

## **WILLIAM FREDERICK McCOMAS, Ph.D.**

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### **EDUCATION**

- 1991 PhD in Science Education; **The University of Iowa**, Iowa City, IA. Dissertation: *"The Nature of Exemplary Practice in Secondary School Science Laboratory Instruction: A Case Study Investigation."* Advisor: Dr. John E. Penick
- 1981 M.A. in Biology; **West Chester State University**, West Chester, PA
- 1981 M.A. in Physical Science (Geology/Astronomy); **West Chester State University**, West Chester, PA
- 1977 B.S. in Secondary Education; **Lock Haven State University**, Lock Haven, PA
- 1976 B.S. in Biology; **Lock Haven State University**, Lock Haven, PA
- 1974 Foreign exchange student; **Nottingham College of Education**, Nottingham, England

### **AREAS OF PROFESSIONAL SPECIALIZATION**

My interests focus on the teacher education and curriculum issues associated with science education. Research and publication interests focus on effective laboratory instruction, science literacy issues, informal science learning in museums and field settings, the relationship of the history and philosophy of science and science instruction, models for the assessment of science learning and issues in biology education with particular focus on problems associated with evolution education.

### **PROFESSIONAL EXPERIENCES**

2006-present. **Professor of Science Education. Parks Family Endowed Professor of Science Education.** Department of Curriculum and Instruction, College of Education and Health Professions. University of Arkansas, Fayetteville, AR 72701.

1992-2006. **Associate Professor of Science Education, Founding Director of the Program to Advance Science Education (PASE). Vice Chair and Chair of the Division of Learning and Instruction** (1998-2002), Rossier School of Education, University of Southern California, Los Angeles, CA 90089-0031. I developed a masters program and science education concentrations within the Ph.D. and Ed.D. degrees. These programs were supported by new science education courses including Elementary Science Teaching Methods, Science Education Issues, Philosophy of Science for Science Educators, Advanced Science Teaching Methods, and science content / pedagogy courses in biology, physical science and earth/space science for elementary teachers. Administrative duties included

responsibility for admissions, scholarships, department budget, staffing and faculty teaching schedules as chair and vice chair of the division of Learning and Instruction.

1991-92. **Visiting Assistant Professor. Science Education Center of the University of Iowa. Iowa City, IA 52242.** Member of the off-campus masters program instructional team teaching courses in Human Ecology and the Philosophy of Science.

1990-91. **Teaching Assistant. Science Education Center of the University of Iowa.** Duties involved assisting in instruction in the final science teaching methods class and monitoring students during their internship experiences. In addition, responsibilities included placing, visiting and evaluating the student teachers along with the design of an orientation manual for the interns and their cooperating teachers.

Spring 1990. **Adjunct Biology Instructor. Montgomery Country Community College. Blue Bell, PA 19422.** Duties included the design of and instruction in a non-majors general biology course.

1988-89. **Research Assistant. Science Education Center of the University of Iowa.** Research coordinator for the Science, Technology and Society (S/T/S) project which investigated the effectiveness of the S/T/S teaching philosophy by assessing student achievement in both cognitive and affective domains. Duties included the design of assessment instruments, workshop presentations, research protocol design, data analysis, and the development of monthly articles and technical reports.

1988-89. **Instructor. Science Education Center of the University of Iowa.** Responsibility for the design of the first course (Science Teaching Methods I) in the three-course sequence leading to the B.S. and/or M.A.T. in science education. This course focused on science in the elementary school providing secondary teachers in training with background in child development. Responsibilities included the development of a comprehensive readings manual to complement the practicum and seminar portions of this course. In addition to teaching, I supervised students in the practicum setting in local schools.

1978-88 and 1989-90. **Biology, General Science, and Life Science Instructor. Norristown Area School District, Norristown, PA 19403.** During my tenure with the district, I taught general science and life science at the middle level for two years and college preparatory and remedial biology and physical science at the secondary level for ten years. As a biology instructor I used BSCS Green, Modern Biology, and Prentice-Hall Biology texts in both regular and summer sessions, developed the biology laboratory manual and aided in the development and evaluation of a program of individualized biology instruction. In addition, I was the co-sponsor of international programs with full responsibility for arranging a student exchange program to the Castlevew School in Sunderland, England (Summer, 1984).

1977-78. **Biology, Earth Science and Environmental Education Instructor. Wissahickon Senior High School. Ambler, PA 19002.** Here I taught ninth-grade ISCS Earth Science and several sections of traditional biology along with an elective course in environmental science for advanced students.

### PROFESSIONAL TEACHING CREDENTIALS

Comprehensive Science Instruction Certificate; **Iowa Department of Public Instruction** (1991)  
 Science Program and Personnel Supervision; **Bloomsburg State University (PA)** (1982)  
 Earth and Space Science Instructional Certification; **West Chester State University (PA)** (1979)  
 Biology and General Science Instructional Certification; **Lock Haven State University (PA)** (1977)

## CLINICAL (STUDENT) TEACHING EXPERIENCES

Spring, 1977, Norristown **Area Senior High**, Norristown, PA (general biology and anatomy and physiology) and the **American International School of Vienna, Austria** (physical science [chemistry], general and advanced biology).

## PUBLICATIONS

### *Books and Monographs*

McComas, W. F. (Ed.) (2006). *Investigating Evolutionary Biology in the Laboratory: A Complete Guide to Enhancing Laboratory Instruction*. Dubuque, IA: Kendall/Hunt Publishing Company.

McComas, W. F. (Ed.) (2002). *Investigating Environmental Biology in the Laboratory*. Reston, VA: The National Association of Biology Teachers.

McComas, W. F. (Ed.) (1998). *The Nature of Science in Science Education: Rationales and Strategies*. Dordrecht, The Netherlands: Kluwer (Springer) Academic Publishers.

### *Book Chapters*

McComas, W. F. (2008). The Nature of Science in Popular Books on the Subject: Lessons for Science Education. In Lee, Y. J. & Tan, A. L. (Eds.) (2008) *Science education at the nexus of theory and practice*. Rotterdam: Sense Publishers.

McComas, W. F. (2006). What evolution is and why we should accept it: Definitions, deconstruction, evidence and evolutionary biology. In W. F. McComas, (Ed.) *Investigating Evolutionary Biology in the Laboratory*, p. 18-28. Dubuque, IA: Kendall/Hunt Publishing Company.

McComas, W. F. (2006). Philosophical challenges in evolution education. In W. F. McComas, (Ed.) *Investigating Evolutionary Biology in the Laboratory*, p. 29-40. Dubuque, IA: Kendall/Hunt Publishing Company.

McComas, W. F. (2006). Historical challenges in evolution education. In W. F. McComas, (Ed.) *Investigating Evolutionary Biology in the Laboratory*, p. 41-56. Dubuque, IA: Kendall/Hunt Publishing Company.

McComas, W. F., Abraham-Silver, L., and Ma, L. (2006). Cognitive challenges in evolution education. In W. F. McComas, (Ed.) *Investigating Evolutionary Biology in the Laboratory*, p. 57-81. Dubuque, IA: Kendall/Hunt Publishing Company.

McComas, W. F. (2004, December). Exemplary Practice is Exemplary Research. Forward to *Analysing Exemplary Science Teaching*. Steve Alsop, Larry Bencze and Erminia Pedretti (eds). Oxford University Press.

McComas, W. F. (2002). The nature of the ideal environmental science curriculum in W. F. McComas, (Ed.) *Investigating Environmental Biology in the Laboratory*. Reston, VA: The National Association of Biology Teachers.

McComas, W. F. (2002). Science and its myths. In M. Shermer (Ed.). *The Skeptics Encyclopedia of Pseudoscience* (pp. 430-442). Santa Barbara, CA: ABC CLIO Press

McComas, W. F., Clough, M. P., and Almazroa, H. (1998). A review of the role and character of the nature of science in science education. In W. F. McComas (Ed.). *The Nature of Science in Science Education: Rationales and Strategies*. Kluwer (Springer) Academic Publishers. (Pp. 3-39).

McComas, W. F. and Olson, J. (1998). The nature of science in international science education standards documents. In W. F. McComas (Ed.) *The Nature of Science in Science Education: Rationales and Strategies*. Kluwer (Springer) Academic Publishers. (Pp. 41-52).

McComas, W. F. (1998). The principal elements of the nature of science: Dispelling the myths of science. In W. F. McComas (Ed.) *The Nature of Science in Science Education: Rationales and Strategies*. Kluwer (Springer) Academic Publishers. (Pp. 53-70).

McComas, W. F. (1998). A thematic approach to the nature of science for science teachers. In W. F. McComas (Ed.) *The Nature of Science in Science Education: Rationales and Strategies*. Kluwer (Springer) Academic Publishers. (pp. 211-222).

McComas, W. F. (1996). The affective domain and science, technology and society instruction: A meta-analytic review. In R. E. Yager (Ed.) *Science / Technology / Society as Reform in Science Education*. Albany, NY: SUNY Press. (pp. 70-83).

McComas, W. F. (1993). The nature of science supervision: A review of the literature. Chapter 4 in G. M. Madrazo and L. L. Motz (Eds.) *Sourcebook for Science Supervisors, Fourth Edition*. Washington, DC: National Science Teachers Association.

McComas, W. F. (1993). STS Education and the Affective Domain. In R. E. Yager (Ed.) *What Research Says to the Science Teacher, VII*. The Science, Technology and Society Movement. Washington, DC: National Science Teachers Association.

### ***Refereed Articles***

McComas, W. F. (2008). Back to the Future? Reconsidering the Role of 19<sup>th</sup> Century Nature-Study in 21<sup>st</sup> Century Science Teaching. *The Science Teacher* (February)

McComas, W. F. (2008). Seeking historical examples to illustrate key aspects of the nature of science. *Science & Education*. Scheduled for publication.

McComas, W. F. (2007, October). Biology education under the microscope. Examining the history and current state of biology education. *The Science Teacher*, 74(7), 28-33.

McComas, W. F. (2006, January). Science teaching beyond the classroom: The role of informal learning environment. *The Science Teacher*, 72(10), 26-30.

McComas, W. F. (2005, October). Laboratory instruction in the service of science teaching and learning. *The Science Teacher*, 72(7), 24-29.

McComas, W. F. (2004, November). Keys to Teaching the Nature of Science: Focusing on the Nature of Science in the Science Classroom. *The Science Teacher*, 71(9), 24-27.

McComas, W. F. (2004, November). Look before You Leap: Demonstrating the Limits of Induction. *The Science Teacher*, 71(9), 62-63.

McComas, W. F. (2003). A Textbook Case: Laws and Theories and Biology Instruction. *International Journal of Science and Mathematics Education*, 1(2), 1-15.

McComas, W. F. (2003). The Nature of the Ideal Environmental Science Curriculum: Advocates, Textbooks and Conclusions. *American Biology Teacher*, 65(3), 171-78.

McComas, W. F. (2002). The Ideal Environmental Science Curriculum: History, Rationales, Misconceptions & Standards, *American Biology Teacher*, 64(9), 665-672.

Olson, J. K., Cox-Petersen, A. M. and McComas, W. F. (2001). The inclusion of informal environments in teacher preparation. *Journal of Science Teacher Education*, 12(3), 155-173.

McComas, W. F. and Moore, L.S. (2001) The expectancy effect in the secondary school laboratory: Issues and opportunities. *American Biology Teacher*, 63(4), 246-252.

McComas, W.F., Clough, M.P., Scott, E., Smith, M.U. & Lederman, N.G. (July, 2000) Nature of Science NSTA Position Statement. Adopted by the National Science Teachers Association.

Leonard, W. H., McComas, W. F. and Mason, C. L. (2000). Why it's not a good time for science education in the once golden state of California. *CSTA Journal*, Winter, 4-7.

McComas, W. F. and Cox-Petersen, A. M. (1999). Enhancing undergraduate science instruction through science education partnerships: The G-STEP model. *Journal of College Science Teaching*, 29(2), 120-125.

McComas, W. F., Clough, M. P., and Al-mazroa, H. (1998). The role and character of the nature of science in science education. *Science & Education*, 7(6), 511-532.

Lederman, N. G., McComas, W. F. and Matthews, M. R. (1998). Editorial. *Science & Education*, 7(6), 507-509.

McComas, W. F. and Wang, H. A. (1998). Blended science instruction: The promise and peril of reconnecting the sciences. *School Science and Mathematics*, 98(6), 340-348.

Smith, M. U., Lederman, N. G. Bell, R. L., McComas, W.F. & Clough, M.P. (1997). How great is the disagreement about the nature of science? A response to Alters. *Journal of Research in Science Teaching*, 34(10), 1101-1103.

McComas, W. F. (1997). Reexamining the nature of science: Lessons of misconceptions and misunderstandings from a science educator. *Skeptic*, 5(2), 88-95.

McComas, W. F. (1997). The discovery and nature of evolution by natural selection: Misconceptions and lessons learned from the history of science. *American Biology Teacher*, 59(8), 492-500.

McComas, W.F. (1997). An ecological perspective of the laboratory teaching environment. *Science Education International*, 8(2), 12-16.

McComas, W. F. (Spring, 1997). The nature of the laboratory experience: A guide for describing, classifying and enhancing hands-on activities. *California Science Teachers Association Journal*, 6-9.

McComas, W. F. (October 13, 1996). Op-Ed Article: "Shrinking Student-to-Teacher Ratios Poses Difficult Choices." Los Angeles Times (Valley Edition).

McComas, W. F. (1996). Myths of science: Reexamining what we think we know about the nature of science. *School Science and Mathematics*. 96(1), 10-16.

Storey, R. , McInerney, J. D. ,McComas, W. F. et al. (1995). National Association of Biology Teachers' Position Statement of Teaching Evolution. Adopted by the Executive Committee of the Board of Directors on March 15, 1995, National Association of Biology Teachers' News and Views. June, 1995. Also published in Voices for Evolution. M. Matsumura (ed.) Berkeley, CA: The National Center for Science Education (pp. 140-144).

McComas, W. F. and Colburn, A. I. (1995). Laboratory learning: Addressing a neglected dimension of science teacher education. *Journal of Science Teacher Education*, 6(2), 120-124.

Alters, B. J. and McComas, W. F. (1994). Punctuated equilibrium: The missing link in evolution education. *The American Biology Teacher*, 56(6), 334-340.

McComas, W. F. and Alters, B. J. (1994). Modeling modes of evolution: Comparing phyletic gradualism and punctuated equilibrium. *The American Biology Teacher*, 56(6), 354-360.

McComas, W. F., Blunck, S. M., McArthur, J. M. and Brockmeyer, M. A. (1991). Changing the focus: Fostering the development of Science, Technology and Society Programs in Schools. *Bulletin of Science, Technology and Society*, 12(6), 294-298.

McComas, W. F. (1991). Using laboratory experiences to communicate aspects of evolutionary theory in secondary school biology: An analysis of teacher resources. *The American Biology Teacher*, 53(3).

McComas, W. F. (1990). How long is a long time? Constructing the link between geology and biology. *The American Biology Teacher*, 52(3) 161-7.

McComas, W. F. (1989). The issue of valid and effective student evaluation. *Education in Urban Society*, 22(1) 72-82.

McComas, W. F. & Penick, J. E. (1989). Exemplary biology programs. *The American Biology Teacher*, 51(3), 137-141.

McComas, W. F. (1988). Variation, adaptation and evolution at the zoo. *The American Biology Teacher*, 50 (6), 379-383.

### ***Books, Chapters and Articles Accepted for Publication***

McComas, W. F. *The Nature of Science in Science Education: Rationales and Strategies (Second Edition)*. Dordrecht, the Netherlands: Springer Academic Publishers. Publication anticipated in 2008.

### ***Books, Chapters and Articles Submitted for Publication***

#### ***Projects in Development***

McComas, W. F.. Darwin, Divinity, Religion and Reason: Reflections on the Myths and Misconceptions of Evolution by Natural Selection.

McComas, W. F. *Laboratory Learning*. A book length treatment of the history of, rationales for and exemplary practices related to instruction in the science laboratory.

McComas, W. F. An assessment of student and faculty perceptions of the actual and ideals states of undergraduate laboratory instruction.

McComas, W. F. Enhancing the laboratory experience: A checklist to improve instruction.

### ***Non-Refereed Articles and Conference Proceedings***

McComas, W.F. and Sundt, M. (2005). Pathways to teaching: Attracting and keeping good teachers. *USC Urban Ed: The Magazine of the Rossier School of Education*. Spring/Summer 2005, pg. 26-28.

McComas, W.F. and Colbert, J. A. (2004/5). Learning, teaching and thinking science. *USC Urban Ed: The Magazine of the Rossier School of Education*. Fall/Winter 2004-05, pg. 48-52.

McComas, W.F. (2003). The Nature of Science: What Consensus Exists Within Popular Books on the Subject? The proceedings of the Seventh International History, Philosophy and Science Teaching Conference, Winnipeg, Manitoba, Canada (July, 2003).

McComas, W. F. (Editor and Producer) (2003). *The proceedings of the Sixth International History, Philosophy and Science Teaching Conference*, Denver, Colorado (November, 2001). Published as an interactive CD ROM available from [www.ihpst.org](http://www.ihpst.org).

McComas, W. F. (2001). Experiential science learning and participants' understanding of the nature of science. In D. Psillos, et al editors. *The Proceedings of the Third International Conference of the European Science Education Research Association: Vol. II* (pp. 548-550).

McComas, W. F. (1995). A thematic introduction to the nature of science. In F. Finley, D. Allchin, D. Rhees and S. Fitfield (Eds.), *The Proceedings of the Third International History, Philosophy and Science Teaching Conference: Vol. II*. (pp. 726-737). Minneapolis: University of Minnesota Press.

McComas, W. F. (1993). The effects of an intensive summer laboratory internship on secondary students' understanding of the nature of science as measured by the test on understanding science (TOUS). (ERIC Document Reproduction Service No. ED 377 029).

McComas, W. F. (1990). Measuring attitudes. In McComas, W. F., Meyers, L. H., Yager, R. E. and Blunck, S.M. The Iowa Chautauqua program: What assessment results indicate about S/T/S instruction. In D. W. Cheek and L. J. Waks (Eds.) *Technological Literacy V: Proceedings of the National Technological Literacy Conference* Arlington, Virginia, February 2-4, 1990. (ERIC Document Reproduction Service No. ED 325 429)

McComas, W. F. (1989). Assessing progress in S/T/S education. In McComas, W. F., Blunck, S. B. and Brockmeyer, M. A. and Yager, R. E. Science, technology and society: The Iowa Chautauqua model for inservice teacher training. In D. W. Cheek and L. J. Waks (Eds.) *Technological Literacy IV: Proceedings of the National Technological Literacy Conference*. Arlington, Virginia, February 3-5, 1989. Bloomington, IN: ERIC Clearinghouse for Social Studies/Social Science Education (ERIC Document No. ED 315 326)

McComas, W. F. and Yager, R. E. (Eds.) (1988). *The Iowa assessment package for evaluation in five domains of science education*. Iowa City: University of Iowa, Science Education Center.

Yager, R. E., Blunck, S. M., Binadja, A., McComas, W. F. & Penick, J. E. (1988). *Assessing the impact of S/T/S instruction in 4-9 science in five domains*. Iowa City, IA: The Science Education Center of the University of Iowa. (ERIC Document Reproduction Service No. ED 292 641)

## PRESENTATIONS

### *Keynote, Invited and Plenary Session Speeches*

McComas, W.F. (2007, November). *How Knowledge of the History and Philosophy of Science Can Help Address the Challenges of Evolution Education*. The first Kendall-Hunt Lecture at the annual conference of the National Association of Biology Teachers, Atlanta, GA.

McComas, W.F. (2007, June). *Teaching and Assessing the Nature of Science: Issues and Complexities*. A plenary session with M. Clough, J. Olson, K. deBerg and J. Ryder. The Ninth International History, Philosophy and Science Teaching Group Meeting in Calgary, Alberta Canada.

McComas, W.F. (2007, April). *Reconsidering What We Think We Know about How Science Works. The Scientific Ways of Knowing Conference*. University of Akron, OH. Keynote speech.

McComas, W. F. (2007, April). *The Galapagos Islands: Human Resource, Protection and Biodiversity*. Montana Environmental Education Association (Bozeman, MT). Keynote speech.

McComas, W.F. (2006, November). *Exploring the Nature of Science: A Missing Element in Science Instruction*. International Science Education Conference – Singapore. Keynote speech.

McComas, W. F. (2006, August). *The State of Science Education Research in the United States*. Japan Science Teachers Association. Nara, Japan. Invited speech.

McComas, W. F. (2005, April). Speeches on *Identification of and Services for the Gifted in Science* and *Using Inquiry to Enhance Gifted Science Education* as an invited guest speaker of the Gifted Science Centers of Suncheon and Chonnam Universities, Republic of South Korea.

McComas, W. F. (2005, April). *The Nature of Science: Informing Science Instruction. The Chemical Heritage Society Education Symposium*. Philadelphia, CA. Keynote speech.

McComas, W. F. (2005, February). *Science Instruction and Gifted Learners*. California Association for the Gifted. San Jose, CA. Invited speech.

McComas, W. F. (2004, November). *The Philosophy of Biology: Implications and Challenges for Biology Educators*. National Association of Biology Teachers (Chicago, IL). Invited speech

McComas, W.F. (2004, October). *Public Science Literacy: Considering the Impact of Misconceptions of Science*. American Board of Forensic Document Examiners (Las Vegas, NV). Keynote speech.

McComas, W. F. (2003, October). *The Galapagos Islands: Discovery, Darwin, Natural History and Preservation*. National Association of Biology Teachers. (Portland, OR). Invited speech.

McComas, W. F. (2002, October). *Darwin's Invention: Pangenesis as a Case Study in the Nature of Science*. National Association of Biology Teachers. (Cincinnati, OH). Invited speech.

McComas, W. F. (2002, March). *The Nature of Science Learning for Talented and Gifted Students* California Association for the Gifted (CAG) (Palm Springs, CA). Invited speech.

McComas, W. F. (2001, October). *What Teachers Need to Know about Evolution and its Nature*. Keynote address for the Annual Meeting of the California Science Teachers Association (CSTA) (Palm Springs, CA). Invited speech.

McComas, W. F. (2001, February). *Further Misconceptions about Evolution and its Nature*. Greater Los Angeles Teachers Science Association (GLATSA) (Los Angeles, CA). Keynote speech.

McComas, W. F. (2000, November). *Darwin, Wallace, Finches and the Galapagos Islands: Rethinking Evolution*. Invited speech presented at the Los Angeles Country Museum of Natural History in honor of a photographic exhibition (Los Angeles, CA).

McComas, W. F. (2000, October). *Genetics, Gemmules, Darwin and Divinity: Misconceptions about Natural Selection, its Historical Development and its Impact on Society*. National Association of Biology Teachers (Orlando, FL). Invited speech.

McComas, W. F. (1999, October). *The Natural History of the Galapagos Islands*. National Association of Biology Teachers (Ft. Worth, TX) and the Hawaii Science Teachers Association (Honolulu, HI). Invited speeches.

McComas, W. F. (1998, November). *Beaks, the Beagle and Other Misconceptions about Evolution and its Nature*. National Association of Biology Teachers (NABT). Reno, NV. Invited speech.

McComas, W. F. (1998, March). *School Science and Gifted Learners: What the National Science Education Standards Don't Tell Us*. California Association for the Gifted (CAG). Anaheim, CA Keynote speech.

McComas, W. F. (1997, July). *The Myths of Science*. Keynote address. The Skeptic's Society. Pasadena, CA. Keynote speech.

McComas, W. F. (1996, February). *Natural History, Myths and Evolution in the Galapagos Islands*. Greater Los Angeles Teachers' Science Association. Los Angeles, CA. Keynote speech.

McComas, W. F. (1995, October). *Reinventing the Biology Laboratory Experience*. National Association of Biology Teachers. Phoenix, AZ. Invited speech.

McComas, W. F. (1995, March). *Don't Guess, Know When (and How) to Assess*. California Association for the Gifted (CAG). Oakland, CA. Invited speech.

McComas, W. F. (1994, December). *The New Science of Science Education*. Regional meeting of the National Science Teachers Association. Las Vegas, NV. Invited speech.

McComas, W. F. (1994, November). *Biological Themes in the Galapagos Islands*. National Association of Biology Teachers. St. Louis, MO. Invited speech.

McComas, W. F. (1994, October). *The Biology of the Galapagos Islands and Enhancing Laboratory Instruction*. California Science Teachers Association. Palm Springs, CA. Invited speech.

McComas, W. F. (1994, March). *The New Science of Science Education*. California Association for the Gifted. Palm Springs, CA. Invited speech.

### ***Contributed Presentations***

McComas, W.F. (2007, June). Teaching the nature of science through historical examples. Eighth meeting of the International History, Philosophy and Science Teaching Group. University of Calgary, Canada.

McComas, W.F. and Farland, D. (2007, April). The Enhanced DAST: Technical aspects of a new measure of assessing students' views of scientists. Annual meeting of the National Association for Research in Science Teaching. New Orleans, LA.

Farland, D. and McComas, W.F. (2007, January). Enhancing the DAST (Draw-a-scientist-test): Implications for Teacher Education. Annual meeting of the Association for Science Teacher Education. Clearwater Beach, FL.

Czerniak, C., Shymansky, J, Yore, L, Krajcik, J. and McComas, W. F. (2007, January). Presenting complex science education research results: A panel discussion and hands-on workshop. Annual meeting of the Association for Science Teacher Education. Clearwater Beach, FL.

Farland, D. and McComas, W.F. (2006, October). Deconstructing the DAST (Draw-a-scientist-test): Considering the validity and reliability of E-DAST (enhanced DAST). Annual meeting of the School Science and Mathematics Association. Missoula, MT.

Hakhamimi, R., McComas, W. F. and MacKendrick, D. (2006, April). *Deconstructing Einstein: Using Visitors' Voluntary Comments to Measure Perceptions, Interests and Attitudes of a Science-related Exhibition*. Annual Meeting of the National Association for Research in Science Teaching (NARST). San Francisco, CA.

Kisiel, J. McComas, W. F., Silver, L. and Dierking, L. (April, 2006). *Investigating the Public Understanding of Evolution by Natural Selection: A Colloquium*. Annual Meeting of the National Association for Research in Science Teaching (NARST). San Francisco, CA.  
 McComas, W.F. (2006, January). Gifted Education and Science Teacher Education. Association for Science Teacher Education (ASTE). Portland, OR.

DeGroot, R. and McComas, W. F. (2006, January). *What Science Teacher Educators Should Know about Analogies*. Association for Science Teacher Education (ASTE). Portland, OR.

McComas, W. F. (2005, April). *What Consensus Exists in Popular Books on the Nature of Science?* National Association for Research in Science Teaching. Dallas, TX.

McComas, W. F. (2005, July). *Historical Perspectives in the Teaching of Nature of Science*. Seventh meeting of the International History, Philosophy and Science Teaching Group (IHPST). Leeds, UK.

McComas, W. F. and Zwiap, S. (2005, January). *Examining Preservice Elementary Teachers' Understanding of Students' Science Misconceptions*. Association for the Education of Teachers of Science (AETS). Colorado Spring, CO.

Tse, K. and McComas, W. F. (2005, January). *The Secondary Science Methods Experience: Considering the Options*. Association for the Education of Teachers of Science (AETS). Colorado Spring, CO.

McComas, W. F. , Mihram, D., and Grether, M. (2005, February). *Considering the Professorate: Analysis of a Course Designed for those who will be College Professors*. American Association of Colleges of Teacher Education (AACTE). Washington, DC.

McComas, W. F. and Kaplan, S. N. (2004, February). *Thinking Like Disciplinarians: Shared Strategies in Discipline-Specific Elementary Instructional Methods Courses*. AACTE (Chicago, IL).

McComas, W.F. (2003, July). *The Nature of Science: What Consensus Exists Within Popular Books on the Subject?* Seventh International History, Philosophy and Science Teaching Conference, Winnipeg, Manitoba, Canada.

McComas, W. F. and Steinmetz, J. (2003, March). *Assessing Faculty Perceptions of Secondary School Laboratory Instruction*. National Association for Research in Science Teaching. Philadelphia, PA.

McComas, W. F. and Narguizian, P. (2003, January). *The Ideal Ecology Curriculum as Revealed by a Review of Secondary School Biology Textbooks*. Association for the Education of Teachers in Science (AETS), St. Louis, MO.

McComas, W. F., Combs, D. and Heil, D. (2002, October). *A Hands-on Approach to the Nature of Science*. Association of Science-Technology Centers (ASTC). Charlotte, VA.

McComas, W.F. (2001, November). Panel member discussing *Current Research Trends in the Philosophy of Science and Applications to Science Teaching*. Sixth International History, Philosophy and Science Teaching Organization Meeting. Denver, CO.

McComas, W. F. and Narguizian, P. (2001, November). *A Textbook Case of the Nature of Science: Laws and Theories and Biology Instruction*. Sixth International History, Philosophy and Science Teaching Group Meeting. Denver, CO.

McComas, W. F. (2001, August). *Quantitative and Qualitative Investigations into Experiential Science Learning and Participants' Knowledge of the Nature of Science*. European Science Education Research Association. Thessaloniki, Greece.

McComas, W. F., Cox-Petersen, A. (2001, April). *The Impact of Experiential Science Learning on Participants' Understanding of the Nature of Science*. National Association for Research in Science Teaching. St. Louis, MO.

Cox-Petersen, A., and McComas, W.F. (2001, April). *Experiential Learning at Science Research Sites: Contexts for Teacher Professional Development*. National Association for Research in Science Teaching. St. Louis, MO.

McComas, W. F., Jablon, P., Lederman, N.G., and Yager, R., (2001, January). Member of a panel examining the *Nature of Doctoral Programs in Science Education*. Association for the Education of Teachers of Science. Costa Mesa, CA.

McComas, W. F., (2001, January). *Science Instruction Beyond the Classroom: Rationales and Strategies for Teaching in Informal environments*. Association for the Education of Teachers of Science. Costa Mesa, CA.

McComas, W. F., et al. (2000, April). Member of a symposium examining *Future Research Directions in the Nature of Science in Science Education*. National Association for Research in Science Teaching. New Orleans, LA.

McComas, W. F., Good, R., Gess-Newsom, J., Smith, M.U., Staver, R. Lawson, A., et al. (2000, January). Member of a panel examining *Future Research Directions in the Nature of Science in Science Education*. Association for the Education of Teachers of Science. Akron, OH.

McComas, W. F., Cox-Petersen, A & Ericksen, M. (1999, September). *The Impact of Experiential Science Learning on Participants' Understanding of Science and its Nature: A Preliminary Investigation*. International meeting of the History, Philosophy and Science Teaching group (IHPST). Como, Italy.

McComas, W. F. and Moore, L.S. (1998, April). *The Expectancy Effect in the Secondary School Laboratory*. Annual meeting of the National Association for Research in Science Teaching. San Diego, CA.

McComas, W. F. (1998, February). *The Nature of Laboratory Instruction: Actual vs. Desired Approaches*. Annual Conference of the American Association for the Advancement of Science. Philadelphia, PA.

McComas, W. F. (1998, January). *The Nature of Science in Science Education: A Roundtable Discussion*. Association for the Education of Teachers of Science. Minneapolis, MN.

McComas, W. F. (1997, November). *Integrating Issues to Invigorate Instruction*. Regional Conference of the National Science Teachers Association. Denver, CO.

McComas, W. F. and Olson, J. K. (1997, June). *What is the Nature of Science? An Appraisal of National Standards and Frameworks*. Fourth International History, Philosophy and Science Teaching Conference. Calgary, Alberta, Canada.

Cox, A. M and McComas, W. F. (1997, March). *Teacher-student Interactions in a Children's Discovery Center*. National Association for Research in Science Teaching. Oak Brook, IL.

McComas, W. F. and Wang, H. A. (1997, March). *An Assessment of Student and Instructor's Perceptions of the Actual and Ideal State of Undergraduate Laboratory Instruction*. National Association for Research in Science Teaching. Oak Brook, IL.

McComas, W. F. and Cox, A. M. (1997, January). *G-STEP: Partnerships in Science Education*. Association for the Education of Teachers of Science. Cincinnati, OH.

McComas, W. F. (1996, October). *Bioethics Instructional Strategies in the Science Classroom*. National Association of Biology Teachers Conference. Charleston, SC.

McComas, W. F. (1996, October). *Evolution Misconceptions: The Science Education Lessons*. The California Science Teachers Association. Sacramento, CA.

McComas, W. F. (1996, March). *What is Science?* The National Science Teachers Association. St. Louis, MO.

McComas, W. F. (1996, January). *Advanced Science Teaching Methods: A Roundtable Conversation*. The Association for the Education of Teachers of Science. Seattle, WA.

McComas, W. F. (1995, October). *A Thematic Approach to Instruction in the Nature of Science*. A paper delivered at the 3rd International. History, Philosophy and Science Teaching conference. Minneapolis, MN.

McComas, W. F. (1995, September). *What Every Science Teacher Needs to Know about the Philosophy of Science*. California Science Teachers Association, San Jose, CA.

McComas, W. F. (1995, January). *The Nature of Science in Science Teacher Education Programs*. A symposium at the Association for the Education of Teachers of Science. Charleston, WV.

McComas, W. F. and Alters, B. J. (1994, November). *Hands-on Evolution*. A workshop presented at the National Association of Biology Teachers. St. Louis, MO.

McComas, W. F. (1994, March). *The Nature of Exemplary Practice in Secondary School Science Laboratory Instruction: A Case Study Approach*. National Association for Research in Science Teaching. Anaheim, CA.

McComas, W. F., and Colburn, A. I. (1994, March). *Reinventing the Laboratory Experience*. The National Convention of the National Association of Science Teachers. Anaheim, CA.

McComas, W. F. and Alters, B. J. (1993, November). *Punctuated Equilibria Leaps into Biology Education*. The National Convention of the National Association of Biology Teachers. Boston, MA.

McComas, W. F. (1993, April). *The Effects of an Intensive Laboratory Internship for Secondary Students on Students' Understanding of the Nature of Science: A Quantitative Approach*. National Association for Research in Science Teaching. Atlanta, GA

McComas, W. F. (1992, November). *Using Bioethics Case Studies in the Classroom: A Hands-On Workshop*. National Association of Biology Teachers Conference. Denver, CO.

McComas, W. F. (1992, October). Panelist addressing *The Relationship of Universities, Museums and Schools*. Western Museums Conference. Riverside, CA.

McComas, W. F., Brockmeyer, M.A., Giles, C. and Coleman, T. (1991, December). *From Established Educational Schemes to Science, Technology and Society: The Process of Change*. National Science Teachers Association Area Convention in New Orleans, LA.

McComas, W. F. (1991, November). *The Biology of the Galapagos Islands*. National Association of Biology Teachers. Nashville, TN.

McComas, W. F., Blunck, S. M., Brockmeyer, M. A. and McArthur, J. (1991, February). *Changing the View: A Summary of the Changes Which Must Occur to Foster the Acceptance of S/T/S Programs in Schools*. The Sixth National Technology Literacy Conference. Washington, DC.

McComas, W. F. (1990, November). *The Galapagos Islands: Key to Darwin's Theory of Evolution?* National Association of Biology Teachers. Houston, TX.

McComas, W. F., Meyers, L. H., Yager, R. E. and Blunck, S. M. (1990, February). *Assessment in the Affective Domain: An Indicator of the Effectiveness of the S/T/S Philosophy*. The Fifth National Technological Literacy Conference. Arlington, VA.

McComas, W. F. (1989, October). *Integrating Societal Issues in the Biology and Life Science Curricula*. The National Association of Biology Teachers. San Diego, CA.

McComas, W. F., Brockmeyer, M. A., Yager, R. E. and Blunck, S. M. (1989, February). *The Role of Expanded Student Assessment in Science, Technology and Society (S/T/S) Educational Schemes*. The Fourth National Technological Literacy Conference. Arlington, VA.

McComas, W. F. (1988, November). Workshop on the *Issue of Global Assessment of Students in Multiple Domains of Science Education*. The National Association of Biology Teachers. Chicago, IL.

McComas, W. F. (1987, October). *Developing Experiential Educational Programs*. Montgomery County (PA) Science Teachers Association.

McComas, W. F. (1983, October). *The Anatomy of the Cell Membrane*. The National Association of Biology Teachers. Philadelphia, PA.

### ***Future Presentations***

Farland, D. and McComas, W. F. (2008, April). Using and interpreting the e-DAST (Enhanced Draw-a-scientist-test). Annual Meeting of the National Association for Research in Science Teaching. Baltimore, MD.

## **EDITORIAL RESPONSIBILITIES**

I serve as a reviewer for many science education publications and frequently work directly with authors in the preparation of materials for publication. Through my editorial involvement, a number of new science education scholars have seen their works published. I have been guest editor of several issues of **The Science Teacher**: November 2004; History and Nature of Science, October, 2005; Teaching Science in the Laboratory, January 2006; Learning Science in Informal Settings, October 2007; Biology Education and February 2008; Nature Study. In this role I was responsible for recruiting authors, selecting, reviewing, and editing the articles that comprised each theme issue.

## **SCIENCE EDUCATION DISSERTATION SUPERVISION AS CHAIR**

Cassie Carter, (USC/PhD, Summer 2006)  
Lynette Larson, (USC/EdD, Summer 2006)  
Kim Henige (USC/EdD, Summer 2005)  
Susan Zwiep (USC/PhD, Summer 2005)  
Richard Shope (USC/EdD, Summer 2005)  
Debra Dunn (USC/PhD, Fall 2004)  
Holly Henebry (USC/PhD, Fall 2004)  
Jesse (Shaya) Kass (USC/PhD, Fall 2003)  
Barbara Christie (USC/PhD, Summer 2003)  
James Kiesel (USC/PhD, Summer 2003)

Marcus Eriksen (USC/PhD, Spring 2003)  
Paul Narguizian (USC/EdD, Summer 2002)  
Sergio Osio (USC/PhD, Spring 2002)  
Karen M. Carroll (USC/PhD, Spring 2000)  
Joanne K. Olson\* (USC/PhD, Spring 1999)  
Anne Cox Petersen (USC/PhD, Spring 1998)  
Hsing-Chi Wang (USC/PhD, Spring 1998)  
Hiya Almazroa (USC/PhD, Summer 1997)  
Abdallah Othman (USC/PhD, Spring 1997)  
Anselm Anukam (USC/EdD, Fall 1996)

\*Winner of the USC Rossier School of Education Best Dissertation Award (Division of Learning & Instruction)

## **NON-SCIENCE EDUCATION DISSERTATION SUPERVISION AS CHAIR**

Mike Hoon (USC/EdD, Summer 2006)  
Andrew Heughins (USC/EdD, Summer 2006)  
Heyon Ji Seo (USC/EdD, Summer 2006)  
Edit Tanahian (USC/EdD, Spring 2006)  
Sharri Kornblum (USC/PhD, Summer 2004)

Educational Leadership  
Educational Leadership  
Instructional Technology  
Mathematics Education  
Mathematics Education

## **INTERNATIONAL EXPERIENCES**

In addition to the extensive international travel completed as part of my interests in ecological photography, I have made a research presentation at the European Science Education Research (ESERA) conference in Greece and the International History, Philosophy and Science Teaching (IHPST) group meetings in Como, Italy and Calgary and Winnipeg, Canada. In addition, I have given graduate seminars at King's College, London and the University of Valencia, Spain. I was a consultant to the Pintar Software Company on whose behalf I met with education ministry officials in Kuala Lumpur, Malaysia. Most recently, I was the guest of Korean government and gave invited speeches at several university-based conferences on gifted science education. I also represented ASTE and addressed the Japan Science Teachers Association annual conference in August 2006 and presented a keynote speech for the International Science Education Conference held in Singapore in November 2006.

## **MEDIA APPEARANCES / EXPERT TESTIMONY**

Science and Education Advisor to *Jay Jay the Jet Plane* (2006), a preschool series airing nationwide on PBS; produced by Porch Light Entertainment.

Interview featured in V. Strauss (December 7, 2004). *Fresh Challenges in the Old Debate over Evolution*. The Washington Post. p. A14.

Interview featured in W. Gibbs and D. Fox (October, 1999) *The False Crisis in Science Education*. Scientific American.

Guest on KPCC (Southern California Public Radio) *Talk of the City* (March, 1998), for a call-in discussion of the state of science education.

## **CURRICULUM PROJECT AND INSTRUCTIONAL MATERIAL DEVELOPMENT**

### ***Video / Media Productions***

The Program to Advance Science Education has embarked on the production of a series of video illustrating exemplary practices in science instruction with funding from the Galaxy Institute and technical support from the USC School of Cinema-Television. The first video is titled *Enhancing the Science Field Trip: What Research Says*, (W. F. McComas, executive producer and on-camera host).

### ***Instructional Units***

*Transport Systems in Plants and Animals* (1999); *Human Diseases* (1995); *The Plant Kingdom* (1994); *The Animal Kingdom* (1994); *The Life Cycle of Malaria* (1987); *The Kingdom Protista* (1986); *The Kingdom Fungi* (1982); *The Kingdom Monera* (1982). Hubbard Scientific, Inc.

### ***Published Photographs***

Gallery exhibition of my photographs called *The Galápagos Islands: Evolution's Showcase*. Los Angeles County Museum of Natural History. During its run (August 2000 - February 2002) the exhibition was viewed by over 600,000 visitors.

Many of my photographs have been featured in science education publications and projects including:

Thirty images featured in a major Galápagos Islands educational project (poster, book cover, and web site) produced in cooperation with the Smithsonian Institution and the National Science Teachers Association, (December, 1999).

Covers on **The American Biology Teacher**; *King penguins in Antarctica* (February, 2008), *Asian magpie* (September, 2005), *Giant millipede* (October, 2005) *Zebras at a waterhole* (April, 2004), *Alaskan caribou* (January, 2002), *Cacti* (October, 2000), *Indri lemur* (March, 2000), *Lions* (March 1999), *Baobab tree* (October, 1998), *Madagascar tree frog* (February, 1998), *Elephants* (October, 1997), *Juvenile orangutan* (May, 1997); *Frigate birds* (March, 1997); *Komodo monitor lizards* (April, 1996); *Long-tailed macaques* (January, 1996), *Alaskan moose* (September, 1995); *Blue-footed boobies* (September, 1994); *Jellyfish* (October, 1993); *Galapagos Island heron* (April, 1993); *Galapagos marine iguanas* (February, 1992); *Students conducting a large mammal census in the Colorado Rockies* (March, 1991); *Students in the science laboratory* (October, 1991); and *Students measuring stream acidity* (March, 1990). My work has also been featured on the covers of Volumes I and II of **Favorite Labs from Outstanding Teachers** published by the National Association of Biology Teachers.

Cover photographs on **The Journal of College Science Teaching**: *Alaskan salmon* (October, 1999), *Serengeti Plain* (February, 1999), *Rocky Mountain Vista* (September, 1998), *Waved Albatross* (Dec 1997/Jan 1998), *Jellyfish* (November 1997), *New Mexico Landscape* (September, 1997), *Acid rain site* (Dec 1996/Jan 1997), *Sea turtles* (March, 1996), *Brown pelicans* (February, 1996), *Female scientist* (November, 1995), *Monarch butterfly* (December, 1994) and *Environmental study students in Costa Rica* (April 1993).

A variety of images (Galapagos Islands, Students working in Labs) were used to illustrate the November 2004 special issue of **The Science Teacher** featuring the History and Nature of Science.

### AWARDS AND HONORS

- 2007; **Evolution Education Award** from the National Association of Biology Teachers, Biological Sciences Curriculum Study (BSCS) and American Institute of Biological Sciences (AIBS).
- 2004; **Associates Award for Excellence in Teaching**, the highest such honor given by the University of Southern California.
- 2001; **Gustav Ohaus Award for Innovations in College Science Teaching** awarded by the National Science Teachers Association (NSTA) for the design and implementation of *Science Instruction Beyond the Classroom: Rationales and Strategies* a semester-long course designed to enhance the science teaching by connecting to non-formal environments such as zoos and museums.
- 2001; **Socrates Award** from the Education Graduate Organization (EGO) of the USC Rossier School of Education. Awarded by students to a professor who has provided significant support through teaching and mentoring.
- 2002; Named a Fellow (three year term) in the **USC Center for Excellence in Teaching**, a competitive honor awarded to 4-6 professors a year. We provide workshops and seminars designed to enhance teaching skills and raise the awareness of the importance of teaching among professors and graduate students.

- 1998; ***Distinguished Achievement Award*** from the Educational Press Association (EdPress) for the article “Discovery & Nature of Evolution by Natural Selection: Misconceptions & Lessons from the History of Science.” *The American Biology Teacher*, 59(8), 492-500 (October 1997).
- 1998; ***Outstanding Science Teacher Educator*** awarded by the Association for Science Teacher Education (ASTE) formally the Association for the Education of Teachers in Science (AETS).
- 1995; Included in ***Who's Who in American Education***.
- 1989; Named ***Outstanding Graduate Teaching Assistant*** awarded by the University of Iowa Council on Teaching Excellence.
- 1987; Named ***Outstanding Science Teacher*** awarded by the Montgomery County (PA) Science Teachers Association.
- 1986; National award winner in the search for new laboratory activities sponsored by Prentice-Hall / Allyn and Bacon of Englewood Cliffs, NJ.
- 1986; National Aeronautics and Space Administration ***Honors Teacher*** award recipient and participant in the *Teacher in Space* project.

### PROFESSIONAL MEMBERSHIPS

- Association Science Teacher Education (ASTE) (1992- )
  - Board Member as Director-at-Large (2005-8) and Chair of the Publications Committee
- American Education Research Association (AERA) (1999- )
- Arkansas Science Teachers Association (ASTA)(2006- )
- California Science Teachers Association (CSTA) (1993- ) Life Member
- Greater Los Angeles Science Teachers Association (1993- ) Board Member (1993-99)
- International History, Philosophy and Science Teaching Group (IHPST) (1995- )
  - President (2005-7) and Conference Chair (Denver, 2001)
- National Association of Biology Teachers (NABT) (1980- ) Life Member
  - Member, Finance Committee (2007- )
  - Chair, Journal Advisory Committee (1994-97)
  - Member, Publications Committee (1994-97)
  - Member, International Activities Committee (2003-7)
- National Association for Research in Science Teaching (NARST) (1990- )
  - Member, Publications Committee (2005- )
- National Center for Science Education (NCSE) (1992-present)
- National Science Education Leadership Association (NSELA) (1994-2002)
- National Science Teachers Association (NSTA) (1985-present)
  - Member, Finance Committee (2004-2007)
  - Board Member, Representing District XVI (CA, NV & HI) (1998-2000)
- Phi Delta Kappa (PDK) (1988- )
- Skeptics Society; Editorial Board Member (1994- )

### GRANTS AND FELLOWSHIPS / FUNDED

Grant from the USC Fund for Innovative Undergraduate Teaching (\$9K, 2003-4) to support the *Misconception Synthesis Project* an interactive data base of natural science misconceptions to assist preservice teachers in making more effective instructional decisions in the design of lessons. (PI)

Grant from the Reader's Digest Dewitt-Wallace Foundation (\$70K, 1999-02). *Pathways to Teaching Project* to support returned Peace Corps volunteers. (PI)

Grant from *USC Neighborhood Outreach program* (\$26K, 1999-2000) to develop the Fellowships in Informal Science Education program, a graduate course in the theory and practice related to the use of free choice learning environments in science instruction. (PI)

Grant from *USC Neighborhood Outreach program* (\$24K, 1997-00) to support the Intersession Science Enrichment Project in the Family of Five Schools in South Central Los Angeles. (Co-PI)

Grant from *Earthwatch and the Bing Foundation* (\$3K, 1997) to study the effects of science-rich, field-based programs on participant's knowledge of and interest in the nature of scientific discovery. (PI)

*Galaxy Institute for Education* (\$500K) to form the USC Elementary Science Institute (USC-ESI) chartered to enhance science teaching in the elementary grades through staff development. The first major project was a daylong symposium to discuss the future of elementary science instruction. Further work included the development of an exemplary practice instructional videotape (designed as part of a series) on effective fieldtrip strategies in partnership with the USC School of Cinema TV. (PI)

*USC School of Dentistry and the California Science Project* (\$15K, 1996-97) to continue G-STEP as described below. (PI)

*NSF-PRAXIS Funds* (\$70K, 1995-96) to enhance science teaching and learning with initiatives including the development of material resources to support elementary science teaching methods with State-adopted science curriculum projects, G-STEP (Graduate Science Teaching Enhancement Project); a workshop and teaching experience for university-based graduate teaching assistants and Trojan Science Institute; a day-long update series for recent elementary teaching graduates from the USC School of Education. (PI)

*Iowa Eisenhower Funds* (\$28K, 1992). *Laboratory Learning: An Inservice Institute*, a professional development workshop for science teachers. (Co-PI)

Fellowship (\$3K, Summer 1986) from the *Leonhardt Foundation of New York City* to work as a team member at the Earthwatch-sponsored Mayan archaeological site of Copan in Western Honduras while investigating the nature of field-based science education programs.

Fellowship from *NASA and NSTA* (Summer 1985) to study at the Goddard Spaceflight Center in Greenbelt, Maryland as part of the NASA Educational Workshop for Math and Science Teachers (NEWMAST).

Fellowship (Summer 1981) from the *National Science Foundation* to study Human Genetics and Bioethics at Ball State University in Muncie, Indiana.

## **GRANTS AND FELLOWSHIPS / PENDING AND UNFUNDED**

### ***Submitted and Under Consideration***

### ***Recent Unfunded Grant Applications***

The *SCI-MAP Project* (full proposal was submitted in March 2007) to the National Science Foundation to produce a web-based searchable archive of all studies of students' science misconceptions and the development of an on line teaching course to instruction teachers both in how

to use the *SCI-MAP* database to engage in conceptual change teaching. Partners include a national advisory board, local school advisors and technical assistance from University of Arkansas *NORMES*.

NSF GK-12 Grant (Submitted Spring 2005). Designed to provide pedagogical training, experience and access to USC science graduate students who will assist in the teaching of science in neighborhood schools. (Co-PI with colleagues in the USC College of Letters, Arts and Sciences)

National Science Foundation Math Science Partnership (MSP) grant. (Submitted Fall 2003). (\$7.3 million) Project INFUSED (Inservice Foundation of Unified Science Education Delivery) is designed to strategically enhance science teaching and student achievement in four urban school districts (260 teachers) in Los Angeles. This project was designed to unite a number of free-standing science instructional delivery entities (JPL, CA Science Center, LA Natural History Museum, Southern CA Earthquake Center, MESA Engineering Education Center, and others) and provide long term (5 year) staff and curriculum development services based on an in-depth needs assessment. (PI)

### **PARTICIPATION IN RELEVANT SHORT COURSES**

2005; Grantmanship 101: Three day seminar conducted by the Grants Institute  
 2005; Sexual Harassment for Academic Supervisors: One day workshop conducted by the University of Southern California (USC)  
 2004; Grants Management: One day workshop conducted by USC

### **PROFESSIONAL SERVICE**

#### **State of California and the University of Southern California**

#### ***University of Southern California***

Member, Arts and Humanities Panel of the Undergraduate Curriculum Committee (2002-2005)  
 Fellow, *Center for Excellence in Teaching* (CET) (2001-2005)  
 Member, Social Science Panel of the Undergraduate Curriculum Committee (1999-2001)  
 Member, University-wide Committee for Graduation and Retention (1995-6)  
 Member of the USC Educational Awards and Honors committee (2004- )

#### ***University of Southern California - Rossier School of Education***

Chair, Division of Learning and Instruction (2001-02)  
 Vice Chair, Division of Learning and Instruction (1998-2001)  
     Chair, Admissions Committee for the Division of Learning and Instruction (1998-2002)  
     Chair, Scholarship Committee for the Division of Learning and Instruction (1996-2000)  
 Member, EdD Advisory Committee (2002-04)  
     Chair, EdD Admissions and Reconsideration Committee (2003- )  
 Member, Curriculum Committee (2004 - ) Chair (2004 - )  
 Member, MS Advisory Committee (2003- ) Chair (1997-98)  
 Member, Teacher Education Advisory Committee (2003- )  
 Advisor, Alpha Delta Theta Honorary Society now KDP Education Honorary (2000- )  
 Member, School of Education Institutional Review (IRB) Committee (1993-4)  
 Member, School of Education Undergraduate Degree Advisory Committee (1992-2002)  
 Rossier School of Education Graduation Faculty Marshall (1993-03 and 2005)

### ***Los Angeles Community***

Member, Education Advisory Committee of the *Kidspace Museum* (2005-6)  
 Member, Education Advisory Committee of the *Los Angeles Museum of Natural History* (1999-03)  
 Member, Education Advisory Committee of the *Huntington Art Museum, Library and Botanical Gardens*, San Marino, CA (2001-present)  
 Member, Life Science Hall Advisory Committee, *California Science Center* (1996-98)  
 Member, Education Advisory Committee of the *Los Angeles Zoo*. (1995-97)  
 Judge for the science fair competition at Bravo Medical Magnet HS (1995, 1997, 1999, 2001, 2003)  
 Member, Curriculum Advisory Committee / Science Center School (1992-2000)

### **State of Arkansas and the University of Arkansas**

Member, *College of Education and Health Professions* 15 for the Future Visioning Committee (2007- )  
 Member, *College of Education and Health Professions* Reorganization Committee (2006-7)  
 Address to the Department of Biology (October, 2006): *What is the Philosophy of Biology?*  
 Speech for the Department of Physics (January 2007): *What Every Science Professor Should Know about the Philosophy of Science*  
 Chair, CIED Search Committee: Assistant Professor of Science Education (2006-8)  
 Member, Arkansas Mathematics, Science, and Technology (STEM) Coalition (2007- )

### **Science Education - Local and National**

Chair of the **Sixth International History, Philosophy and Science Teaching Organization Conference**. Denver, CO. Attended by over 200 scholars from over 25 countries (2001, November).  
 Member, NSF Review Panel for Mathematics Science Partnership (MSP) Grants (2003)  
 Member, Editorial Board of Science and Education (2003- )  
 Member, Editorial Board of the International Journal of Science and Mathematics Education (2003- )  
 Member of the Board of Directors, Greater Los Angeles Teacher's Science Association (1992-2000)  
 Facilities coordinator for the GLATSA Annual Conference (1995-2001)  
 Member, Board of Directors (District XVI), National Science Teachers Association (1998-2000)  
 Member, Publications committees of the National Association of Biology Teachers (1994-96)  
 Chair, Journal Advisory Committee (1994-96)  
 Member, International Committee, National Association of Biology Teachers (2003- present)  
 Member, AIDS Curriculum advisory committee / National Science Teachers Association and Abbott Laboratories (1996-97)  
 Member, Board of Advisors of SKEPTIC magazine and the SKEPTIC'S society (1994- )

### **Science Education – Consulting and Contractual**

2003; External reviewer for *Exploring Life*, a new biology curriculum from Prentice Hall Publishers through an NSF subcontract to Lehigh University, PA.

2000-2; Science education consultant to **American Pintar**, a Malaysia-based, laboratory software simulation company. I participated in a series of meetings in Kuala Lumpur with company officials and representatives of the Malaysian Ministry of Education (October, 2000).

1999; Conducted a week-long critique of the science department at the **American School in Japan** (Tokyo) including several faculty development workshop presentations.

1996-7; Advisory board member; **Abbott Labs and National Science Teachers Association** project to develop a high school AIDS curriculum. This resulted in the award-winning *Biology of AIDS* education module.

1994; Contract from the **National Science Teachers Association** and the **United States Geologic Survey** to evaluate a series of science-related posters distributed to teachers nationally.

1993; Consultant to the **Hughes Institute for Education**, participated in the development of videotape-based instructional modules to accompany a new satellite-delivered interactive hands-on elementary science curriculum project.

1986-92; Expedition photographer for **The School for Field Studies** of Beverly MA. I have traveled to Central America to record field research in Belize (Maya site excavation), Costa Rica (tropical rain forest biology, cloud forest ecology, primate interactions and sea turtle ecology) and Panama (primate behavioral biology). Work in North America has included sites in the Adirondacks (acid rain), North Atlantic (whale behavior), and Colorado (large mammal census).

### **BACKGROUND AND INTERESTS**

I was born and raised in suburban Philadelphia, but have traveled extensively throughout North America and to over seventy countries in Europe, the Middle and Near East, Africa, Central and South America the Caribbean and SE Asia. For more than a decade I have arranged and hosted eco-travel opportunities with a science and/or natural history theme. I was the host/instructor on several expeditions to the Galápagos Islands and mainland Ecuador (1995, 2001, 2003), Indonesia (1996), East Africa: Tanzania and Kenya (1998, 2002), and Malaysian Borneo and Singapore (1999), Iceland, Greenland and the Faeroe Islands (2003) in cooperation with the Los Angeles County Museum of Natural History. In 2004 I hosted a trip to Bolivia and Peru. Upcoming trips will include a safari to Uganda and Rwanda with a focus on primates including the highly endangered mountain gorillas.

I have earned a private pilot's license to add to other interests including music composition, piano and guitar performance along with book collecting – specifically travel narratives and classic works in the history and philosophy of science. I am also a professional photographer and have contributed numerous photographs to magazines and professional journals and developed several photo-based instructional units along with a major one-person exhibition of photographs titled *Galapagos: Evolution's Showcase* at the Natural History Museum of Los Angeles County. I am married to Kim Krusen McComas, who is pursuing a PhD in mathematics education after many years in the classroom at the middle and high school levels. We live in Fayetteville, AR with our children Will and Emily who, for some reason, show keen interests in math, science and travel.