology, Chemistry, Earth Science, General Science, Physical Education.

PROFESSIONAL EXPERIENCE

Professor and Instructor

- 2001-** Associate Professor, Wayne State University, Detroit, MI.
Science Education, College of Education. Instructor of undergraduate and graduate science education courses and supervision of student teachers. Supervision and direction of master theses and doctoral dissertations.
- 1998-2001** Assistant Professor, University of California, Davis, CA.
Science Education, Division of Education. Instructor of graduate science education, research methodology, learning theory, science methods, and general education courses, and undergraduate educational psychology. Supervision and direction of master theses and doctoral dissertations.
- 1997-1998** Associate Professor, The University of Oklahoma, Norman, OK.
- 1991-1997** Assistant Professor, The University of Oklahoma, Norman, OK.
Science Education, Department of Instructional Leadership and Academic Curriculum. Instructor of graduate and undergraduate science education and research methodology courses, and supervision of student teachers. Supervision and direction of master theses and doctoral dissertations.
Assistant Professor (1996-1997), Associate Professor (1997-1998), The University of Oklahoma Health Sciences Center, Oklahoma City, OK.
Joint Appointment, Allied Health Education, College of Allied Health. Director of the Center for Health Science Education, and liaison for school programs in biomedical and health sciences education.
- 1988-1989** Adjunct Assistant Professor, Onondaga County Community College, Syracuse, NY.
Biology Program, Department of Biology. Instructor of General Biology, Biology Laboratory, and Biotechnology courses.

Secondary Schools Educator

- 1985-1987 Science Teacher, Manlius-Pebble Hill School District, Syracuse, NY.**
Instructor of high school Chemistry and Biology courses (part-time).
- 1983-1984 Science Teacher, Gananda Central School District, Walworth, NY.**
Instructor of middle school Physical Science, Life Science, and high school General Science, Biology.
- 1981-1983 Science Teacher, DeSales High School, Geneva, NY.**
Instructor of high school Biology, Chemistry and Earth Science.

Other Related Experience

- 1984-1991 Graduate Teaching Assistant, Syracuse University, Syracuse, NY.**
Department of Science Teaching. Instructor and assistant of secondary and elementary science methods courses, undergraduate natural science courses, and supervision of student teachers.
- 1987-1989 Teaching Fellow, Syracuse University, Syracuse, NY.**
Graduate College Teaching Assistant Program, Instructor of methods seminars for all academic disciplines.
- 1985-1987 Research Assistant, Syracuse University, Syracuse, NY.**
Department of Science Teaching. Elementary Science Syllabus Implementation Project. Grant project sponsored by the New York State Department of Education.
- 1982-1984 Laboratory Research Assistant, Cornell University, Geneva, NY.**
Agriculture and Experiment Station, Department of Entomology. Bioassays and field experiments with pheromones and volatile insect attractants.

PUBLICATIONS

Books

Marek, E.A., & Cavallo, A.M.L. (1997). The Learning Cycle: Elementary School Science And Beyond, Revised Edition. Portsmouth, NH: Heinemann.

Nationally and Internationally Refereed Articles

Cavallo, A.M.L., McNeely, J., & Marek, E.A. (in press). *Eliciting students' understanding of chemical reactions using two forms of open-ended questions during a learning cycle.* International Journal of Science Education.

Cavallo, A.M.L., Miller, R.B., & Saunders, G. (in press). *Goal orientation and self-concept of ability as factors of preservice teachers' motivation and affect toward learning science.* Journal of Elementary Science Education.

Cavallo, A.M.L., & Laubach, T. (2001). *Students' science perceptions and enrollment decisions in differing learning cycle classrooms.* Journal of Research in Science Teaching, 38, 1029-1062.

Cavallo, A.M.L. (2001). *Convection connections: Integrated learning cycle investigations that explore convection—the science behind wind and waves.* Science and Children, 38, 20-25.

Gerber, B., Cavallo, A.M., & Marek, E.A. (2001). *Relationships among informal learning environments, teaching procedures and scientific reasoning ability.* International Journal of Science Education, 23, 535-549.

Gerber, B., Marek, E.A., & Cavallo, A.M. (2001). *Development of an informal learning assay*. International Journal of Science Education.

Cavallo, A.M.L., Sullivan, C.A., Hall, N. & Bennett, M. (1999). *Promoting participation in the Health Science professions: Summer programs for talented, underrepresented students in science*. School Science and Mathematics, 99, 294-301.

Atha, J.T., & Cavallo, A.M.L. (1999). *Aquatic ecology: A learning cycle investigation using Daphnia magna*. The Science Teacher, 66, 26-29.

Mosenthal, P.B., & Cavallo, A.M.L. (1998). *Profiling changing states of conceptual knowledge: With designs towards developing a universal knowledge interface system for the 21st century*. Peabody Journal of Education, 3 & 4, 145-177.

Cavallo, A.M.L., Gerber, B., Marek, E.A. & Chiodo, J. (1998). *Research on teachers' attitudes and understandings of interrelationships among energy, environment and public policy*. Education, 119, 67-77.

Cavallo, A.M.L. & Laubach, T. (1998). *Defining density: Activities based on the three phases of the learning cycle*. The Science Teacher, 65, 45-48.

Cavallo, A.M.L. (1996). *Meaningful learning, reasoning ability and students' understanding and problem solving of genetics topics*. Journal of Research in Science Teaching, 33, 625-656.

Williams, K., & Cavallo, A.M.L. (1995). *Relationships between reasoning ability, meaningful learning and students' understanding of physics concepts*. Journal of College Science Teaching, 24, 311-314.

Marek, E.A., & Cavallo, A.M.L. (1995). *Passkeys to learning science in the elementary schools: The data and language of science*. Journal of Elementary Science Education, 7, 1-15.

Cavallo, A.M.L. & Schafer, L.E. (1994). *Relationships between students' meaningful learning orientation and their understanding of genetics topics*. Journal of Research in Science Teaching, 31, 393-418.

Cavallo, A.M.L. (1994). *Do females memorize biological topics more than males?* The American Biology Teacher, 56, 348-352.

Cavallo, A.M.L., & Schafer, L.E. (1994). *Helping teachers integrate science across the curriculum using the learning cycle*. In L.E. Schafer (Ed.), Behind the methods class door: Educating elementary and middle school science teachers (pp. 55-62). Columbus, OH: ERIC Clearinghouse for Science, Mathematics and Environmental Education. Association for the Education of Teachers in Science (AETS) Yearbook.

Marek, E.A., Cowan, C.C., & Cavallo, A.M.L. (1994). *Students' misconceptions of diffusion: How can they be eliminated?* The American Biology Teacher, 56, 74-77.

Cavallo, A.M.L., & Tice, C.J. (1993). *A problem solving model for use in science student teacher supervision*. Journal of Science Teacher Education, 4, 18-23.

State Refereed Articles

Marek, E.A., Cavallo, A.M.L., & Laubach, T. (1998). *Theory based science education: Preparing teachers for the 21st century*. Journal of the Oklahoma Association of Teacher Education, 2, 64-72.

Proceedings

Marek, E.A., Gerber, B.L., & Cavallo, A.M.L. (1998). *Literacy through the learning cycle*. In P. Rubba & J. Rye (Ed.), Proceedings of the 1998 Annual International Conference of the Association for the Education of Teachers in Science (pp. 147-158). Minneapolis, MN: Association for the Education of Teachers in Science. (ERIC Document Reproduction Service No. ED421363).

Gerber, B.L., Marek, E.A., & Cavallo, A.M.L. (1997). *The development of an informal learning assay*. In P. Rubba, P. Keig, & J. Rye (Ed.), Proceedings of the 1997 Annual International Conference of the Association for the Education of Teachers in Science (pp. 393-407). Pensacola, FL: Association for the Education of Teachers in Science. (ERIC Document Reproduction Service No. ED405220).

Crawford, K.C., McPherson, R.A., Cavallo, A.L., Duca, S.V., Sacket, G., & McMillan, B. (1993). *The EARTHSTORM Project: Using real-time weather data from the Oklahoma Mesonet*. Proceedings of the Third International Conference on School and Popular Meteorological and Oceanographic Education (pp. 1-6). Boston, MA: American Meteorological Society.

ERIC Documents

Cavallo, A.L. (1993). *Students' meaningful learning orientation and their meaningful understandings of meiosis and genetics*. ERIC Document Reproduction Service (ED 356 140).

Cavallo, A.L. (1993). *The retention of meaningful understanding of meiosis and genetics*. ERIC Document Reproduction Service (ED 356 141).

Reap, M.A., & Cavallo, A.L. (1993). *Students' meaningful understanding of science concepts: Gender differences*. ERIC Document Reproduction Service (ED 356 139).

Technical Reports

Cavallo, A.M.L., Sullivan, C., Hall, N., & Bennett, M. (1997). *Final report of the summer academy in the health sciences professions*. Evaluation report to the Oklahoma State Regents for Higher Education. The University of Oklahoma Printing Services.

Cavallo, A.M.L., Sullivan, C., Hall, N., & Bennett, M. (1996). *Final report of the summer academy in the health sciences professions*. Evaluation report to the Oklahoma State Regents for Higher Education. The University of Oklahoma Printing Services.

Cavallo, A.M.L., Reap, M.A., Saunders, G., & Gerber B. (1995). *EARTHSTORM project evaluation: A report to the National Science Foundation*. NSF Project No. TPE 9155306. The University of Oklahoma Printing Services.

Marek, E.A., Cavallo, A.M.L., Gerber, B., & Chiodo, J. (1995). *Energy, environment and policy choices program evaluation: A report to the U.S. Department of Energy*. The University of Oklahoma Printing Services.

Marek, E.A., Cavallo, A.M.L., Gerber, B., & Chiodo, J. (1994). *Energy, environment and policy choices program evaluation: A report to the U.S. Department of Energy*. The University of Oklahoma Printing Services.

Scholarly Productions

Reap, M.A., Saunders, G., Cavallo, A.M.L., Crawford, K., & McPherson, R. (1994). *EARTHSTORM: A curriculum for teaching middle school science*. The University of Oklahoma Printing Services.

Cavallo, A.M.L., & Shepenson, S. (1994). *Improving science instruction: What students think about laboratory centered science*. Video production, Instructional Services Center and the Science Education Center, The University of Oklahoma.

College and University Faculty Committee (1993). *Student competencies for college success: Science*. Oklahoma State Regents for Higher Education (contributor).

Cavallo, A.L. (1991). *The relationship between students' meaningful learning orientation and their mental models of meiosis and genetics*. Unpublished doctoral dissertation, Syracuse University. (University Microfilms No. AAC92-04496).

Liberatore, A.M. (1988). *Methods of science instruction: A science methods activity book for teaching in the secondary schools*. Science Education Masters Degree project. United States Copyright 1993, No. 572 002, Ann Marie Liberatore Cavallo.

Liberatore, A.M. (1988). *Chemotaxis in Escherichia coli: A prokaryotic sensory system*. General Science Masters Degree comprehensive project.

Manuscripts in Review

Cavallo, A.M.L., Rozman, M., Blickenstaff, J., & Walker, N., *Students' learning approaches, reasoning abilities, motivational goals, and epistemological beliefs in differing college science courses*. Journal of College Science Teaching.

Manuscripts in Progress

Cavallo, A.M.L., Rozman, M., Larabee, T., & Ishikawa, C., *Shifts in male and female students' learning, motivation, beliefs, and scientific understanding in an inquiry-based college physics course*. Journal of Research in Science Teaching.

Cavallo, A.M.L., Surber, C., & Rozman, M., *An examination of shifts in students' mental models of meiosis and genetics topics in three high school samples*. Journal of Research in Science Teaching.

Cavallo, A.M.L., & Layman, G., *Students' meaningful learning orientation and their retention of genetics topics*. Science Education.

Cavallo, A.M.L., Taylor, W., Adams, Kristina C., & Laubach, T., *Investigating differences in genetics understanding among advanced, underrepresented students in science*. International Journal of Science Education.

Cavallo, A.M.L., Miller, R.B., Blackburn, M., *Testing a causal model for meaningful understanding in the learning of genetics topics*. Journal of Research in Science Teaching.

Reap, M., McWhirter, L., & Cavallo, A.M.L., *The effects of three science methods instructional procedures on student teachers' perceptions of science and scientists.* Journal of Science Teacher Education.

GRANTS AND CONTRACTS

- 2001 Transforming Science Teaching Through Technology. *Proposed.*** Collaborative project with the Detroit Public Schools to infuse technology into science teaching for both preservice and inservice teachers. *Co-principal Investigator.* Great Cities Universities Research Program (GCU) (\$22,00 requested).
- 2001 Science and Mathematics Alternative Route to Teaching (SMART): Preparing teacher excellence in the urban schools. *Proposed.*** Collaborative project with the Detroit Public Schools to prepare qualified teachers in science and mathematics to work in the urban school system. *Principal Investigator.* National Science Foundation (\$868,000 requested).
- 2000 UC Davis Community Teaching Fellowships for Mathematics and Science (CTFMS). *Funded.*** Project to increase participation in math and science teacher education toward obtaining teaching credentials in these disciplines. *Project director/PI.* University of California Office of the President (\$96,708.00).
- 1999 CRESS Special Project Grant, *Funded.*** Grant to support a proposal titled, "Evaluation of the Grants Program 1989-199 and Beyond." *Principal Investigator.* University of California, Davis, Center for Cooperative Research and Extension Services for Schools (CRESS) (\$10,000.00).
- 1999 Junior Faculty Research Fellowship, *Funded.*** Competitive summer funding to support faculty engaged in scholarly research and writing projects. *Principal Investigator.* University of California, Davis, Office of Research Administration (\$2,000.00).
- 1999 New Faculty Research Grant, *Funded.*** Competitive faculty research support for proposal titled, "Learning Approaches, Achievement Motivation, and Epistemological Beliefs Among College Students in Beginning and Advanced Science Courses." *Principal Investigator.* University of California, Davis, Office of Research Administration (\$3,000.00)
- 1998 College of Liberal Studies Seminar, *Funded.*** Competitive grant for course proposal titled, "The Nature of Scientific Inquiry: Models in Physical and Biological Science." *Project co-director, co-instructor.* The University of Oklahoma College of Liberal Studies Executive Committee (\$4,329.78).

- 1997 Summer Academy in the Health Sciences Professions, *Funded.*** Grant to support a summer enrichment program for underrepresented, advanced high school students interested in the health care professions. *Principal investigator, project director, program evaluator and instructor of human genetics.* Oklahoma State Regents for Higher Education (\$157,000.00).
- 1996 College of Liberal Studies Seminar, *Funded.*** Competitive grant for course proposal titled, "Science: Its Process and Purpose." *Project co-director, co-instructor.* The University of Oklahoma College of Liberal Studies Executive Committee (\$7,702.22).
- 1996 Computer Infrastructure Investment Program, *Funded.*** Competitive grant to support the development of faculty research programs. *Principal Investigator.* The University of Oklahoma Research Council (\$1,000.00, with \$500.00 matching funds from the Department of Instructional Leadership and Academic Curriculum).
- 1996 Summer Academy in the Health Sciences Professions, *Funded.*** Grant to support a summer enrichment program for underrepresented, advanced high school students interested in the health care professions. *Co-director, program evaluator and instructor of human genetics.* Oklahoma State Regents for Higher Education (\$133,200.00).
- 1995 Summer Academy in the Health Sciences Professions, *Funded.*** Grant to support a summer enrichment program for underrepresented, advanced high school students interested in the health care professions. *Co-director, program evaluator and instructor of human genetics.* Oklahoma State Regents for Higher Education (\$143,000.00).
- 1992- Project EARTHSTORM: Earth-system Education for Science Teachers Using the Oklahoma**
- 1995 Regional Mesonet, *Funded.*** Teacher enhancement program integrating science and technology in middle school science and mathematics instruction. *Co-principal investigator.* National Science Foundation (\$766,094.00).
- 1992- Energy, Environment and Policy Choices: Summer Institutes for Science and Social Studies**
- 1995 Educators, *Funded.*** Teacher enhancement program integrating science, social studies and public policy in classroom teaching. *Evaluation specialist.* U.S. Department of Energy (\$855,000.00).
- 1992 Summer Academy in Science Education, *Funded.*** Summer enrichment program for high school students interested in science and/or teaching careers. *Co-principal investigator.* Oklahoma State Regents for Higher Education (\$13,470.00).
- 1990 Graduate Research Grants, *Funded.*** Two competitive awards to support promising graduate students' doctoral dissertation research. Syracuse University Graduate College (\$1,000.00), and School of Education (\$750.00).

PRESENTATIONS

National

Cavallo, A.M.L., Rozman, M.L., Larabee, T., & Ishikawa, C. (2001, March). *Shifts in male and female students' learning, motivation, beliefs, and scientific understanding in an inquiry-based college physics course*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, St. Louis, MO.

Cavallo, A.M.L., Rozman, M.L., Blickenstaff, J., Walker, N., Turoczi, H.J., & Watters, J. (2000, April). *Students' learning approaches, reasoning abilities, motivational goals, and epistemological beliefs in differing college science courses*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, New Orleans, LA.

Reap, M.A., & Cavallo, A.M.L. (2000, April). *Master and novice secondary science teachers' understandings and use of the learning cycle*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, New Orleans, LA.

Haack, C., Cavallo, A.M.L. & Marek, E.A. (2000, April). *Scaffolded problem solving and student understanding of concepts in an introductory university physics class*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, New Orleans, LA.

Saunders, G.L., Cavallo, A.M.L., & Abraham, M.R. (1999, March). *Relationships among epistemological beliefs, gender, approaches to learning, and implementation of instruction in chemistry laboratory*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA.

Laubach, T.A., & Cavallo, A.M.L. (1999, March). *Students' intentions to enroll in science electives: Comparing science perceptions in differing learning cycle classrooms*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA.

Marek, E.A., Gerber, B.L., & Cavallo, A.M.L. (1998, January). *Literacy through the learning cycle*. Paper presented at the Annual Conference of the Association for the Education of Teachers in Science, Minneapolis, MN.

Cavallo, A.M.L., Taylor, W., Adams, K., & Shaffer, M. (1997, April). *Meaningful understanding of genetics topics among advanced, underrepresented students in a health sciences program*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Oak Brook, IL.

Gerber, B.L., Cavallo, A.M.L., & Marek, E.A. (1997, April). *Reasoning ability, teaching procedure and informal learning among secondary school students*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Oak Brook, IL.

Gerber, B.L., Marek, E.A., & Cavallo, A.M.L. (1997, January). *Development of an informal learning assay*. Paper presented at the Annual Conference of the Association for the Education of Teachers in Science, Cincinnati, OH.

Cavallo, A.M., Miller, R.B., & Blackburn, M. (1996, April). *Testing and building causal models for meaningful understanding in the learning of genetics concepts*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, St. Louis, MO.

Simpson, B., & Cavallo, A.M. (1996, April). *The effects of using the learning cycle to teach physiology to elementary students in large and small school districts*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, St. Louis, MO.

Miller, R.B., Cavallo, A.M., & Blackburn, M. (1996, April). *Meaningful understanding in the learning of genetics concepts: Building a causal model*. Paper presented at the Annual Conference of the American Education Research Association, New York, NY.

Chiodo, J., Marek, E., Cavallo, A., Gerber, B., & Hedges, E. (1995, December). *Social plus science equals an interdisciplinary program*. Paper presented at the Annual Conference of the National Council for the Social Studies, Chicago, IL.

Williams, K.A., & Cavallo, A.M.L. (1995, August). *Reasoning ability, meaningful learning, and students' understanding of physics concepts*. Paper presented at the Annual Conference of the American Association of Physics Teachers, Spokane, WA.

Cavallo, A.M., & Sheperson, S. (1995, April). *Students' mental models of meiosis and genetics topics*, Paper presented at the Annual Conference of the National Association for Research in Science Teaching, San Francisco, CA.

Cavallo, A.M., Gerber, B.L., Marek, E.A., & Chiodo, J. (1995, April). *The influence of an interdisciplinary program on teachers' attitudes and understandings of interrelationships between energy, environment and public policy*, Paper presented at the Annual Conference of the National Association for Research in Science Teaching, San Francisco, CA.

Reap, M.A., Saunders, G., & Cavallo, A.M.L. (1995, April). *Project EARTHSTORM: Integrating real-time weather data into the science classroom*, Paper presented at the Annual Conference of the National Association for Research in Science Teaching, San Francisco, CA.

Chiodo, J., Marek, E.A., Cavallo, A.M., & Gerber, B. (1994, November). *Energy, environment, and policy choices: A project for integrating social studies and science*, Paper presented at the Annual Conference of the National Council for the Social Studies, Phoenix, AZ.

Williams, K.A., & Cavallo, A.M.L. (1994, August). *One more reason to teach so students do not just memorize*. Paper presented at the Annual Conference of the American Association of Physics Teachers, Notre Dame, IN.

Cavallo, A.M.L., Surber, C., & Sheperson, S. (1994, March). *Improving science instruction: What students think about laboratory-centered science*. Paper presented at the Annual Conference of the National Science Teachers Association, Anaheim, CA.

Marek, E.A., Chiodo, J.J., & Cavallo, A.M.L. (1994, March). *Energy, environment and policy choices: Summer institutes for teachers*. Paper presented at the Annual Conference of the National Science Teachers Association, Anaheim, CA.

Marek, E.A., Gerber, B., & Cavallo, A.M.L. (1994, March). *Examination of an interdisciplinary program in energy education*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Anaheim, CA.

Reap, M.A., Cavallo, A.M.L., Saunders, G., & Gerber, B. (1994, March). *The effects of integrating real time weather data into laboratory centered science: Year two of project EARTHSTORM*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Anaheim, CA.

Reap, M.A., Cavallo, A.M.L., & McWhirter, L. (1994, January). *Changing perceptions of scientists among pre-service elementary school teachers*. Paper presented at the Annual Conference of the Association for the Education of Teachers in Science, El Paso, TX.

Cavallo, A.M.L., Miller, R.B., & Surber, C. (1993, April). *Relationships between students' meaningful learning orientation, level of cognitive operation and their understanding of genetics topics*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Atlanta, GA.

Cavallo, A.M.L., & Gerber, B. (1993, April). *The effects of EARTHSTORM: A technology-based NSF sponsored institute for middle school science teachers*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Atlanta, GA.

Reap, M.A., Cavallo, A.M.L., & McWhirter, L. (1993, April). *Perceptions of scientists among pre-service and experienced elementary science teachers*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Atlanta, GA.

Crawford, K.C., McPherson, R.A., Cavallo, A.L., Duca, S.V., Sacket, G., & McMillan, B. (1993, July). *The EARTHSTORM Project: Using real-time weather data from the Oklahoma Mesonet*. Paper presented at the Third International Conference on School and Popular Meteorological and Oceanographic Education, Toronto, Ontario, Canada.

Cavallo, A.L. (1992, April). *Memorizing or making sense: Students' meaningful understanding of biology concepts*. Paper presented at the Annual Conference of the American Education Research Association, San Francisco, CA. (Presented in a symposium entitled, Meaningful Learning in Science: A Discussion of Current Issues).

Mosenthal, P.B., & Cavallo, A.L. (1992, April). *Assessing process and procedural knowledge levels in meaningful learning*. Paper presented at the Annual Conference of the American Education Research Association, San Francisco, CA. (Presented in a symposium entitled, Meaningful Learning in Science: A Discussion of Current Issues).

Cavallo, A.L. (1992, March). *Students' meaningful learning orientation and their meaningful understandings of meiosis and genetics*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA. (Presented in a symposium organized by Dr. Joseph Novak, Cornell University, entitled, The Current Status of Ausubel's Assimilation Theory in Science Education).

Cavallo, A.L. (1992, March). *The retention of meaningful understanding of meiosis and genetics*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA.

Reap, M.A., & Cavallo, A.L. (1992, March). *Students' meaningful understanding of science concepts: Gender differences*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA.

Marek, E.A., McWhirter, L., & Cavallo, A.L. (1992, March). *Long-term effects of NSF sponsored summer institutes*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, Boston, MA.

Boram, R., Marek, E. & Cavallo, A. (1992, March). *The Omnibox: More science equipment than you can use!* Paper presented at the Annual Conference of the National Science Teachers Association, Boston, MA.

Beach, S.A., Kincade, K.M. & Cavallo, A.M.L. (1992, November). *Literacy learning and science instruction: Enhancing science explorations with children's books*. Paper presented at the Annual Meeting of the College Reading Association, St. Louis, MO.

Cavallo, A.L. (1991, April). *Meaningful and rote learners' mental models of meiosis and selected genetics concepts*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, The Abby, WI.

Liberatore, A.M. (1989, March). *The relationship of selected variables with meaningful learning and achievement in a college science course*. Paper presented at the Annual Conference of the National Association for Research in Science Teaching, San Francisco, CA.

Regional and State

Laubach, T.A., & Cavallo, A.M.L. (1999, November). *Student science perceptions and enrollment decisions: Does the learning cycle model really matter?* NARST sponsored paper presented at the Area Convention of the National Science Teachers Association, Tulsa, OK.

Gerber, B.L., Marek, E.A., & Cavallo, A.M.L. (1996, November). *Relationships among classroom teaching methods, student activities and intellectual development*. Paper presented at the Area Convention of the National Science Teachers Association, Toronto, Ont, Canada.

Cavallo, A.M.L., Hall, N., Sullivan, C.A., & Coats, K. (1996, October). *Education and experience in the health care professions: A summer opportunity for high school students*. Paper presented at the Fall Convention of the Oklahoma Science Teachers Association, Oklahoma City, OK.

Haack, C., & Cavallo, A. (1995, December). *Teacher role in learning cycle lessons*. Paper presented at the Area Convention of the National Science Teachers Association, San Antonio, TX.

Saunders, G., Reap, M.A., & Cavallo, A.M. (1995, November). *Using technology in a learning cycle classroom: Results of EARTHSTORM*. Paper presented at the Annual Conference of the Oklahoma Association of Teacher Educators (by invitation), Norman, OK.

Cavallo, A.M.L., & Saunders, G.A. (1995, October). *Integrating science across the curriculum using the learning cycle*. Paper presented at the Fall Convention of the Oklahoma Science Teachers Association, Oklahoma City, OK.

Reap, M.A., Saunders, G., & Cavallo, A.M.L. (1995, October). *Using technology in a learning cycle classroom: Results of EARTHSTORM*. Paper presented at the Southwest Regional Conference of the Association for the Education of Teachers in Science, Tulsa, OK.

Hays, S., Cavallo, A.M., & Beach, S.A. (1995, March). *Reading, writing and authentic learning with inquiry-based science*. Paper presented at the Annual Conference of the Oklahoma Reading Association, Oklahoma City, OK.

Haack, C., & Cavallo, A.M. (1994, November). *Using learning cycles in middle/high school science*. Paper presented at the Area Convention of the National Science Teachers Association, Minneapolis, MN.

Cavallo, A.M., & Surber, C. (1993, October). *How does meaningful learning and reasoning ability help students understand genetics?* NARST sponsored paper presented at the Area Convention of the National Science Teachers Association, Denver, CO.

Cavallo, A.M., & Gerber, B. (1993, October). *Project EARTHSTORM: Using real-time weather data in laboratory-based science*. AETS sponsored paper presented at the Area Convention of the National Science Teachers Association, Denver, CO.

McWhirter, L., Cavallo, A.M.L., & Reap, M. (1993, January). *Methodologies used to enhance changes in perceptions of science and scientists among preservice elementary school teachers*. Paper presented at the Southwest Regional Conference of the Association for the Education of Teachers in Science, Corpus Christi, TX.

Crawford, K., Cavallo, A.M., McPherson, R., Sacket, G., McMillan, B., & Duca, S.V. (1992, October). *Bringing real-time weather data into your classroom*. Paper presented at the Fall Convention of the Oklahoma Science Teachers Association, Sand Springs, OK.

Sacket, G., Cavallo, A.M., Crawford, K., McPherson, R., McMillan, B., & Duca, S.V. (1992, October). *The Oklahoma Mesonet: Technology and the environment*. Demonstration presented at the Fall Convention of the Oklahoma Science Teachers Association, Sand Springs, OK.

Liberatore, A.M., & Schafer, L.E. (1989, May). *Relationships among meaningful and non-meaningful learning and achievement in a college science course for prospective elementary teachers*. Paper presented at the Northeast Regional Conference of the Association for the Education of Teachers in Science, Syracuse, NY.

Liberatore, A.M., & Tice, C.J. (1988, May). *Problem solving is SCIENCE: An alternative approach to pre-service science teacher self-evaluation*. Paper presented at the Northeast Regional Conference of the Association for the Education of Teachers in Science, Purchase, NY.

HONORS

OASCD Publication Award (1995). Statewide award for significant contribution to teacher supervision and curriculum development through research and publication. Oklahoma Association for Supervision and Curriculum Development.

Junior Faculty Research Award (1995). Award for promising research and scholarship among junior faculty. The University of Oklahoma.

College of Education Teaching Award (1995). Award for exemplary and innovative teaching. The University of Oklahoma.

Outstanding Teaching Assistant Award (1990). Award for distinguished scholarship, teaching and service. Syracuse University.

Teaching Fellow Award (1989, 1988, 1987). Three consecutive yearly awards for academic accomplishment and teaching excellence. Syracuse University.

SERVICE

Current Memberships in Professional Organizations

National Association for Research in Science Teaching (**NARST**).

American Education Research Association (**AERA**).

Association for the Education of Teachers in Science (**AETS**).

National Science Teachers Association (**NSTA**).

National Association of Biology Teachers (**NABT**).

School Science and Mathematics (**SSMA**).

National and International Service

Editorial Boards

Editorial Board Member, International Journal of Science Education, 1998-2002.

Editorial Board Member, Journal of Science Teacher Education, 1997-2001.

Editorial Board Member, Journal of Elementary Science Education, 1997-2001.

Guest Reviewer, Educational Researcher, 2000.

Guest Reviewer, Journal of Research in Science Teaching, 1999, 2000.

Editorial Board Member, Journal of Research in Science Teaching, 1994-1998.

Committees

Policy Advisory Committee, (NARST), 2001-2004.

Outstanding Masters Thesis Award Selection Committee, (NARST), 1998-2001.

Election Committee, (NARST), 1997-2000.

Committee on Liaisons with Professional Organizations of Science Educators, (AETS), 1996-1998.

Outstanding Paper Award Selection Committee, (NARST), 1994-1995.

Annual Conference Program Committee, (NARST), 1993-1994.

Election Committee, (AETS), 1993-1995.

Proposal Reviews

Annual Conference of the National Association for Research in Science Teaching (NARST), 2000-2001.

Annual Conference of the American Education Research Association (AERA), 1997-1998.

Annual Conference of the National Association for Research in Science Teaching (NARST), 1996-1997.

Annual Conference of the American Education Research Association (AERA), 1994-1995.

Annual Conference of the National Association for Research in Science Teaching (NARST), 1993-1994.

Annual Conference of the American Education Research Association (AERA), 1992-1993.

Annual Conference of the American Education Research Association (AERA), 1991-1992.

Conference Service

Session Chair, Third International Seminar on Misconceptions and Educational Strategies in Science and Mathematics, 1993.

Session Presider, Annual Conference of the National Association for Research in Science Teaching (NARST), 1990.

Other National and International Service

Proposal Reviewer, Fund for the Improvement of Post-Secondary Education (FIPSE) Grant Program, 2000.

Research and Technology Project, Milken Family Foundation Project jointly administered by the University of Michigan and University of Maryland, 1999.

Outside Examiner, Ph.D. Dissertation titled, *Secondary students' understanding of the gene concept: An analysis of conceptual change from multiple perspectives*, Grady J. Venville (candidate), Curtin University of Technology, Western Australia, 1997.

Educational Testing Services, Science Test Pilot Site for the National Teachers Examination, 1991-1993.

State and Regional Service

Professional Organizations

Executive Planning Committee, State Science and Mathematics Conference, Oklahoma Science Teachers Association (OSTA) and Oklahoma Council for Teaching Mathematics (OCTM), 1997.

State Departments of Education

State Presidential Award Selection Committee, Oklahoma State Education Department, 1993.

State Presidential Award Selection Committee, Oklahoma State Education Department, 1992.

State Science Olympiad Planning and Implementation Committee, New York State Department of Education sponsored event, 1988.

State Science Olympiad Planning and Implementation Committee, New York State Department of Education sponsored event, 1987.

State Regents for Higher Education

Systemwide Faculty Learner Outcomes Review Committee, Science, Oklahoma State Regents for Higher Education, 1992-1993.

Science Coordinating Committee for the Statewide Systemic Initiative, K-12, Oklahoma State Regents for Higher Education, 1992.

Science Coordinating Committee for the Statewide Systemic Initiative, Higher Education, Oklahoma State Regents for Higher Education, 1992.

Other State and Regional Service

Regional Science Fair Judge and Team Representative, Onondaga County, NY, 1987.

Regional Science Fair Judge and Team Representative, Onondaga County, NY, 1986.

Schools and Universities Partnership for Educational Responsibility Committee, Syracuse, NY, 1988-1991.

University Service

Administrative Roles

Interim Director, Davis Honors Challenge, Lower Division Honors Program, University of California, Davis, 2000-2001.

Director, Center for Health Science Education, College of Allied Health, The University of Oklahoma Health Sciences Center, 1996-1998.

Acting Director, Science Education Center, The University of Oklahoma, 1992, 1995.

Campus-wide Committees

Public Service Research Program (PSRP) Advisory Committee, University of California, Davis, 2000-2003.

Central Valley Community Science Project for Gender Equity in Culture, Climate and Curriculum, Advisory Board Member, University of California, Davis, 2000-2002.

Athletics Council, The University of Oklahoma, 1995-1998.

Gender-equity Subcommittee of the Athletics Council, The University of Oklahoma, 1996-1998.

Environmental Studies Committee, The University of Oklahoma, 1995-1998.

University Scholarship Selection Committee, Honors Program, The University of Oklahoma, 1993-1998.

University Recreational Services Advisory Committee, The University of Oklahoma, 1992-1994, 1995-1997.

Outstanding Senior Man and Woman Selection Committee, The University of Oklahoma, 1994-1995.

University Child Care Committee, The University of Oklahoma, 1993-1994.

University Mentor Program, The University of Oklahoma, 1992-1994.

Graduate College Academic Misconduct Panel, The University of Oklahoma, 1992-1994.

College and Department Committees

Search Committee, Agricultural Education/Science Education Faculty Position, University of California, Davis, 2000-2001.

Masters Degree Program Graduate Advisor, University of California, Davis, 1999-present.

Chair, Committee for Merit Review (Jill Wilson), University of California, Davis, 2000.

Chair, Committee for Merit Review (Sharon Dugdale), University of California, Davis, 2000.

Committee for Merit Review (Pam Castori), University of California, Davis, 1999.

Chair, Committee for Merit Review (Richard Pomeroy), University of California, Davis, 1999.

Committee on Teacher Education, University of California, Davis, 1999-present.

CRESS Policy Committee, Division of Education, University of California, Davis, 1998-present.

Teaching Fellowship Selection Committee, Division of Education, University of California, Davis, 1998.

Social Committee, Division of Education, University of California, Davis, 1998-present.

Outstanding Senior Selection Committee, College of Education, The University of Oklahoma, 1995-1996.

College Curriculum Committee, College of Education, The University of Oklahoma, 1992-1996.

Education Professions Division, College of Education, The University of Oklahoma, 1991-1998.

Division of Teacher Education Committee, College of Education, The University of Oklahoma, 1991-1995.

Graduate Studies Committee, Department of Instructional Leadership and Academic Curriculum, The University of Oklahoma, 1996-1998.

Certification Chairs Committee, Department of Instructional Leadership and Academic Curriculum, The University of Oklahoma, 1995-1998.

Ad-hoc Committee for Review of Annual Evaluation, Department of Instructional Leadership and Academic Curriculum, The University of Oklahoma, 1994-1995.

Co-chair, Science Certification Committee, Department of Instructional Leadership and Academic Curriculum, The University of Oklahoma, 1991-1998.

Elementary Education Certification Committee, Department of Instructional Leadership and Academic Curriculum, The University of Oklahoma, 1991-1998.

Special Courses

Davis Honors Challenge on American Education. Inquiry-based seminar course for freshmen and sophomore Honors students, University of California, Davis, 1999-2000.

Inquiry Methods and the Learning Cycle. Instructor of undergraduate Student Outreach Program, University of California, Davis, 1998, 1999, 2000.

The Nature of Scientific Inquiry: Models in Biological and Physical Science. Natural science course for undergraduate distance learners, College of Liberal Studies, The University of Oklahoma, 1998 (Directed).

Science: Its Process and Purpose. Natural science course for undergraduate distance learners, College of Liberal Studies, The University of Oklahoma, 1996-1997.

Pre-college Science. Course for entering college freshmen requiring high school science course credit. The University of Oklahoma, 1991.

Other University Service

Faculty Marshall, Commencement Services, University of California, Davis, 1999, 2000.

Faculty Marshall, Commencement Services, The University of Oklahoma, 1992.

Public and Other Service

School Partnerships

University Liaison, Eisenhower Mathematics and Science Fellowship and Professional Development Project, Moore Public Schools, Moore, OK, 1994-1997.

Inservice Programs

Inquiry Science and the Learning Cycle. Detroit Public Schools, Detroit, MI, 2001.

Inquiry Science for the Young Child. Acorn Learning Center, San Ramon, CA, 2000.

Integrating Laboratory Science: The Learning Cycle. Lawton Public Schools, Lawton, OK, 1996.

Integrating Laboratory-based Science in the Secondary Schools. Moore Public Schools, Moore, OK, 1995-1996.

Focus on Science. Moore Public Schools, Moore, OK, 1994-1995.

Teaching Laboratory-Based Science in the Secondary Schools. Purcell Public Schools, Purcell, OK, 1995.

Continuing Education Courses

Project Wild and Project Wet. Oklahoma College of Continuing Education and Oklahoma Department of Wildlife Conservation, The University of Oklahoma, 1998.

Project Wild and Project Learning Tree. Oklahoma College of Continuing Education and Oklahoma Department of Wildlife Conservation, The University of Oklahoma, 1992-1997.

Summer Program Courses and Sessions

Human Genetics. Summer Academy in the Health Sciences Professions, The University of Oklahoma Health Sciences Center, 1995, 1996, 1997.

Introduction to Practicum: OSHA Standards, Biohazards and Blood-borne Pathogens. Summer Academy in the Health Sciences Professions, The University of Oklahoma Health Sciences Center, 1996, 1997.

Purposes and Interactions Between Science and Social Studies. Energy, Environment and Policy Choices Summer Institutes for Teachers, The University of Oklahoma, 1993, 1994.

Candle Burning. Energy, Environment and Policy Choices Summer Institutes for Teachers, The University of Oklahoma, 1993, 1994.
A Laboratory-Based Teaching Model. EARTHSTORM Summer Institutes for Teachers, The University of Oklahoma, 1992, 1993, 1994.
Laboratory-Based Science Teaching. Summer Academy, The University of Oklahoma, 1993.

Public Broadcasts

Radio Interview: Research on Meaningful Learning of Science Concepts. Stations KOMA, KATT, WWLS, and the ABC radio news network, The University of Oklahoma, 1996.

Teaching Assistant Program Seminars

Handling Problems. Teaching Assistant Program, The University of Oklahoma, 1996.
Peer Teaching. Teaching Assistant Program, The University of Oklahoma, 1995.
Teaching Assistant Workshop. Teaching Assistant Program, Syracuse University, 1991.
Teaching Assistant Workshop. Teaching Assistant Program, Syracuse University, 1987-1988.
Functions of Science Laboratory Instruction. Teaching Assistant Program, Syracuse University, 1989.
The Teaching Fellow as Mentor. National Teaching Assistant Workshop, Syracuse University, 1988.
Planning for Instruction. Teaching Assistant Program Fall Seminar, Syracuse University, 1988.
The First Class. Teaching Assistant Program, Syracuse University, 1987.
Dealing With Problems. Teaching Assistant Program, Syracuse University, 1987.

TEACHING

Graduate Courses Taught

Doctoral Proseminar in Education
Learning Theory in Science Education
Teachers
(developed as a new course)
Research Topics in Science Education
Quantitative Statistics
Elementary School Science Methods
History of Science Education: Curriculum
Development and Change
Teaching Science in the Secondary School
course)
The Elementary School Science Curriculum
Developmental Theory
Biology
Paradigms for Scientific Investigations
Understanding Classroom-based Research
(developed as a new course)
Research and Technology in Health Science
(developed as a new course)
Methods of Science Instruction in the Middle
and Secondary Schools
Supervision of Student Teachers

Undergraduate Courses Taught

Secondary School Science Methods
Biology: Elem. and Middle School

Educational Psychology
American Education, Honors Seminar
Teaching Science in the Secondary School
Science Curriculum Implementation
Teaching Science in the Elementary School
Science in the Elementary School
(developed as an integrated block

Inquiry-based Science Teaching
Investigations in Natural Science:

Methods and Materials of Elementary
School Science
General Biology and Laboratory
Biotechnology
Supervision of Student Teachers

ADVISING

Doctoral Dissertations Completed

Haack, C. (2000). *Relationships among the use of scaffolded problems, meaningful learning orientation, reasoning ability, and understanding in an introductory college physics course*. The University of Oklahoma.

Reap, M.A. (2000). *Novice and master secondary science teachers' understanding and implementation of the learning cycle*. Unpublished doctoral dissertation, The University of Oklahoma.

Saunders, G., (1998). *Relationships among epistemological beliefs, implementation of instruction, and approaches to learning in chemistry laboratory*. Unpublished doctoral dissertation, The University of Oklahoma, Norman, OK.

Gerber, B.L., (1996). *The relationships among informal learning environment, teaching procedure and scientific reasoning ability*. Unpublished doctoral dissertation, The University of Oklahoma, Norman, OK. (Recipient of dissertation poster award from the Graduate College of The University of Oklahoma).

Masters Theses Completed

Laubach, T. (1998). *Tenth grade biology students' intentions to enroll in elective science courses: A comparison of science perceptions in differing learning cycle classrooms*. Unpublished masters thesis, The University of Oklahoma, Norman, OK. (Finalist for the National Association for Research in Science Teaching Outstanding Masters Thesis Award, 1999).

Taylor, W. (1996). *Meaningful understanding of genetics topics among high school students enrolled in an advanced health sciences program*. Unpublished masters thesis, The University of Oklahoma, Norman, OK.

Masters Projects Completed

Watters, J. (2001). *Physical science learning cycles: Atoms, the periodic table, and physical and chemical properties*. Unpublished masters project, University of California, Davis, CA.

Welch, B. (1998). *The genetic puzzle: Meiosis, fertilization and offspring learning cycle investigations*. Unpublished masters project, The University of Oklahoma, Norman, OK.

Atha, J.T. (1997). *Aquatic ecology from the perspective of Daphnia magna: Learning cycle investigations for the classroom*. Unpublished masters project, The University of Oklahoma, Norman, OK.

Brock, N. (1994). *Science and math investigations for model schools: A proposal to the National Science Foundation*. Unpublished masters project, The University of Oklahoma, Norman, OK.

Chavez, L. (1994). *Imbalance in the lower atmosphere: A learning cycle curriculum in atmospheric science*. Unpublished masters project, The University of Oklahoma, Norman, OK.