

Renée S. Schwartz

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EDUCATION

- 2004 **Ph.D., Science Education**
Oregon State University, Corvallis, OR
Dissertation: Epistemological Views in Authentic Science Practice: A Cross-discipline Comparison of Scientists' Views of Nature of Science and Scientific Inquiry
- 1994 **M. S. Molecular Biology**
Wake Forest University, Winston-Salem, NC
Thesis: Codon and Context Usage Can Control Frameshifting at Phenylalanine Codons.
- 1988 **B. S. Genetic Biology;**
Purdue University, West Lafayette, IN
Honors and Distinction

PROFESSIONAL WORK EXPERIENCE

- **Assistant Professor, Western Michigan University** (2003-present)
Department of Biological Sciences
The Mallinson Institute for Science Education
- **Managing Editor**, *School Science and Mathematics Journal*. (1999-2003)
- **Assistant Director/Graduate Assistant**, Academy for Excellence in Science and Mathematics Education (1998-2001) Oregon State University, Corvallis.
- **Consultant. AGI EarthCom middle school science curriculum.** (1998-1999)
Revision of *EarthCom* chapters for the inclusion of explicit instruction about nature of science and scientific inquiry.
- **Materials Developer. Dept of Science and Mathematics Education**, (1997-1998)
Oregon State University, Corvallis, OR.

TEACHING EXPERIENCE

Post-Secondary Science and Science Education:

- **Assistant Professor, Western Michigan University**, Kalamazoo, MI. (2003-present)
 - BIOS 2700: Life Science for Elementary Educators, II
 - BIOS 170: Life Science for Elementary Educators, I
 - SCI 617: Research Traditions: Research perspectives and practices for Nature of Science
 - SCI 6180: Teaching and Learning in the College Science Classroom
 - SCI 560: Hands-on/Minds-on: Exploring Inquiry and the Nature of Science
- **Instructor, Oregon State University**, Corvallis, OR. Department of Science and Mathematics Education. (2000-2002)
 - Advanced Strategies for Teaching Science (K-12)
 - Science Teaching Methods (K-12)
 - Science Materials and Laboratory (Nature of Science and Scientific Inquiry) (middle/secondary)
- **Graduate Teaching Assistant, Oregon State University**, Corvallis, OR. (1997-1998)
 - General Biology laboratory and recitation
- **Instructor, IVY Tech. State College**, Lafayette, IN. (1995-1996)
 - Microbiology laboratory course
 - Anatomy & Physiology laboratory course
- **Graduate Teaching Assistant, Wake Forest University**, Winston-Salem, NC. (1991-1994)
 - General Biology
 - Cell & Molecular Biology
- **Visiting Instructor, Purdue University**, West Lafayette, IN. Biology Department. (1988-1989)
 - Coordinator and Head Instructor for Cell Biology and Genetic Biology
- **Undergraduate Teaching Assistant, Purdue University**, West Lafayette, IN. Biology Department. (1987-1988)
 - Cell Biology and Genetic Biology

Inservice Teacher Education/ Professional Development:

- **Nature of Science Research group:** Western Michigan University, Mallinson Institute for Science Education (2005-present)
 - Mentor graduate students in the teaching and learning of nature of science
- **Co-PI Way2Go project (NSF IERI grant)**, Western Michigan University (2005-present)
 - Prepare middle school teachers for teaching a summer course to 8th grade students. Professional development targets elements of the Karplus learning cycle, scientific inquiry, specific lesson development and pedagogy.
- **Curriculum Consultant, Vicksburg Middle School**, Vicksburg, MI. (2005-present)
 - Participate in professional development days; consult with grade 7 science curriculum; provide in-class support for middle school teachers
- **Assistant Director/ Graduate Assistant, Academy for Excellence in Science and Mathematics Education**, Oregon State University, Corvallis, OR. (1998-2001)
 - The Academy designed and conducted large and small-scale professional development programs for K-12 science teachers across the state of Oregon.

K-12 Science Teaching:

- **Guest instructor. Philomath High School.** Philomath, OR. (Fall, 2001)
- **Instructor. Taiwan Academic Cultural Exchange Program.** Oregon State University. (August, 2000)
- **Instructor. Saturday Academy for middle school students.** (Fall, 2000)
- **Middle School Science Teacher. Sweet Home School District.** Sweet Home, OR. (Summer, 2000)
- **Volunteer teacher's aide. Adams Elementary School.** Corvallis, OR. (1997-2002)

SCIENTIFIC RESEARCH AND LABORATORY EXPERIENCE

- **Research Assistant. Wake Forest University,** Winston-Salem, NC. (1991-1994)
Investigated the relationship between translational frameshifting and nucleotide sequence bias in *E. coli*.
- **Microbiologist. Manor Hill Foods,** Baltimore, MD. (1990)
Designed and established facilities and procedures for in-house microbial testing of food products.
- **Quality Assurance Manager and Technician. Ruiz Food Products,** Tulare, CA. (1989-1990)
Supervised QA technicians; aided development of specifications for new product lines; maintained communication and testing among factory departments to assure compliance with product, packaging, and sanitation specifications; required use of Spanish language skills.
- **Undergraduate Honors Research. Purdue University,** West Lafayette, IN. (1986-1988)

EVALUATION EXPERIENCE

- **Project Evaluator, Illinois Mathematics & Science Academy Mathematics Science Partnership,** Illinois Department of Education, US Department of Education, (2005-2007). Warren Township District 121 IMSP.
- **Evaluation consultant,** NSF Teacher Enhancement grant, Dr. Beth Klein (PI), SUNY-Cortland. (2003). Evaluation of the effectiveness of the program on teachers' nature of science views.
- **Project Evaluator, US-ED Learning a Second Culture (FIPSE).** (2001-2002)
Program incorporates environmental science and a term abroad experience (Tech de Monterey, Guaymas, Mexico) for the development of global awareness and cultural sensitivity of undergraduate science majors. Evaluated assessment of year three cohorts; Involved site visit to Campus Guaymas, and analysis of all data collected over the three years of the project.
- **Evaluation work associated with the Academy for Excellence in Science & Mathematics Education:**
 - *GK-12 Project* (NSF evaluation). Designed project evaluation protocol and instruments; helped conduct year one evaluation.

- *Steppingstones of Technology Innovations for Students with Disabilities* (NSF evaluation). Technology intended to provide visually impaired students access to Cartesian graphs through tactile senses.
- *Web-based Force Feedback* (NSF evaluation). Technology incorporated a force feedback mouse in learning physics and mathematics concepts.
- **Program Evaluator. North Bend School District.** (1998-1999)
North Bend, OR. Evaluation of the district's elementary science program involving two science specialists.

FUNDED PROJECTS

As Principal Investigator:

Exploring Inquiry and Nature of Science Instruction in an Earth/Space Science Context. Michigan Space Grant Consortium (2004-2007). Award amount: \$ 4,589.00 (funded)

A Context-Based Exploration of Teachers' Views and Practices of Nature of Science and Inquiry. Faculty Research and Creative Activities Support Fund (2004-2006). Award amount: \$9,994.00 (funded)

As Co-Principal Investigator:

An experimental efficacy study of science achievement and attitude development amongst 8th grade students using an inquiry, integrated science-mathematics-engineering model of instruction. National Science Foundation, Educational Research Initiative. [# 0437655] PI: Dr. William Cobern. (1/15/05 – 6/30/10). Award amount: \$ 1,910,613.00 (funded)

Assessing Pedagogical content knowledge for inquiry science teaching. National Science Foundation, CCLI. [#0512596] PI: Dr. David Schuster. (April 1, 2006 – March 31, 2009). Award amount: \$400,064.00 (funded)
Supplement support received September, 2007 in the amount of \$39,960.00.

Creating a microbiology unit for pre-service elementary education students. The Waksman Foundation. PI: Dr. William Cobern. Co-PIs: Brandy Skjold, Renee' Schwartz, Sylvia Rossbach. (May, 2006-May, 2007). Award amount: \$5,000.00 (funded)

Unfunded Proposals:

An exploratory study of learning and teaching about nature of science and scientific inquiry through teacher-scientist connections. National Science Foundation, Discovery Research K-12. [P# 0822247] PI: Dr. Renee' Schwartz. Submitted 1/28/08. Requested amount: \$445,835.00 (declined)

Filling the scientific pipeline, plugging the leaks, opening the tap: Implementing and testing a model life science program at the middle grades. National Institutes of Health, NAID. PI: Dr. William Cobern. Submitted 1/08. Requested amount: \$ 976,089.00 (declined)

The Western Michigan Univeristy Science Education Research Center. Earmark proposal jointly submitted from the Department of Chemistry and the Mallinson Institute for Science Education [Co-PIs: Dr. Susan Stapleton, Dr. William Cobern, Dr. Renee' Schwartz] Submitted December 3, 2007. Requested amount: \$1,500,000.00 (declined)

An experimental efficacy comparison of inquiry and direct instruction for fifth grade science (with respect to student acquisition & retention of science conceptual knowledge and positive science attitudes. US Department of Education, Mathematics and Science Education Research. PI: Dr. Renee' Schwartz. Submitted October, 2004. Requested amount: \$2,590,163.00 (declined)

IGERT: The integrated education of the next generation of community college teachers of science. National Science Foundation, DGE [P#: 0436739]. PI: Dr. Susan Stapleton, Submitted, 4/29/04, Requested amount: \$1,452,790.00 (not invited)

BOOK CHAPTERS

Schwartz, R. S. (invited contribution). The Mystery Bag (an Earth Model activity). In Lederman, N. & Lederman, J. (Eds) *Nature of Science Activities*. NSTA Press.

Westerlund, J., McComas, W., & Schwartz, R. (in press). A Review of Scientific Research Experience Models in Conveying Aspects of Nature of Science. In McComas, W. (Ed). *Nature of Science in Science Education, 2nd Edition*, Dordrecht: Kluwer Academic Publishers.

Schwartz, R. S., & Crawford, B. A. (2004). Authentic Scientific Inquiry as a Context for Teaching Nature of Science: Identifying Critical Elements for Success. In Flick, L. & Lederman, N. (Eds). *Scientific Inquiry and Nature of Science: Implications for Teaching, Learning, and Teacher Education*, Dordrecht: Kluwer Academic Publishers.

REFEREED PUBLICATIONS

Schwartz, R. S., Skjold, B., Akom, G., Hong, H.H., Huang, F., & Kagumba, R. (in review). Preparing future science educators: Changes in nature of science views and practices during a graduate program. *Science Education*. Submitted July 2, 2008.

Hong, H. H., & Schwartz, R. S. (in review). Explicit teaching about nature of science- A biology course for preservice teachers in the USA. *Korean Journal of Biology Education*. Submitted July, 2008.

Brown, M., & Schwartz, R. S. (accepted with minor revision). Connecting Photosynthesis and Cellular Respiration: Pre-Service Teachers' Conceptions, *Journal of Research in Science Teaching*.

Schwartz, R. S., & Gess-Newsome, J. (2008). Elementary science specialists: A pilot study of current models and a call for participation in the research, *The Science Educator*.

Schwartz, R. S., & Lederman, N. (2008). What scientists say: Scientists' views of nature of science and relation to science context. *International Journal of Science Education*, 30(6), 727-771.

Schwartz, R. S. (2007). What's in a word? How word choice can develop (mis)conceptions of nature of science. *Science Scope*, 31(2), 42-47.

Schwartz, R. S., Lederman, N. G., & Crawford, B. A. (2004). Developing views of nature of science in an authentic context: An explicit approach to bridging the gap between nature of science and scientific inquiry. *Science Education*, 88(4), 610-645.

Schwartz, R. S., & Lederman, N. G. (2002). "It's the nature of the beast": The influence of knowledge and intentions on learning and teaching of nature of science. *Journal of Research in Science Teaching*, 39(3), 205-236.

Lederman, N. G., Abd-El-Khalick, F., Bell, R. L., & Schwartz, R. S. (2002). Views of Nature of Science Questionnaire (VNOS): Toward Valid and Meaningful Assessment of Learners' Conceptions of Nature of Science. *Journal of Research in Science Teaching*, 39(6), 497-521.

Lederman, N. G., Schwartz, R. S., Abd-El-Khalick, F., & Bell, R. L. (2001). Preservice Teachers' Understanding and Teaching of the Nature of Science: An Intervention Study. *The Canadian Journal of Science, Mathematics, and Technology Education*, 1(2), 135-160.

Schwartz, R. S., Abd-El-Khalick, F., & Lederman, N. G. (2000). Achieving the reform's vision: The effectiveness of a specialist-led elementary science program. *School Science and Mathematics*, 100(4), 181-194.

Schwartz, R.S., Lederman, N.G., & Smith, M. (1999). Modeling success during Earth science week. *Science Scope*, 23, 36-37.

Schwartz, R.S., & Curran, J.F. (1997). Analyses of frameshifting at UUU-pyrimidine sites, *Nucleic Acids Research*, 25, 2005-2011.

Schwartz, R. S., & Curran, J. F. (1994). Codon and context usage control frameshifting at phenylalanine codons. *Abstracts of the Cold Spring Harbor Laboratory conference on Translational Control*.

NONREFEREED PUBLICATIONS AND DOCUMENTS

Schwartz, R. S., Skjold, B., & Hong, H. H. (2008). Biology 2700 course pack. Western Michigan University.

Schwartz, R. S. (2006). Evaluation report of the Warren Township Math-Science Partnership. Report for the United States Department of Education.

Schwartz, R. S. (2004). Nature of Science Learning Outcomes for the SUNY-Cortland Program. Evaluation Report for NSF funded teacher enhancement project.

Schwartz, R. S. (2002). US-ED Learning a Second Culture: FIPSE evaluation report.

Schwartz, R. S., & Gummer, E. (2000). Project Mammoth Park and Project ICAN. Promotion article.

Schwartz, R. S., (1998). Evaluation Report: North Bend School District Elementary Science Specialist Program. Report prepared for the School Board of the North Bend School District. North Bend, Oregon.

REFEREED PRESENTATIONS AND PROCEEDINGS

*** indicates presentations with graduate students or K-12 teachers**

Schwartz, R. S. (in review). *Preparing Future Science Faculty: Experiences in a Methods Course for College Science Teaching*. Proposal submitted for the 2009 conference of the National Association for Research in Science Teaching.

*Kagumba, R., & Schwartz, R. S. (in review). "Take the bull by the horns": An action research to improve questioning strategies in a biology course. Proposal submitted for the 2009 conference of the National Association for Research in Science Teaching.

Schwartz, R. S., Lederman, N., & Lederman, J. (2008, April). *An instrument to assess Views of Scientific Inquiry: The VOSI questionnaire*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.

Schuster, D., Cobern, W., Applegate, B., Schwartz, R., Undreiu, A., & Vellom, P. (2008, April). *Design and development of an instrument to assess pedagogical content knowledge of inquiry science teaching*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD. [Conference Proceedings]

*Schwartz, R. S., Skjold, B., Hong, H. H., Akom, G., Huang, F., & Kagumba, R. (2008, March). *Case studies of future science teacher educators' learning of NOS*. Paper presented at the annual meeting of the American Educational Researchers Association, New York, NY.

* Schwartz, R. S., Skjold, B., Hong, H. H., Akom, G., Kagumba, R., & Huang, F. (2008). *Future science teacher educators' learning of NOS: Self-study of perspectives and impacts for change*. 2008 Proceedings of the annual international conference of the Association for Science Teacher Educators. St. Louis, MO. January 19-22.

*Schwartz, R. S., Hong, H. H., & Skjold, B. (2007, October). *Teaching about nature of science through models and modeling in biology*. Presentation at the regional conference of the National Science Teachers Association, Detroit, MI. October 18-20.

Brown, M., & Schwartz, R. S. (2007, October). *Teachers' conceptions of photosynthesis and cellular respiration as connected processes*. Presentation at the regional conference of the National Science Teachers Association, Detroit, MI. October 18-20.

Schwartz, R. S. (2007, April). *Beyond Evolution: A thematic approach to teaching NOS in an undergraduate biology course*. 2007 Proceedings of the international conference of the National Association for Research in Science Teaching, New Orleans, LA. April 15-18. [Conference Proceedings]

*Schwartz, R.S., Akom, G., Skjold, B., Hong, H. H., Kagumba, R., Huang, F. (2007, April). *A change in perspective: Science education graduate students' reflections on learning about NOS*. Paper presented at the international meeting of the National Association for Research in Science Teaching, New Orleans, LA. April 15-18.

Hanuscin, D., Freiderichson, P., Dass, P., Gess-Newsome, J., Schwartz, R.S., & Eason, G. (2007, January). *Working in Two Worlds: Developing a Research Identity as a Joint Appointment*. Symposium to be presented at the International meeting of the Association for Science Teacher Educators, Clearwater Beach, FL. January 3-6.

*Schwartz, R., & Burke, M. (2007, January). *Reflections about inquiry teaching and student learning in the middle grades: How can we expand the comfort zone?* Paper presented at the International meeting of the Association for Science Teacher Educators, Clearwater Beach, FL. January 3-6.

Schuster, D., Cobern, W., Applegate, B., Schwartz, R., Vellom, P., & Undreiu, A. (2006). *Assessing pedagogical content knowledge of inquiry science teaching*. Paper presented at the National STEM Assessment Conference. October 19-21. [Conference Proceedings]

*Hong, H. H., Schwartz, R. S., & Holm, G. (2006, August). *Korean elementary preservice teachers' views of nature of science*. Paper presented at the annual conference of the Korean Association for Research in Science Education, Gangwon National University, Korea.

Schwartz, R., & Lederman, N. (2006, April). *Scientists' epistemological views of science*. Paper presented at the annual conference of the American Educational Research Association. San Francisco, CA. [Conference Proceedings.]

Schwartz, R. (2006, April). *What scientists say: Views of nature of science*. Paper presented as part of the colloquium "Research on nature of science" at the annual conference of the National Association for Research in Science Teaching. San Francisco, CA.

*Brown, M., & Schwartz, R. (2006, April). *Pre-service Teachers' Conceptions of Photosynthesis and Cellular Respiration as belonging to Systems*. Paper presented at the annual conference of the National Association for Research in Science Teaching. San Francisco, CA. [Conference Proceedings.]

Abler, D., Lederman, J., Lederman, N., & Schwartz, R. (2006, April). *Inquiry and Natures of Mathematics and Science*. Paper presented at the annual meeting of the National Science Teachers Association. Anaheim, CA.

Abler, D.A., Lederman, N.G., Lederman, J.S., & Schwartz, R. (2006, March). *Inquiry and natures of mathematics and science*. A paper presented at the Annual Meeting of the Association for Supervision and Curriculum Development, Chicago, IL

Cobern, B, Lederman, N., Schuster, D., Schwartz, R., & (2006, Feb.). *Implementation of Clinical Trials and Experimental Research in Science Education*. Symposium presented at the annual meeting of the American Association for the Advancement of Science, St. Louis, MO.

*Brown, M., & Schwartz, R. (2006, January). *Pre-service Teachers' Conceptions of Photosynthesis and Cellular Respiration as belonging to Systems*. Paper presented at the annual conference of the Association of Science Teacher Education, Portland, OR.

Schwartz, R. S. (2006, January). *Embedding NOS instruction and assessment in an undergraduate biology course*. Paper presented at the annual conference of the Association of Science Teacher Education, Portland, OR.

Hanuscin, D., Freiderichson, P, Dass, P., Gess-Newsome, J., Schwartz, R.S., & Eason, G. (2006, January). *Working in Two Worlds: Symposium on Joint Appointments in Science Education*. Symposium presented at the International meeting of the Association for Science Teacher Educators, Portland, OR.

Schwartz, R.S., & Lederman, N.G. (2005, April). *Scientists' views of scientific models and modeling*. Paper presented as part of the symposium "International perspectives of scientific models and modeling" at the Annual meeting of the American Educational Research Association, Montreal, Canada. [Conference Proceedings; ERIC document: ED493587]

Schwartz, R.S., & Lederman, N.G. (2005, April). *Scientists' views of scientific models and modeling*. Paper presented as part of the symposium "International perspectives of scientific models and modeling" at the Annual meeting of the National Association for Research in Science Teaching, Dallas, TX.

Schwartz, R.S., & Lederman, N.G. (2005, January). *"But what do scientists say?" Scientists' views of nature of science*. Paper presented at the Annual meeting of the Association for the Education of Teachers of science. Colorado Springs, CO. [Conference Proceedings.]

Schwartz, R. S., & Lederman, N. G. (2004, April). *Epistemological views in authentic science practice: A cross-discipline comparison of scientists' views of nature of science and scientific inquiry*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching, Vancouver, B.C., Canada.

Westerlund, F., Taylor, T., García, D., & Schwartz, R. (2004, February). *Nature of science learning outcomes of secondary teachers*. Paper presented at the South West regional meeting of the Association for the Education of Teachers in Science, Georgetown, TX.

Westerlund, J., Schwartz, R., García, D., & Taylor, T. (2004, January). The effects of summer scientific research experiences with or without nature of science instruction upon the NOS views of secondary science teachers. Paper presented at the annual meeting of the Association for the Education of Teachers in Science, Nashville, TN. [Conference Proceedings.]

Westerlund, J., García, D., Schwartz, R., & Taylor, T. (2003, October). Explicit NOS instruction and authentic science research: Effects on teachers NOS views. Paper presented at the North Central regional meeting of the Association for the Education of Teachers in Science, Rochester, MN.

Westerlund, J., Schwartz, R. S., Koke, J., Garcia, D., & Taylor, T. (2003, August). *The effects of summer scientific research experiences with or without nature of science (NOS) instruction upon the NOS views of secondary science teachers*. Paper presented at the meeting of the International History, Philosophy, and Science Teaching conference, Winnipeg, Canada. [Conference Proceedings.]

Schwartz, R. S., Westerlund, J., Koke, J., Garcia, D., & Taylor, T. (2003, March). *Explicit/reflective NOS instruction and authentic science research: Effects on teachers' NOS views*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA. [Conference Proceedings.]

Lederman, N., Abd-El-Khalick, F., Bell, R., Lederman, J., Schwartz, R., & Khishfe, R. (2003, March). *Assessing learners' views of nature of science: Hands-on/Minds-on experiences*. Pre-conference workshop presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Schwartz, R. S., & Crawford, B. A. (2003, January). *Critical elements for teaching the nature of science in the context of authentic scientific inquiry: Practical guidelines for teacher educators*. Paper presented at the annual meeting of the Association for the Education of Teachers in Science. St. Louis, MO. [Conference Proceedings.]

Lederman, N. G., Schwartz, R. S., Lederman, J., Matthews, L., & Khishfe, R. (2002, April). *Project ICAN: A teacher enhancement project to promote teachers' and students' knowledge of scientific inquiry and nature of science*. Symposium presented at the annual meeting of the National Association for Research in Science Teaching, New Orleans, LA. [Conference Proceedings.]

Schwartz, R. S., Lederman, N. G., Dekkers, P., Liu, S., Khishfe, R., Bell, R., Abd-El-Khalick, F. (2002, April). *International perspectives on research in nature of science*. Symposium presented at the annual meeting of the National Association for Research in Science Teaching, New Orleans, LA.

Lederman, N. G., Schwartz, R. S., Khishfe, R., Lederman, J., Matthews, L., & Liu, S.Y. (2002, January). *Project ICAN: A Professional Development Program for Teachers' Knowledge and Pedagogy of Nature of Science and Scientific Inquiry*. Paper presented at the annual meeting of

the Association for the Education of Teachers in Science, Charlotte, NC. [Conference Proceedings.]

Schwartz, R. S., Lederman, N. G., Khishfe, R., Lederman, J., Matthews, L., Liu, S-Y., (2002). *Explicit/Reflective Instructional Attention to Nature of Science and Scientific Inquiry: Impact on Student Learning*. Paper presented at the Annual International Conference of the Association for the Education of Teachers in Science. Charlotte, NC. ERIC doc: ED465622 [Conference Proceedings]

Lederman, N. G., Abd-El-Khalick, F., Bell, R., Schwartz, R. S., & Akerson, V. (2001, March). *Views of nature of science questionnaire (VNOS): Assessing the unassessible*. Presentation at the Annual meeting of the National Association for Research in Science Teaching, St. Louis, MO. [Conference Proceedings]

Westerlund, J., Schwartz, R. S., Lederman, N. G., & Koke, J. (2001, March). *Teachers learning about nature of science in authentic science contexts: Models of inquiry and reflection*. Symposium presented at the annual meeting of the National Association for Research in Science Teaching, St. Louis, MO. [Conference Proceedings]

*Schwartz, R. S., Lederman, N. G., & Thompson, T. (2001, March). *Grade nine students' views of nature of science and scientific inquiry: The effects of an inquiry-enthusiast's approach to teaching science as inquiry*. Presentation at the Annual meeting of the National Association for Research in Science Teaching, St. Louis, MO.

Schwartz, R. S., & Lederman, N. G. (2001, March). *"I have a theory about...:" Dispelling myths about nature of science*. Workshop conducted at the annual meeting of the National Science Teachers Association, Saint Louis, MO.

Abd-El-Khalick, F., Lederman, N. G., Bell, R., & Schwartz, R. S. (2001, January). *Views of nature of science questionnaire (VNOS): Toward valid and meaningful assessment of learners' conceptions of nature of science*. Symposium presented at the Annual meeting of the Association for Educators of Teachers of Science. Costa Mesa, CA. [Conference Proceedings.]

*Schwartz, R. S., Lederman, N. G., Westerlund, J., Gilmer, P., Hahn, L., & Herr, N. (2001, January). *Building collaboratives for inquiry: Goals, glitches, and glue*. Symposium presented at the Annual meeting of the Association for Educators of Teachers of Science. Costa Mesa, CA.

Schwartz, R. S., Gfeller, M., & Lederman, N. G. (2001, January). *Nature of science and nature of mathematics: Natural connections or strange bedfellows?* Presentation at the Annual meeting of the Association for Educators of Teachers of Science. Costa Mesa, CA.

*Schwartz, R. S., & Palmer, N. (2000, October). *Project ICAN: Inquiry, context, and nature of science*. Presentation at the Annual meeting of the Oregon Science Teachers Association, Newport, OR.

Schwartz, R. S. (2000, April). *The effectiveness of a science research internship on preservice teachers' views of nature of science*. Paper presented at the annual Oregon State University Graduate Student Conference, Corvallis, OR.

Schwartz, R., Lederman, N. G., & Crawford, B. A. (2000, April). *Understanding the nature of science through scientific inquiry: An explicit approach to bridging the gap*. Paper presented at the annual meeting of the National Association of Research in Science Teaching, April 28 -May 1, 2000, New Orleans, LA. [Conference Proceedings]

Lederman, N.G., & Schwartz, R.S. (2000, April). "It's the nature of the beast:" *The influence of knowledge and intentions on nature of science learning and teaching*. Paper presentation at the annual meeting of the National Association for Research in Science Teaching. New Orleans, LA.

Schwartz, R.S., Lederman, N.G., Bell, R.L., & Abd-El-Khalick, F. (2000, April). *Teaching the nature of science: Another case of knowledge is necessary but not sufficient*. Presentation at the annual meeting of the American Educational Research Association, New Orleans, LA. [Conference Proceedings]

Duggan-Haas, D., Roettger, E., Foster, G., Truedson, J., Yeotis, C., Schwartz, R. S., Lederman, N., Rowe, F., Adams, P. (2000, January). *Science and science education collaboratives: Where we are. How we got there. Where we are going*. Symposium presented at the annual meeting of the Association for the Education of Teachers in Science, Akron, OH. ERIC document: ED437272. [Conference Proceedings]

Cohen, R., Foster, G., Latz, M., Duggan-Haas, D., Liu, C., Adams, A., Schwartz, R. S. (2000, January). *Science education and science faculty collaboration: Developing a common philosophy of science teaching*. Symposium presented at the annual meeting of the Association for the Education of Teachers in Science, Akron, OH. [Conference Proceedings]

Schwartz, R.S., Lederman, N.G., & Crawford, B. (2000, January). *Making connections between the nature of science and scientific inquiry: A science research internship for preservice teachers*. Presentation at the annual meeting of the Association for the Education of Teachers in Science, Akron, OH. [Conference Proceedings.]

Schwartz, R.S., & Lederman, N.G. (2000, January). *Nature of science and classroom instruction: A comparison of two preservice teachers*. Presentation at the annual meeting of the Association for the Education of Teachers in Science, Akron, OH.

Schwartz, R. S., Crawford, B., & Lederman, N. G. (1999, March). *A science research internship for preservice science teachers: Bridging the gap between the nature of science and scientific inquiry*. Presentation at the annual meeting of the National Association for Research in Science Teaching. Boston, MA. [Conference Proceedings]

Lederman, N. G., Schwartz, R. S., Abd-El-Khalick, F., & Bell, R. (1999, March). *The nature of science and instructional practice: Factors that facilitate success*. Paper presented at the annual meeting of the National Association for Research in Science Teaching. Boston, MA. [Conference Proceedings]

Schwartz, R. S., Abd-El-Khalick, F., & Lederman, N. G. (1999, January). *An exploratory study of the "effectiveness" of elementary science specialists*. Paper presented at the annual meeting of the Association for the Education of Teachers in Science. Austin, TX. [Conference Proceedings.]

Schwartz, R. S. (1993, April). *Codon and context usage controls frameshifting at phenylalanine codons*. Paper presented at the spring meeting of the NC chapter of the American Society of Microbiology, Raleigh, NC.

INVITED PRESENTATIONS AND SEMINARS

Schwartz, R. S. (2008, October). *Investigating science through inquiry*. Invited seminar, Sakarya University; Sakarya, Turkey. October 15.

Schwartz, R. S. (2008, September). *Beyond evolution: The effectiveness of embedding nature of science instruction throughout an undergraduate biology course*. Seminar presented to the Department of Biological Sciences, Western Michigan University. September 12.

Schwartz, R. S. (2008, June). *Preparing the future professoriate: A methods class for college science teaching*. Invited poster presented at the NSF-sponsored conference "Facilitating Change in Undergraduate STEM." Augusta, MI. June 16-19.

Schwartz, R. S. (2007, September). *Why the need for a research agenda?* Invited Keynote panelist at the NSF-sponsored conference "The Impact of Elementary Science Specialists." Boston, MA. Sept. 24-26.

Schwartz, R. S. (2007, October). *Research on Nature of Science and Scientific Inquiry*. Invited presentation for "Meet the Profs," sponsored by the Department of Biological Sciences, Western Michigan University. October 29.

Duschl, R., Schwartz, R., Zeidler, D., & Krajcik, J. (2007, April). *Sociocultural inquiry, argumentation, and nature of science*. Invited panelist for the Science Teaching and Learning Special Interest Group, American Educational Researchers Association, Chicago, IL. April 9-13.

Schwartz, R.S. (2005, October). *Views of Nature of Science in authentic context: What scientists say*. Invited seminar, Purdue University Departments of Chemistry and Chemical Education. West Lafayette, IN.

Schwartz, R. S., Lederman, N. G., & Abd-El-Khalick, F. (1998, September). *The evaluation of the North Bend science specialists program*. Invited evaluation report at the North Bend School District Board meeting. North Bend, OR.

Schwartz, R. S. (1993, March). *Codon and context usage controls frameshifting at phenylalanine codons*. Seminar presentation to the Department of Biological Sciences, Wake Forest University, Winston-Salem, NC.

PROFESSIONAL SERVICE

University/College/Department Service

- Western Michigan University, Kalamazoo Promise Researcher discussion group. Invited group, Vice President for Research. (2008-present)
- Western Michigan University, College of Arts and Sciences, Search committee for Director of the Gender and Women's Study Program (2007-2008)
- Western Michigan University, College of Arts and Sciences, Search committee for Interim Director of the Gender and Women's Study Program (2007)
- Western Michigan University, Department of Biological Sciences ad-hoc committee: Newsletter and BIOS Development (2007-present)
- Western Michigan University, Department of Biological Sciences: Presentation for "Meet the Profs," October 29, 2007.
- Western Michigan University, Department of Biological Sciences: Consultant for review of the secondary education program in biology (2006-present)
- Oregon State University, Department of Science and Mathematics Education, Faculty Search Committee (1999-2000)
- Wake Forest University, Department of Biological Sciences, Student Chair of Tutorial committee (1993-1994)
- Wake Forest University, Department of Biological Sciences, Program organization committee for annual conference in Biological Sciences (1994)

National Service

- National Science Foundation: Grant Review panel (2004)
- Manuscript Reviewer: *Science Education*. (2004-present)
- Manuscript Reviewer: *Journal of Research in Science Teaching*. (2000-present)
- Manuscript Reviewer: *School Science and Mathematics Journal*. (1998-present)
- Manuscript Reviewer: *Science & Education*. (2005-present)
- National Association for Research in Science Teaching [NARST]:
 - Nominee for NARST Board (upcoming 2009 elections)
 - Member of the Publications Advisory Committee (2007-present)
 - Program committee:
 - Strand Coordinator for strand "History, philosophy, and sociology of science" (2008-2010)
 - Strand Coordinator for "History, philosophy, epistemology of science" (2004-2006)
 - Member NARST Outstanding Paper Award committee (2004-2007)
 - Vice-Chair of the selection committee for the Outstanding Paper Award in the *Journal of Research in Science Teaching*, (2003/04)
 - Member of selection committee for the Distinguished Contribution through Research Award (2001-04)
 - Member of selection committee for the Outstanding Paper Award in the *Journal of Research in Science Teaching* (2001-04)

- Reviewer for NARST conference proposals (1999-present)(Strand 1: 2001; Strand 2: 1999-2000; Strand 4: 2000-2001; Strand 4a: 2004; Strand 4b: 2002-2006; Strand 8: 1999-2006; 2007-2008; Strand 5 & Strand 13)
- School Science and Mathematics Association: Finance Committee (2004-2007)
- American Educational Research Association [AERA] Graduate Student Council, Division C, Oregon State University Representative (2001-2003)
- Proposal Reviewer for AERA:
 - Division C, Section 3 conference proposals (2000)
 - Division K, Section 7 conference proposals (2005)
- Association for the Education of Teachers of Science [AETS, now ASTE] Ad-hoc committee: Collaborations between scientists and science educators. (1998-2000)
- Project 2061, Curriculum reviewer (1999, 2000)
- Annenberg/CPB Channel and the Harvard-Smithsonian Center for Astrophysics: Evaluator of proposals for the video production of a Science Content Course for Elementary Teachers, in association with the Association for the Education of Teachers in Science (1998)

Local/Community Service

- School Ambassador, Kalamazoo Area Mathematics and Science Center, (2008-present)
- Curriculum consultant, Vicksburg Middle School, Vicksburg, MI

GRADUATE STUDENT ADVISEES (2003-present)

Dissertation Chair:

Current:

- Kara Kits, PhD candidate
Dissertation title: An exploration of worldview and understandings of nature of science among science teachers at Christian schools.
- Brandy Skjold, PhD candidate

Completed:

- Mary Brown, PhD (completed, April 2005)
Dissertation title: Understanding photosynthesis and plant cellular respiration as “nested systems”: Characterizing preservice teachers’ conceptions

Committee member for:

Current: Hang Hwa Hong, PhD candidate

Completed: Patti Richardson, MA completed summer, 2004.

Informal advising:

HangHwa Hong (PhD candidate)

Robert Kagumba (PhD student)

Betty Udongo (PhD candidate)

HONORS AND AWARDS

College of Arts and Sciences Teaching and Research Award (2007). Award amount: \$450.00

College of Arts and Sciences Teaching and Research Award (2005). Award amount: \$450.00

College of Arts and Sciences Teaching and Research Award (2004). Award amount: \$500.00

Outstanding Presentation, Oregon State Graduate Student Conference, April, 2000.

Mary Poston Award for Outstanding Presentation. (1993).

North Carolina chapter of the American Society of Microbiology, Raleigh, NC.

Sigma Xi Grant-in-Aid of Research, 1993

Cocke Travel Grant, 1993, 1994

Phi Kappa Phi, since 1987 (Inducted at Purdue University)

Phi Beta Kappa, since 1987 (Inducted at Purdue University)

PROFESSIONAL ORGANIZATIONS

National Association of Research in Science Teaching

Association for Science Teacher Education

National Science Teachers Association

American Educational Research Association

School Science and Mathematics Association

IN PREPARATION AND ONGOING RESEARCH PROJECTS

- Embedding and assessing NOS in an undergraduate biology course (submitted/reviewed/manuscript revisions in progress)
- An instrument to assess views of scientific inquiry: The VOSI questionnaire (paper presented at NARST 2008 conference; manuscript in preparation for publication)
- What scientists say: Views of Scientific Inquiry (manuscript in preparation)
- Views of scientific models and modeling: Comparison of scientists and science teachers (manuscript in preparation)
- Descriptions and impacts of elementary science specialists models (current research project in collaboration with Dr. Julie Gess-Newsome; follow up to 2008 study)
- Effects of a systems approach to teaching photosynthesis and cellular respiration (current research project in collaboration with Dr. Mary Brown; follow up to *accepted* publication)
- Developing college faculty conceptions of science teaching and teaching practices (current research project related to SCI 6180 College teaching methods course)
- From astrophysical exotica to butterfly collecting: Scientists' descriptions of scientific research (ongoing)
- Identifying similarities and differences between authentic scientific inquiry and school-based scientific inquiry (ongoing)
- Developments in Pedagogical Content Knowledge for NOS: Critical elements and effective strategies in teacher education and professional development (ongoing)