

Nathan Wood

Assistant Professor - Educational Research
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EDUCATION

The University of Minnesota, PhD Curriculum and Instruction - Science Education (2006)

The University of Minnesota, MS Chemistry (2001)

Montana State University, BS Chemistry (1999)

EMPLOYMENT EXPERIENCE

- 8/08 – present **Assistant Professor** – North Dakota State University, School of Education
- 9/06 – 7/08 **Assistant Professor** - University of Idaho, Department of Curriculum and Instruction
- 6/02 - 8/02 **Instructor** - University of Minnesota, Department of Chemistry
- 9/01 – 12/01 **Instructor** – Macalester College, Department of Chemistry

SCHOLARSHIP

DISSEMINATED WORK

Journal Articles, Refereed

- 4) Lawrenz, F.; Wood, N.; Kirchoff, A.; Kim, N.; & Eisenkraft, A. (In Press) Variables Affecting Physics Achievement. *J. Res. Sci. Teach.*
- 3) Wood, N. B.; Lawrenz, F.; & Haroldson, R. (In Press) A Judicial Look at the Culture of Dealing. *J. Res. Sci. Teach.*
- 2) Wood, N. B.; Lawrenz, F.; Huffman, D; & Schultz, M. (2006) Viewing the School Environment Through Multiple Lenses: Toward a Model of Effective Reform *J. Res. Sci. Teach.* 43(3), 237-254.
- 1) Sartori, D.A.; Hurst, S.K.; Wood, N. Larsen, R.D.; & Abbott, E.H. (2005) Crystal Structure, Physical Properties and PT-195 NMR Characterization of Pt(bipy)Br₂. *Journal of Chemical Crystallography.* 35(12), 995-998.

Kern, A.L.; Roehrig, G.H.; Wood, N.B.; and Sande, M.E. (In Preparation) Covering or uncovering chemistry content. *(to be submitted to the Journal of Chemical Education)*

Wood, N. B. & Lawrenz, F. (In Preparation) Development and Validation of an Instrument for Assessing Abilities Design. *(to be submitted to the Journal of Engineering Education)*

Rutherford, B.; Schreuders, P.; & Wood, N.B. (In Preparation) Relationships between K-12 technology course-taking and undergraduate students' comfort with, and interest in, elements of engineering. *(to be submitted to The Journal of Engineering Education)*

Book Chapters

Wood, N.B.; Roehrig, G. & Kern, A. (Accepted) Assessing Students' Knowledge of Molecular Representations. In (J. Ryan Ed.) *Assessment of Student Learning in Chemistry.*

Evaluation Reports

- 16) Idaho Science and Literacy in the Elementary Schools (ISLES) Summer Workshop Evaluation Report, with Jerine Pegg, for Idaho Department of Education and US Department of Education – Math Science Partnership Program, October, 2008.
- 15) Active Chemistry Supplemental Project Evaluation, with Frances Lawrenz, for Its About Time Publishing, May, 2008.
- 14) Idaho Hands-on Elementary Science (IHES) Evaluation Report, with Jerine Pegg and Cynthia Bechinski, for Idaho Department of Education and US Department of Education – Math Science Partnership Program, September, 2007.
- 13) Summer Leadership Institute Workshop, with Frances Lawrenz, for Its About Time Publishing, July, 2007.
- 12) Active Physics Extended Analyses, with Frances Lawrenz, Nam Keol Kim, and Allison Kirchhoff, for Its About Time Publishing, May, 2007.
- 11) Summative Report: Active Physics Revision Curriculum Evaluation, with Frances Lawrenz, Rachelle Haroldson, Danielle Dupuis, and Nam Keol Kim, for Its About Time Publishing, January, 2007.
- 10) Supplementary Teacher Interviews: Active Physics Curriculum Evaluation, with Frances Lawrenz, for Its About Time Publishing, January, 2007.
- 9) A Report of Follow-up Teacher Interviews: Active Chemistry Curriculum Evaluation, with Frances Lawrenz, for Its About Time Publishing, June, 2006.
- 8) Detailed Analyses: Active Chemistry Curriculum Evaluation, with Frances Lawrenz, for Its About Time Publishing, December, 2005.
- 7) Summative Report: Active Chemistry Curriculum Evaluation, with Frances Lawrenz and Rachelle Haroldson, for Its About Time Publishing, October, 2005.
- 6) Ohio Training Workshop Evaluation, with Frances Lawrenz and Rachelle Haroldson, for Its About Time Publishing, October, 2004.
- 5) Pilot-Year Report of Pilot Implementation of Active Chemistry, with Frances Lawrenz and Rachelle Haroldson, for Its About Time Publishing, August, 2004.
- 4) Mid-Year evaluation of Pilot Implementation of Active Chemistry, with Frances Lawrenz, Rachelle Haroldson, and Per Lee, for Its About Time Publishing, February, 2004.
- 3) Summer Training Workshop Evaluation, for Its About Time Publishing, with Frances Lawrenz, October, 2003.
- 2) Active Chemistry Chapter Evaluation, with Beth Robelia and Jonathan Keyser, for Its About Time Publishing, April, 2002.
- 1) Active Physics Chapter Evaluation, with Jonathan Keyser and Beth Robelia, for Its About Time Publishing, March, 2002.

Conference Presentations

- A Report of the Ways in Which High School Chemistry Students Attempt to Represent a Chemical Reaction At The Atomic/Molecular Level, with Anne Kern and Gillian Roehrig, *proposal accepted* for the National Association for Research in Science Teaching National Meeting, April, 2009.
- 5) Multimedia Learning in a Real Classroom, the National Association for Research in Science Teaching National Meeting, April, 2008.
- 4) Gender Bias in Different Types of Assessments, with Frances Lawrenz and Rachelle Haroldson, poster presented at the National Association for Research in Science Teaching National Meeting, April, 2006.

- 3) Students in Science Classrooms: A Counter Power Culture, with Frances Lawrenz and Rachelle Haroldson, poster presented at the American Educational Research Association Nation Meeting, April 2005.
- 2) Assessment of Conceptual Understanding of Chemical Equation Writing in High School and College Students, with Leslie Flynn, presented at the National Science Teachers Association National Convention, April, 2005.
- 1) Presenting and Assessing Chemical Equation Writing: Moving Toward Conceptual Understanding, with Leslie Flynn-Gehlsen, poster presented at the National Association for Research in Science Teaching National Meeting, April, 2004.

Invited Presentations

- 3) Presentation of initial report of Integrating Science and Literacy in Elementary Schools (ISLES) program at annual, ID state, MSP meeting. October, 2008.
- 2) Presentation of final report of Idaho Hands-on Elementary Science (IHES) program at annual, ID state, MSP meeting. October, 2007.
- 1) Assessing Toward Equity in STEM. Presentation to the Technology, Education, Engineering, Mathematics, and Science collaborative. September, 2007.

White Papers

- 1) Science, Technology, Engineering, and Math Education Enhancement in the State of Idaho, with Robert Ely, Joe Law, Aicha Elshabini, Jerine Pegg, and Brian Rutherford. Presented at Department of Energy and Idaho STEM Education Collaboration Meeting. September, 2007.

EXTERNAL SUPPORT

Funded

Active

(CoPI) Integrating Science and Literacy in Elementary Schools – Proposal for title IIB, Math Science Partnership (MSP) program, in collaboration with Jerine Pegg (PI), Anne Kern (Co PI), and Gail Ballard. \$300,000, 2008-2010.

External Evaluator (sub-award) for Literacy Integration for Math and Science Secondary Teachers, University of Idaho (Jerine Pegg, Rodney McConnell, and Anne Adams PIs), evaluation budgeted \$7,800, 2008-2009.

In-Active

External Evaluator (consultant) for Active Chemistry Supplemental Grant (NSF) to It's About Time Publishing, total award of \$200,000, evaluation budgeted \$20,000, 2007-2008.

Internal Evaluator for Idaho Hands-on Elementary Science project (IHES) – a Math-Science Partnership (MSP) project, PI-Jerine Pegg, total award of \$57,004, evaluation budgeted \$8,500, 2006-2007.

(Co PI) Subcontract for evaluation of Active Physics Revision, NSF Grant to It's About Time Publishing, \$90,100, 2004-2007.

TEACHING

PRIMARY INSTRUCTOR

Assistant Professor, Educational Research

North Dakota State University, School of Education.

Courses Taught:

ED703, Research, Measurement, and Program Evaluation. Methodology and design of research studies; organization, reporting analysis, and interpretation of research.

ED702, Statistics in Educational Research. This course addresses basic theory; techniques for using descriptive and inferential statistics; application in educational research designs.

ED749, Case-Based Educational Research and Statistics. The purpose of this course is to have graduate students understand statistical meanings and concepts that will provide the professional expertise needed to serve schools and institutions with their contemporary research and accountability needs.

8/08 - present

Courses In Development:

ED707, Foundations of Educational Research. This course examines various and diverse philosophical/theoretical frameworks, methodologies, strategies/techniques, and designs for educational research. It explores the nature of research/inquiry and the underpinnings of positivism/post-positivism, interpretive/constructivist and orientational/emancipatory paradigms with an emphasis on reflective planning/design of educational studies.

Assistant Professor (Temporary):

University of Idaho, College of Education.

Courses Taught:

EDCI504, Special Topics - Curricular Theory in the Context of Mathematics/Science Education. This course will facilitate the exploration of the curricular, decision making process in the K-16 classroom, with specific regard to mathematics and science as content areas. This course is specifically designed for students interested in master's and doctoral work in the areas of mathematics and science education, and will serve to synthesize ideas from curriculum theory, curriculum history, and specific philosophies and histories of the selected content area of study.

ED570, Foundations of Educational Research. Examines various and diverse philosophical/theoretical frameworks, methodologies, strategies/techniques, and design. Explores three paradigms: Positivism/Post positivism, Interpretive/Constructivist and Action/Emancipatory with an emphasis in conducting research in multicultural/diverse settings.

9/06 – 5/08

ED571, Introduction to Quantitative Research. Overview of research techniques, emphasizing experimental, quasi-experimental, descriptive, analytical, single subject designs. Special emphasis on interpreting and critically evaluating research articles; planning, analyzing, and writing quantitative research studies.

ED584, Intermediate Quantitative Analysis in Education. An in-depth analysis of quantitative research methods in social and behavioral sciences. The overall goal of the course is to prepare students to apply quantitative research methodology in education. Topics include understanding applied experimental, quasi-experimental and behavioral designs, survey design, measurement and instrumentation, sampling, item analysis, reliability analysis, and validity assessment.

ED586/686, Advanced Planning and Design of Educational Research. Planning, analyzing, writing, and evaluating research studies appropriate for the dissertation; formulation of conceptual framework relative to analytical process; research designs and control of variables, and interpretation of data; preparation of research presentations and writing for publication.

ED687, Advanced Quantitative Analysis in Education. Advanced analysis of quantitative research methods in education and social sciences. The goal of the course is to expose students to multivariate statistics and quantitative research approaches. Topics include multiple correlation/regression, discriminate analysis, exploratory and confirmatory factor analysis, multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), canonical correlation analysis, cluster analysis, log linear model, path analysis and structural equation modeling.

Instructor: Chemistry 1011, General Principles of Chemistry.

University of Minnesota, Department of Chemistry.

6/02 - 8/02

Chemistry 1011 is the introductory chemistry course offered by the University of Minnesota, Department of Chemistry. Students enrolling in this course typically have had little or no experience in chemistry. It is populated almost exclusively by non-science/engineering students who typically bypass it by testing into Chemistry 1021, which is the first course in the regular general chemistry sequence. I prepared and delivered lectures, demonstrations, assignments, and exams. I also developed a course website using WebCT.

Instructor: Chemistry 12, General Chemistry II Laboratory.

Macalester College, Department of Chemistry.

9/01 – 12/01

Chemistry 12 is the second course in the regular general chemistry sequence offered by the Macalester College Department of Chemistry. As the instructor of the accompanying laboratory, I prepared homework problems and introductory lectures, instructed and supervised laboratory work, and evaluated laboratory reports and homework.

SERVICE

REVIEWER

Program Proposal Reviewer, NARST National Meeting, 2006, 2007, and 2009.

Program Proposal Reviewer, AERA National Meeting, April, 2008.

Ad hoc reviewer for the Journal of STEM Education

Ad hoc reviewer for the Journal of Research in Science Teaching

DISSERTATION/THESIS COMMITTEES

DOCTORAL STUDENTS

STUDENT	COMMITTEE ROLE			DEFENSE DATE
	Advisor	Inside Member	Outside Member	
Crag Hill		X		11/30/07
Cindy Dove		X		12/17/08
Lori Thompson		X		
Malika Carter		X		

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

The National Association for Research in Science Teaching

The American Educational Research Association