

**SANDRA K. ENGER**

The University of Alabama in Huntsville  
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**Education:**

1997 Ph.D. Science Education, The University of Iowa  
1968 M.S. Biology, Winona (MN) State University  
1965 B.S. Science with Mathematics and French Minors (awarded with honor)  
Winona (MN) State University

**Ph.D Thesis:** The Relationship Between Science Learning Opportunities and Ninth Grade Students' Performance on a Set of Open-ended Science Questions

**Additional Education:**

2001 Hierarchical Linear Modeling, University of Chicago  
1997 Project Evaluation Internship, Western Michigan University  
1996 Science Education Project Evaluation NSF Training Institute,  
Western Michigan University, Evaluation Center  
1992 Woodrow Wilson National Fellowship Foundation, Bioethics,  
Princeton University  
1991 Curriculum and Instruction, University of Memphis  
1991 Institute for Chemical Education, University of California, Berkeley  
1990-91 Computer Science and Education, Arkansas State University  
1989 Institute for Chemical Education, University of California, Berkeley  
1988 Institute for Chemical Education, University of California, Berkeley  
1986-87 Biological Sciences, University of Mississippi (Honors Fellowship)  
1971-75 Botany (A.B.D.), The University of Iowa

**Professional Experience:**

2003-Current Associate Professor of Education, Department of Education  
2002-Current Associate Director Institute for Science Education  
1997 (July) Assistant Professor of Education, Department of Education,  
Coordinator of Science Education, Institute for Science Education  
1996-1997 Director of Assessment and Research,  
Iowa-Scope, Sequence, & Coordination Project, The University of Iowa  
1992-1996 Research Assistant in Science Education  
I. Supervision of student teachers in science  
II. Iowa-Scope, Sequence, and Coordination Project (NSF Funded)  
III. Iowa Assessment Project (NSF Funded)  
1982-1989 High School Science Teacher and Chair, Nettleton High School, Jonesboro, AR  
1990-1992 Honors Chemistry, Chemistry, Honors Biology, Biology, Gifted and Talented,  
Student Research in Science, Nettleton High School, Jonesboro, AR  
1989-1990 National Scientific Officer, Republic of Trinidad and Tobago  
1986-1987 Biology Teaching Assistant, The University of Mississippi  
1981-1982 Secondary Mathematics Teacher,  
Forms 1-5 at St. Anne's College, Nassau, Bahamas

1980-1981 High School Mathematics Teacher, Jonesboro High School, Jonesboro, AR  
1971-1974 Biology Head Teaching Assistant, The University of Iowa  
1969-1971 High School Science and Mathematics Teacher, Thessaloniki, Greece  
1967-1969 High School Biology and Mathematics Teacher, Galesville, WI  
1965-1967 Junior High School Science and Mathematics Teacher, Neenah, WI

**Memberships:**

American Association for the Advancement of Science (AAAS), American Educational Research Association (AERA), Association for Supervision and Curriculum Development (ASCD), National Association for Research in Science Teaching (NARST), National Council on Measurement in Education (NCME), National Council of Teachers of Mathematics (NCTM), National Science Teachers Association (NSTA).

**Peer-Reviewed Presentations:**

Enger, S.K., (2012, March). Changing the assessment culture in university settings. Symposium Participant: Paper presentation at the Annual International Conference of the National Association for Research in Science Teaching (NARST) in Indianapolis, IN.

Enger, S.K., & Enger, L.R. (2011, March). Intersections of art, writing, and science. Session presentation at the Annual Meeting of the National Science Teachers Association (NSTA) in San Francisco, CA.

Enger, S.K., & Enger, L.R. (2009, March). Art and writing connections in science. Presentation for the Annual Meeting of the National Science Teachers Association (NSTA) in New Orleans, LA. (Accepted but did not present due to lack of any travel support)

Enger, S.K. (2008, March). Incorporating multiple intelligences in science inquiry. Presentation for the Annual Meeting of the National Science Teachers Association (NSTA), Boston, MA.

Enger, S.K. (2007, December). Alternative assessment opportunities. Presentation for the Southern Regional Meeting of the National Science Teachers Association (NSTA), Birmingham, AL.

Enger, S.K. (2007, December). NSTA's Exemplary Science Program (ESP): Focusing on grades PreK-12. Session presider and presenter at the Southern Regional Meeting of the National Science Teachers Association (NSTA), Birmingham, AL.

Chitpin, S., & Enger, S. K. (2006, April). Scaffolding reflective practice with pre-service teachers. Paper presented at the Annual Meeting of the American Educational Association Meeting (AERA), San Francisco, CA.

Jones, L. S., Amiri, L., Dotger, S., Enger, S.K., Fowler, S., Kleine, K. L. M., Cavallo, A., & Phillipson-Mower, T., (2006, April). Deciphering the evolution/creation controversy: Theoretical attempts to untangle differing epistemologies. Interactive poster session presentation at Annual Meeting of the National Association of Research in Science Teaching (NARST), San Francisco, CA.

Jones, L. S., Amiri, L., Dotger, S., Enger, S.K., Fowler, S., Kleine, K. L. M., Cavallo, A., & Phillipson-Mower, T., (2006, April). Deciphering the evolution/creation controversy: Theoretical attempts to untangle differing epistemologies. Interactive poster session presentation at Annual Meeting of the American Educational Association (AERA) Meeting, San Francisco, CA.

Enger, S. K., LaChance, A., Mueller, C. (2006, April). Science notebooks: A context for formative assessment. Session Presentation at the National Science Teachers Association (NSTA) National Convention, Anaheim, CA.

Enger, S. K., & LaChance, A. (2005, March/April). Advanced science notebooks: Taking notebooks to another level in the middle grades. Session Presentation at the National Science Teachers Association (NSTA) National Convention, Dallas, TX.

Enger, S. K., & LaChance, A. (2005, October). Advanced science notebooks: Taking notebooks to another level in the middle grades. Session Presentation at the Alabama Science Teachers Association (ASTA) State Convention, Birmingham, AL.

Chitpin, S., & Enger, S. K. (2005, May). Popperian analyses for guiding reflective practice in pre-service teachers. Paper presented at the annual conference of the Canadian Society for Studies in Education (CSSE), London, Ontario, Canada.

Enger, S.K. (2004, March). Step outside the textbook with case studies in secondary science. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Atlanta, GA.

Enger, S.K. (2004, March). Learning science in a world silence. Paper accepted for presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Vancouver, BC.

Enger, S K. (2003, July). The Alabama Classroom Enhancement (ACE) project: The independent study scholarship-Turning data into information to improve schools. Paper presented at the twelfth annual meeting of the National Evaluation Institute (CREATE), Louisville, KY.

Enger, S K., & McCoy, R. (2003, March). Reading in science: Using non-fiction sources. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Philadelphia, PA.

Enger, S.K. (2003, January). Pre-service implementation of science notebooks. Paper presented at the annual meeting of the Association for the Education of Teachers in Science (AETS), St. Louis, MO.

Enger, S K. (2002, July). Quality in professional development: from the perspectives of evaluator and provider. Paper presented at the eleventh annual meeting of the National Evaluation Institute (CREATE), Boise, ID.

Enger, S K. (2002, March). Nature journals for the elementary classroom. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), San Diego, CA.

Enger, S.K. (2001, January). Science cases with science concepts on the visible horizon. Paper presented at the annual meeting of the Association for the Education of Teachers in Science (AETS), Costa Mesa, CA.

Enger, S K. (2001, July). Evaluation of professional development: When participants say it best. Paper presented at the tenth annual meeting of the National Evaluation Institute (CREATE), Wilmington, NC.

Enger, S.K.(2000, January). Writing a rationale paper: Suggestions for beginning. Paper written for panel discussion at the annual meeting of the Association for the Education of Teachers in Science (AETS), Akron, OH.

Enger, S. K., (2000, March). Moon journals for the elementary classroom. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Orlando, FL.

Enger, S.K. (2000, March). Go graphic in your science classroom. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Orlando, FL.

Enger, S. K., & Varrella, G.F. (2000, March). Concept and mind maps for teaching, learning, and assessment. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Orlando, FL.

Enger, S. K., & Harwell, S.H. (2000, April/May). Design and evaluation of standards-based professional development. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), New Orleans, LA.

Enger, S.K.(2000, July). Design, delivery, and evaluation of standards-based professional development. Paper presented at the ninth annual meeting of the National Evaluation Institute (CREATE), San Jose, CA.

Harwell, S.H., & Enger, S.K.(1999, January). Passport to excellence: Embedding inquiry in professional development. Paper presented at the annual meeting of the Association for the Education of Teachers in Science (AETS), Austin, TX.

Enger, S.K. (1999, January). Concept mapping: A passport to understanding. Paper presented at the annual meeting of the Association for the Education of Teachers in Science (AETS), Austin, TX.

Enger, S.K. (1999, March). Exploring space: The classroom connection. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Boston, MA.

Enger, S.K. (1999, March). E-mail science (ESP): Electronic science connections across the grades. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Boston, MA.

Enger, S.K. (1999, October). Moon journals for the elementary classroom. Paper presented at the annual meeting of the Alabama Science Teachers Association (ASTA), Hoover, AL.

Enger, S.K., & Harwell, S.H. (1999, July). Standards-based professional development: Design and evaluation for exploring space. Paper presented at the annual meeting of the National Evaluation Institute (CREATE), Traverse City, MI.

Enger, S.K. (1998, April). Science as an entry to writing in the content area. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), Las Vegas, NV.

Enger, S.K. (1998, April). Profiling middle school science inquiry experiences using student and teacher survey data. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), San Diego, CA.

Enger, S.K. (1998, November). Students' conceptual understanding: Qualitative evidence in concept maps. Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA), New Orleans, LA.

Harwell, S.H., & Enger, S.K. (1998, November). Exploring space: An evaluative portrait of Alabama teachers. Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA), New Orleans, LA.

Harwell, S.H., & Enger, S.K. (1998, November). Exploring space: The classroom connection. Jointly chaired a one-hour session that included three teacher presenters at the regional meeting of the National Science Teachers Association (NSTA), Birmingham, AL.

Enger, S.K. (1998, November). Environmental education: A forum for student community action. Paper presented at the regional meeting of the National Science Teachers Association (NSTA), Birmingham, AL.

Enger, S.K. (1998, November). Graphic organizers: Mapping tools for science learning and assessment. Paper and workshop presentation at the regional meeting of the National Science Teachers Association (NSTA), Birmingham, AL.

Enger, S., & Sjölund, R. (1997, September). Tissue printing with a phloem specific monoclonal antibody. Paper presented at the annual meeting of the American Society of Plant Physiologists, Vancouver, BC.

Enger, S.K. (1997, October). Concept mapping: A strategy for learning and assessment. Paper presented at the annual meeting of the National Association of Biology Teachers (NABT), Minneapolis, MN.

Enger, S.K. (1997, July). Adding texture to the project evaluation picture: The use of qualitative evidence. Paper presented at the Sixth Annual National Evaluation Institute (CREATE), Indianapolis, IN.

Enger, S.K. (1997, April), A repertoire of science assessments. Paper presented at the annual meeting of the National Science Teachers Association (NSTA), St. Louis, MO.

Enger, S. K. (1997, March). Voices of Reform: Student Performance on a Set of Free-Response Items Developed from a Standardized Test. Paper presented at the National Association for Research in Science Teaching (NARST), Chicago, IL,

Enger, S.K. (1996, November). Concept mapping: Visualizing student understanding. Paper presented at the annual meeting of the Mid-South Educational Research Association (MSERA), Tuscaloosa, AL.

Enger, S.K. (1996, October). The use of a monoclonal antibody to study plant tissue. Paper and laboratory session at the annual meeting of the National Association of Biology Teachers (NABT), Charlotte, NC.

Enger, S.K. (1996, October). Under the microscope: science learning opportunities in an Iowa-Scope, Sequence, and Coordination school district. Paper presented at the regional meeting of the National Association for Research in Science Teaching (NARST), Iowa City, IA.

Enger, S.K. (1996, July). Concept maps: Students' thinking on paper. Paper presented at the Arkansas Statewide Mathematics and Leadership Conference, Conway, AR.

Enger, S.K. (1996, July). Scoring concept maps. Session presented at the Arkansas Statewide Mathematics and Leadership Conference, Conway, AR.

Enger, S.K. (1994, October). Using bioethical issues in the science classroom. Paper and hands-on session presented at the annual meeting of the Iowa State Teachers of Science (ISTS), Des Moines, IA.

Enger, S.K. (1994, October). The use of monoclonal antibodies to study phloem structure and function. Paper and laboratory session presented at the annual meeting of the National Association of Biology Teachers (NABT), St. Louis, MO.

Enger, S.K. (1993, January). Assessment: Designing and scoring performance tasks. Paper presented at the National Association for Science, Technology, Society (NASTS). Washington, DC.

### **Publications:**

Enger, S.K., & Yager, R.E. (2009). *Assessing student understanding in science: A standards-based k-12 handbook* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Corwin Press.

Yager, R.E. & Enger, S.K. (Eds.) (2006). *Exemplary science in grades preK-4*. Arlington, VA: National Science Teachers Association (NSTA).

Enger, S.K. (2004). Assessment of teaching. In J. Penick & R. L. Harris (Eds.), *Teaching with purpose*. Reston, VA: National Science Teachers Association.

Enger, S.K. (Accepted). Action research: A framework for student researchers in environmental studies. *The American Biology Teacher*.

Varrella, G.F., Harris, R., Weld, J., Enger, S.K., Yager, R.E., & Burry-Stock, J. (2003). Local curricular frameworks: Anchoring reform in practice & evidence of progress. *Electronic Journal of Science Education*, 8,(1).

Enger, S.K., Shymansky, J.A., Enger, L.R., Sandner, L. (2002). Buckle Down on biology. Iowa City, IA: Buckle Down Publishing Company.

Enger, S. K. (2002). The Alabama classroom enhancement (ACE) project: The independent study scholarship—Year 3. Huntsville, AL: The University of AL: Institute for Science Education.

Enger, S. K. (2002). The 2001 evaluation report: Exploring space the classroom connection. Huntsville, AL: The University of AL: Institute for Science Education.

Yager, R., Enger, S.K., & Guilbert, A. (2001). Preparing new teachers for teaching in integrated-science classrooms. In D.R. LaVoie & W-M Roth (Eds.), *Models for science teacher preparation* (pp. 177-194). Netherlands: Kluwer Academic Publishers.

Enger, S.K., & Yager, R.E. (2001). *Assessing student understanding in science: A standards-based k-12 handbook*. Thousand Oaks, CA: Corwin Press.

Enger, S. K. (2001). The 2000 evaluation report: Exploring space the classroom connection. Huntsville, AL: The University of AL: Institute for Science Education.

Enger, S. K. (2001). The Alabama classroom enhancement (ACE) project: The independent study scholarship. Huntsville, AL: The University of AL: Institute for Science Education.

Enger, S. K. (2000). What is this thing called creativity? *Alabama Science Teachers Association ASTA News*, 22 (2), 4.

Enger, S.K. (2000). Case studies in the science classroom *Alabama Science Teachers Association ASTA News*, 22 (4), 4-5.

Enger, S. K. (2000). The 1999 evaluation report: Exploring space the classroom connection. Huntsville, AL: The University of AL: Institute for Science Education.

Enger, S. K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Blast off! on Tennessee science book 3* (pp. 1-25). Iowa City, IA: Buckle Down Publishing Company.

Enger, S. K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Blast off! on Tennessee science book 4* (pp. 1-18). Iowa City, IA: Buckle Down Publishing Company.

Enger, S. K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Blast off! on Tennessee science book 5* (pp. 1-18). Iowa City, IA: Buckle Down Publishing Company.

Enger, S.K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Sharpen up! on Tennessee science book 6* (pp. 7-17). Iowa City, IA: Buckle Down Publishing Company.

Enger, S.K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Sharpen up! on Tennessee science book 7* (pp. 7-12, 18-23). Iowa City, IA: Buckle Down Publishing Company.

Enger, S.K. (1999). Science inquiry. In J. A. Shymansky (Ed.), *Sharpen up! on Tennessee science book 8* (pp. 15-29). Iowa City, IA: Buckle Down Publishing Company.

Enger, S.K. (1998). Linking instruction and assessment in science: Science learning opportunities and student performance on a set of open-ended science questions. *Resources in Education*. (Eric Document Reproduction Service No. ED 415 271).

Enger, S.K., & Yager, R.E. (1998). *The Iowa assessment handbook*. Iowa City, IA: The University of Iowa, Science Education Center. (Eric Document Reproduction Service No. TM029167).

Enger, S. K. (1997). *The relationship between science learning opportunities and ninth grade students' performance on a set of open-ended science questions*. Unpublished doctoral dissertation, The University of Iowa, Iowa City.

Robinson, J.B., Enger, S.K., Varrella, G. F., & Yager, R. E. (Eds.). (1997). Iowa Scope, Sequence and Coordination Project: Final report. Iowa City, IA: The University of Iowa, Science Education Center.

Shymansky, J. A., Chidsey, J.L., Henriques, L., Enger, S.K., Yore, L.D., Wolfe, E.W., & Jorgensen, M. (1997). Performance assessment in science as a tool to enhance the picture of student learning. *School Science and Mathematics*, 97(4), 172-183.

Enger, S.K. (1996). Concept mapping: Visualizing student understanding. Iowa City, IA: The University of Iowa, Science Education Center. (Eric Document Reproduction Service No. ED 406 413).

Enger, S. K., Varrella, G.F., & Yager, R.E. (Eds.). (1996). The 1995-96 Iowa Scope, Sequence and Coordination assessment report. Iowa City, IA: The University of Iowa, Science Education Center.

### **Grant Funding:**

CCLI Exploratory Project: "Case Study Based Introductory Undergraduate Course on Life in the Universe" National Science Foundation

Dr. Lior Borko, P.I. and Dr. Sandra Enger, Co-P.I.

Funded 2010-2012 for \$200,000

Assessment of Student Understanding in Science: "Properties of Matter" and "Energy, Machines, and Motion"

Alabama Space grant Consortium (\$5,000)



Funded 10/1/02-12/15/04

Boeing Grant Funding for Pre-service Education in Science Boeing Grant  
Dr. Sandra Enger, Dr. Jack Fix, and Dr. Sue Kirkpatrick; Funded 2005-2007 (\$80,000)

Middle Grades Hands-on Activity Science Program (MGHASP) National Science Foundation,  
R. Hugh Comfort and Sandra K. Enger, Co-Principal Investigators.  
Funded 2001-2006 (\$720,000). No Cost Extension 2006-2007

Middle School Science Initiative Planning Grant, National Science Foundation,  
R. Hugh Comfort and Sandra K. Enger, Co-Principal Investigators.  
Funded 1999-2000 (\$49,500)

Environmental Outreach Initiative, MSFC/ NASA, Funded 1999-2002 (\$62,152)  
The funded project supports the development of a middle school curriculum module on ground  
water.

Camp SUCCESS (Community Agencies, Mentors, Parents, and Students Using Consortium  
Centers to Enjoy School Success), 21<sup>st</sup> Century Community Learning Centers  
Funded 1998-99 (\$20,800), 1999-00 (\$26,000), 2000-01 (\$26,000)  
I served as the UAH faculty support person who worked with the participating Huntsville City  
Schools to promote the academic success of students in the target elementary and middle  
schools. UAH students worked as teachers, tutors, and mentors in the Huntsville City Schools..

**Areas of Consultancy:**

- |                     |  |
|---------------------|--|
| Project Evaluations | <ul style="list-style-type: none"><li>▪ Professional Development</li><li>▪ Classroom Practices</li><li>▪ Funded Projects in Education</li><li>▪ Science Education Reform</li></ul>   |
| Assessment Design   | <ul style="list-style-type: none"><li>▪ Develop Traditional to Performance-Based</li><li>▪ Training Sessions in Assessment Scoring and Interpretation</li><li>▪ Implementation of Concept Mapping and Other Graphic Organizers</li></ul>   |
| Science Content     | <ul style="list-style-type: none"><li>▪ State Science Alignment Studies</li><li>▪ Review of Materials for Validity</li><li>▪ Content Expertise in Biological Sciences, Chemistry, and Mathematics</li><li>▪ Curriculum Alignment</li></ul> |

**TO:** Dean  
**FROM:** Department Chair  
**RE:** Annual (April 1, 2011-March 31, 2012) Performance Evaluation for Sandra K. Enger  
**DATE:**

	Exceptional Performance	Above Average Performance	Average Performance	Below Average Performance	Unacceptable Performance
Teaching					
Research					
Service					
Overall					

Teaching:

Research:

Service to institution, discipline and public:

Overall:

Department Chair Signature \_\_\_\_\_ Date \_\_\_\_\_

Faculty Acknowledgment: I have had the opportunity to discuss this evaluation with the department chair. I understand that I have the privilege of responding in writing to this evaluation and that such response will be attached to the evaluation.

Faculty Signature: \_\_\_\_\_ Date \_\_\_\_\_

NOTE: This performance evaluation is one of the factors considered in determining reappointment, tenure, promotion, merit pay, and support for development, renewal, and participation in academic organizations.

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Copy 1- Faculty Member  
Copy 2 - Office of Provost and Vice President for Academic Affairs*