ASTE 2008 International Conference Mini-Proceedings

Adams, April D., Northeastern State University Macklin, Monica J., Northeastern State University Underwood, Melissa, Glenpool Public School

adams001@nsuok.edu

Analyzing Inquiry-Based Instruction with the Analysis of Inquiry Rubric

While viewing a video of inquiry-based instruction, participants will use the newly refined Analysis of Inquiry Rubric (AIR) to document teacher actions that facilitate inquiry.

Ajame, Ernestine A., Wayne State University Ferreira, Maria M, Wayne State University

ernieangwi@yahoo.fr

The Role of Science Instructional Strategies on 10th Grade Students' Attitudes Towards Science

This study examined the impact that instructional strategies used in science classrooms have on 10th grade students' attitudes towards science

Akcay, Hakan, University of Iowa Akcay, Behiye, Gazi University Martin, Anita, University of Iowa hakanakcay@gmail.com

Change in Preservice Teachers Beliefs about Nature of Science after Experiencing a History of Science Course

The purpose of this study was to examine the effect of history of science course on preservice science teacher's understanding of nature of science.

Akerson, Valarie L., Indiana University Donnelly, Lisa A, Kent State University vakerson@indiana.edu

Relationships among Learner Characteristics and Preservice Elementary Teachers' Views of Nature of Science

This study explored the relationships of various learner characteristics on preservice elementary teachers views of Nature of Science providing implications for teacher education.

Alegria, Adelina V., Occidental College

alegria@oxy.edu

Integrating language development and science content for middle school English learners

In this study a science teacher, working with linguistically diverse students, was observed teaching a science unit to learn how she utilized literacy activities.

Allan, Elizabeth A., University of Central Oklahoma eallan@ucok.edu Bowen, John, University of Central Oklahoma

Making a Connection: Scientific Research and High School Students

This paper reports on a partnership where students participate in university level research at a local school also providing a teacher laboratory and research experience.

Annetta, Len, North Carolina State Universitylen_annetta@ncsu.eduHolmes, Shawn, North Carolina State Universitylen_annetta@ncsu.eduCheng, Meng-Tzu, North Carolina State Universitysears, Matt, Hillside High School, Durham, NCOgren, Chad, Enloe HIgh School, Raleigh, NCsimmons, Patricia, University of Missouri-St. Louis

Engaging Teachers and Students in Science Through Video Games: Experiences From the HI FIVES Project

This paper set will describe practical experiences from researchers, teachers and students involved in an NSF funded project where video games were used for learning.

Ardasheva, Yuliya Y., University of Louisville Brown, Sherri L., University of Louisville yyarda01@gwise.louisville.edu

Motivation of K-12 Teachers Seeking Training in Educating English Language Learners

This qualitative study explored professional experiences, beliefs, and attitudes that motivated elementary and secondary teachers to proactively seek training in working with ESL students.

Ateh, Comfort M., University Of California Davis Passmore, Cindy, University Of California Davis cateh@ucdavis.edu

Defining the characteristics and underlying principles of effective elicitation of student ideas in secondary science.

Participants engage in activities that explore the extent to which students' thinking and understanding are uncovered and attempt to identify the underlying principles of elicitation.

Atwood, Ronald K., University of Kentucky Christopher, John E., University of Kentucky Combs, Rebecca M. Kayrouz, University of Kentucky Roland, Elizabeth A.E., University of Kentucky

rkatwo00@uky.edu

Preservice Elementary Teachers' Understanding of Magnetism Concepts Before and After Instruction

This is a descriptive study of 178 preservice elementary teachers' conceptual understanding of magnetism concepts before and after non-traditional instruction utilizing Physics By Inquiry.

Aumack, Susan M., Afghan Friends Network

smaumack@hotmail.com

Bringing 21st Century Science Education to Third World Teachers

Emerging from 30 years of war, Afghan teachers hunger for new teaching tools. Three American teacher volunteers delivered effective k-12 science and math teaching techniques.

Austin, Barbara A., Northern Arizona University baa49@nau.edu

What Do District Personnel Know about Science as Inquiry?

This study explored building administrator and district personnel understanding of inquiry. In this study, administrators knew very little about the five features of inquiry.

Avery, Leanne M. State University of New York College at Oneonta

averylm@oneonta.edu

Meyer, Daniel Z., Illinois Institute of Technology Wilson, John, Georgia State University Morrison, Judith, Washington State University White, Chris, Illinois Institute of Technology Fluet, Kim, Illinois Institute of Technology Gatchell, David, Illinois Institute of Technology

Rethinking Physics: Perspectives from the ASTE Scienist-Science Education Collaborative Forum

The ASTE Scientist/Science Educator Collaborative Forum's charge is to provide an ongoing space for conversations among scientists and science educators engaged in various collaborative projects.

Aydeniz, Mehmet, The University of Tennessee, Knoxville maydeniz@utk.edu

Can Technology Do the Job? Facilitating Inquiry Learning Using Dynamic Content Management Systems

We report on factors that influenced prospective science teachers' successes and failures with designing lesson plans that reflected the essential features of inquiry using WordPress.

Badara, Ioana A., University Of Tennessee Melear, Claudia T., University Of Tennessee ibadara@utk.edu

The Impact of a Pre-Service Research-Type Science Course on the Implementation of Inquiry-Based Instruction: A Grounded Theory.

Using a grounded theory approach, this study examines the impact of a research-based course on the preparation of pre-service science teachers to use inquiry-based instruction.

Bailey, Janelle M., University of Nevada, Las Vegasjanelle.bailey@unlv.eduCrippen, Kent J, University of Nevada, Las Vegascolin, Cassandra, University of Nevada, Las VegasColin, Cassandra, University of Nevada, Las Vegascolin, Cassandra, University of Nevada, Las VegasEbert, Ellen K., Clark County School District/UNLVcolin, Cassandra, University of Nevada, Las Vegas

Project PASS: Researching Outcomes of a Long-Term Model for Science Teacher Professional Development

Research projects from a three-year professional development model investigate teachers' beliefs in, implementation of, and possible conceptual change about reform-based science education.

Balcerzak, Phyllis, Science Outreach-Washington University in St. Louis pbalcerz@wustl.edu May, Victoria, Washington University - St. Louis

Leadership and the Secondary Science Teacher

This report presents an analysis of 450 secondary life science teachers' views of leadership. The results support a collaborative model of leadership.

Baldwin, Brian C., Kean University

brian@bcbaldwin.com

The "greening" of teacher preparation: Teacher candidates' views on a hybrid methods course

Teacher candidates' views on a hybrid methods course indicate that they are willing adapters of the change, yet desire more face-to-face class time.

Barman, Charles R., Indiana University at Indianapolis cbarman@iupui.edu Houser, Linda L., Indiana University at Indianapolis Allspaw, Kathleen M., Indiana University at Indianapolis

Preparing Career Changers to Teach in an Urban Environment

The Transition to Teaching Program is a certification program designed for career changers. Features of this program and data about its effectiveness will be discussed.

Bartley, Anthony W., Lakehead University Melville, Wayne, Lakehead University Fazio, Xavier, Brock University abartley@lakeheadu.ca

Experiencing Inquiry in Secondary Science Methods Course: Structure and Ambiguity in Open Inquiry Assignments

Preservice teachers experienced a range of inquiry oriented learning activities as part of their methods courses. This paper describes both the activities and their responses.

Barufaldi, James P., Unversity of Texas Hobbs, Mary E., University of Texas Fletcher, Carol L., University of Texas Sherron, Todd, University of Texas McLeland, Patty, Hutto Indendent School District jamesb@mail.utexas.edu

An Effective Professional Development Model in Science Education

The purpose of this themed paper set is to discuss an effective professional development model for inservice science education.

Bautista, Nazan U., Miami University

uludagn@muohio.edu

No Elementary Teacher Left Behind?: Investigating Elementary Teachers' Physical Science Conceptions after the No Child Left Behind Act This study investigates the changes, if any, in elementary teachers' conceptions of elementary grade level physical science concepts after the No Child Left behind Act.

Beamer, Tyler, College of Charleston Sickle, Meta Van, College of Charleston Harrison, Gary, College of Charleston Tempel, George, Medical University of South Carolina

vansicklem@cofc.edu

Lasting Impact of a Professional Development Program on Constructivist Science Teaching Methods

This research was examined the GK-12: Lowcountry Partners for Inquiry program. Scores in the CLES categories were significantly (p < .05) higher two years post-program.

Bergman, Daniel J., Wichita State University

daniel.bergman@wichita.edu

The effects of two secondary science teacher education program structures on teachers' habits of mind and action

This presentation describes results of an ongoing study comparing science teachers prepared through either one or multiple (3-4) semesters of preservice science methods coursework.

Beyer, Carrie J., University of Michigan Davis, Elizabeth, University of Michigan

cjbeyer@umich.edu

Supporting Preservice Elementary Teachers' Critique and Adaptation of Science Curriculum Materials Using Educative Curriculum Materials

This study examines how preservice elementary teachers critique and adapt inquiry-oriented science curriculum materials with and without support.

Binns, Ian C., University of Virginia Schnittka, Christine G., University of Virginia Bell, Randy L., University of Virginia ian binns @virginia.edu

PowerPoint: Encouraging high-tech chalk & talk or reforms-based science instruction?

This descriptive study explored secondary preservice science teachers' use of presentation software (i.e., PowerPoint) to support science teaching and learning.

Pre-service Elementary/Middle Teachers and Earth Sciences: Is There a Relationship Between Spatial Abilities or Misconceptions and Overall Content Understanding?

Positive statistical relationships were found between scores on spatial ability tests, tests of Earth science conceptual understanding, and mean Earth science course content exam scores.

Blanchard, Margaret R., North Carolina State University Meg_Blanchard@ncsu.edu Meyer, Xenia, Cornell University Pringle, Rose M., University of Florida Feldman, Allan, University of Massachusetts Amherst Koballa, Thomas, University of Georgia Southerland, Sherry A, Florida State University

Images of Inquiry: What are practicing science teachers thinking and doing when they ?do inquiry'?

This paper set provides images of how elementary, middle, and high school science teachers translate inquiry into classroom practice and gives insight into relevant issues.

Bloom, Mark A., Texas Christian University

M.bloom@tcu.edu

To what extent can explicit intervention efforts improve science teachers' conceptions of Nature of Science?

During a professional development workshop, explicit nature of science (NOS) interventions were used in an attempt to improve science teachers' conceptions of NOS

Bluhm, Jennifer L., University of Nevada, Renobluhmin@sbcglobal.netCrowther, David T., University of Nevada, Renobluhmin@sbcglobal.net

Affective Outcomes of Guided Inquiry-Based Science for English Language Learners

This mixed method study explores the affective outcomes of EL students learning as they were engaged in guided inquiry science instruction.

Bottoms, SueAnn I., Oregon State University sueann.bottoms@smile.oregonstate.edu

Professional Development through a Community of Practice

Understanding the influence participation in a community of practice may have on teachers' professional growth requires an understanding of factors that encourage or discourage

participation.

Bowen, Michael G., Mount Saint Vincent University Bartley, Anthony W, Lakehead University gmbowen@yahoo.com

The nature of feedback on student laboratory reports: Issues in the formative assessment practices of preservice science teachers

Preservice teachers participating in formative assessment activities "reviewing" student inquiry reports found difficulties providing appropriate feedback. Implications are discussed with proposals for teacher education.

Bowman, Jacqueline K., Arkansas Tech University Kondrick, Linda C, Arkansas Tech University jbowman@atu.edu

The Relationship between Student Attitudes and Use of Concept Mapping in Science Courses

Although concept mapping is proven to be an effective study tool, the researchers found reasons that students may not choose to use this tool indepedently.

Bradbury, Leslie U., Appalachian State University Goodman, Jeff M., Appalachian State University upsonlk@appstate.edu

Using Wikispaces in an Elementary Science Methods Course: Learning from the Experience and Planning for Future Directions

Presenters will share experiences incorporating wikispace building in an elementary science methods course to reinforce science content through technology and writing to learn science.

Brandoni, Chiara R., Teachers College, Columbia University crb2121@columbia,edu

Improving divergent thinking ability in science: Reflections on research using a new model of divergent thinking to create divergent thinking activities and assessments.

Based on the results of previous research using a new model, teacher rubrics and sample activities have been created to improve divergent thinking in science.

Tretter, Thomas R., University of Louisville

Impact of a Summer Science Institute on Urban Middle School Students??

This study examined the affective and cognitive impacts of eight field trips and supplemental science activities on economically disadvantaged, urban, minority middle school students.

Brownstein, Erica M., Capital University Allan, Elizabeth, University of Central Oklahoma Brunkhorst, Herb, California State University Dykstra, Dewey, Boise State University Hagevik, Rita, University of Tennessee at Knoxville Olson, Joanne, Iowa State University Veal, William, College of Charleston ebrownst@capital.edu

Beginning the conversation for the 2011 version of the NSTA Standards for Science Preparation

The 2003 NSTA Standards for Science Teacher Preparation will be revised in 2011. An initial discussion with the ASTE community will help shape the standards.

Bryan, Lynn A., Purdue University Recesso, Arthur, University of Georgia labryan@purdue.edu

Evidence-Based Approach to Refection on Science Teaching and Learning Using a Web-Based Video Analysis Tool

In this session, we describe a methodological framework and web-based video analysis tool for promoting science teachers' reflection as they develop/refine their professional knowledge.

Buck, Gayle A., Indiana University gabuck@indiana.edu Latta, Margaret L. Macintyre, University of Nebraska-Lincoln Kaftan, Julianne M., University of Nebraska-Lincoln

An Exploratory Study of Using Formative Assessment to Guide Inquiry-Based Instruction

The purpose of this study was to provide an understanding of the key working components of improving inquiry-based instruction through the utilization of formative assessment.

Buczynski, Sandy, University of San Diego

sandyb@sandiego.edu

A longitudinal study of science based professional development for elementary teachers

This study examines the science professional development grade 4-6 teachers received over three years and its impact on their practices and student learning.

Campbell, Ashley J., West Texas A&M University acampbell@wtamu.edu

Science as a Human Endeavor: The Effect of Highlighting the Lives and Work of Great Scientists in a Pre-Service Science Methods Class

This research examines the effects of integrating the lives and work of historical scientists in a science methods class.

Campbell, Todd, Utah State University

toddc@ext.usu.edu

Triad experiences: The impact of joint professional development for pre- and in- service science teachers on triad dynamics.

This presentation focuses on the results of in-depth phenomenological interviewing of triads involved in a pilot professional development project.

Cantrell, Pamela, Brigham Young University Smith, Leigh K., Brigham Young University pamela_cantrell@byu.edu

Learning and Implementing Full Science Inquiry: Translating Knowledge and Skills into Practice

The SciencePlus professional development program engaged teachers in an inquiry immersion experience followed by carefully scaffolded follow-up sessions that translated to successful classroom practice.

Capobianco, Brenda M., Purdue University Eichinger, David, Purdue University Staver, John, Purdue University bcapo@purdue.edu

Examining pre-service elementary school science teachers' understanding of scientific inquiry

This study examines how science content courses influence preservice teachers' understandings of inquiry, their abilities to do inquiry, and design inquiry-based science lessons.

Capobianco, Brenda M., Purdue University Eichinger, David, Purdue University Staver, John, Purdue University

What can we learn from assessing preservice elementary science teachers' conceptions of and abilities to conduct scientific inquiry?

This study examines the effectiveness of assessing preservice elementary science teachers' understandings of and abilities to conduct inquiry and inquiry-based lessons using three assessment tools.

Capobianco, Brenda M., Purdue University Shane, Joseph W., Shippensburg University bcapo@purdue.edu

Brokering policies and standards through secondary preservice science teacher action research

This position paper argues that action research can serve as a powerful mechanism for understanding and enacting national policies and standards among preservice science teachers.

Powell, Janet Carlsen, BSCS Gess-Newsome, Julie, Northern Arizona University Taylor, Joseph, BSCS Gardner, April L., BSCS

JPowell@bscs.org

The Impact of Professional Development and Educative Curriculum Materials on Teacher Knowledge, Teacher Practice, and Student Achievement.

Does professional development make a difference? How about educative curriculum materials? Come find out how the separate and combined impacts influence teacher and student scores.

Carnes, G. Nathan, University of South Carolina ncarnes@gwm.sc.edu

A Conversation About Middle Level Science Teacher Preparation Texts

A round table discussion about the current status of science education texts used to prepare middle school science teachers and opportunities for change.

Carrier, Sarah J., North Carolina State University Guarino, A. J., Auburn University sarah_carrier@ncsu.edu

bcapo@purdue.edu

Schoolyard science meeting the needs of boys and girls.

This study assessed the efficacy of Schoolyard lessons, with boys demonstrating statistically significantly greater score gains in the treatment group than in the traditional curriculum

Cartier, Jennifer L., University of Pittsburgh Sink, Wendy M., University of Pittsburgh Kochhar, Jeanetta L., University of Pittsburgh jcartier@pitt.edu

Supporting Pre-Service Elementary Teacher Learning Through Use of an Instructional Planning Framework

Here we will describe the instructional planning framework that anchors our Elementary Science Methods course and how this framework emphasizes important aspects of scientific practice.

Cavallo, Ann M.L., University of Texas at Arlington cavallo@uta.edu Fox, Jill, University of Texas at Arlington Lee, Joohi, University of Texas at Arlington

Revealing the Mystery (Boxes): Exploring Elementary School Students' Views and Understandings of Science

This research explores fourth graders' understandings and views of NOS as they experience science (Mystery Boxes) as dynamic and tentative, socially constructed, and global.

Ceglie, Robert J., University of Connecticut Settlage, John J., University of Connecticut rceglie@hotmail.com

The Evolving Professional Identity of a College Biology Instructor

Using Gee's identity theory, we investigated how a college biology professor's experiences led to the evolution of a sense of self.

Cheng, Meng-Tzu, North Carolina State University mtcheng@ntu.edu.tw Annetta, Leonald A., North Carolina State University Holmes, Shawn Y., North Carolina State University **Students learning science through modifying video games made by their teachers**

The proposal displays the current results of HI FIVES. An original game, a modified game, and a video will be visually presented.

Clough, Michael P., Iowa State University Bergman, Danny J., Witchita State University Kruse, Jerrid W., Iowa State University Olson, Joanne K., Iowa State University Berg, Craig A. A., University of Wisconsin - Milwaukee

Eating their Young: Beginning Teachers and Fierce Institutional Constraints.

Beginning teachers are often expected to maintain the status quo. We will share several years of data illustrating the barriers to implementing effective teaching practices.

Coble, Jennifer S., University of North Carolina at Chapel Hill jcoble@unc.edu

Can science education reform be a reality in the age of accountability?

This study provides an in depth analysis of how high stakes tests discourages secondary science teachers from utilizing reform based teaching strategies in their classrooms.

Coleman, Bobbie, University of Massachusetts, Amherst nasamobile@aol.com

Successful White Teachers of Black Students: Teaching Across Racial Lines in Middle School Science Classrooms

This study examined pedagogical strategies necessary to improve achievement gap in science for LSES urban Black middle school students

Collins, Angelo, Knowles Science Teaching Foundation angelo.collins@kstf.org

A Model for the Ongoing Professional Development of Beginning High School Science Teachers

Outcomes are reported for a model for professional development including selection, education, overcoming isolation, mentoring, materials, leadership and accountability and how these components interact.

Concannon, James P., University of Missouri

jpc712@mizzou.edu

mclough@iastate.edu

A Proposed Social-Cognitive Model and Ideas for Practice.

This presentation will focus on how teachers can foster girl's and women's self-efficacy, positive attitude, and achievment through the K-12 pipeline/gender filter.

Richardson, Rita M. Coombs, University of St. Thomas rcoombsrichardson@yahoo.com

A University Public School Alliance to Increase the Number of Science TeachersA University Public School Alliance to Increase the Number of Science TeachersA University Public School Alliance to Increase the Number of Science Teachers

The presentation includes descriptions of successful partnerships between a university and two school district and a program of science education where teachers develop their philosophy.

Cox-Petersen, Amy, Cal State Fullerton Ponder, Jennifer, Cal State Fullerton acox@fullerton.edu

Service-Learning, Civic Involvement, and Stewardship: Taking Action in Science Education

Discussion, models, and research to encourage the integration of action-based pedagogical strategies in science education.

Crofford, Geary D., University of Oklahoma/College of Education gcrofford@ou.edu Pedersen, Jon, University of Oklahoma/College of Education Gram, Wendy K., University of Oklahoma/Sam Noble Oklahoma Museum of Natural History

Effectiveness of a summer professional development experience with authentic scientific research and inquiry-based teaching components in Improving Middle-level Science Teachers' Self-Efficacy and Understanding of the Nature of Science

Teachers participating in a scientific research experience coupled with inquiry-based teaching approaches increased their scientific literacy and likelihood to implement inquiry-based curricula

Crowther, David T., University of Nevada Reno crowther@unr.edu

Guided Inquiry in General Biology for Education Majors: Longitudinal Study

Method of instruction for introductory biology for K-8 majors utilizing guided inquiry had a significant difference in content learned as compared to traditional lecture courses.

Cullin, Michael J., Lock Haven University of Pennsylvania mcullin@lhup.edu Haefner, Leigh A., the Pennsylvania State University - Altoona Courson, Susan, Clarion University of Pennsylvania Friedrichsen, Patricia J., University of Missouri - Columbia Brown, Patrick, University of Missouri - Columbia Hanuscin, Deborah L., University of Missouri - Columbia

Strategies for Supporting Prospective Teachers' Instructional Planning

Elementary and secondary teacher educators will share their experiences using various tools to support prospective science teachers in their initial instructional planning.

Dalton, Michael L., Oregon State University Bottoms, SueAnn I., Oregon State University michael.dalton@oregonstate.edu

From Shortage to Abundance in STEM Teacher Preparation: An Undergraduate Model

New, concurrent approaches to teacher preparation that make it possible for more undergraduate STEM students to become qualified STEM teachers while pursuing their primary degrees

Daly, Shanna, Purdue University Bryan, Lynn A, Purdue University Giordano, Nicholas, Purdue University sdaly@purdue.edu

Teaching and Learning about Self-Assembly in High School Science

In this experiential session, we will engage participants in an abbreviated version of a selfassembly lesson that we developed for high school science.

Danielowich, Robert M., Northeastern Illinois University danielowich@hotmail.com

Learning through Reflection about Socioscientific Issues (SSI) Instruction: The Experiences of Four Inservice Secondary Science Teachers

Practicing teachers reflect about SSI lessons they enact in their own classrooms as opportunities for critique and change of their usual approaches to teaching science.

Daughtrey, Taz, College of Integrated Science and Technology, James Madison University daughtht@jmu.edu

Experiencing A Sense of Time

An introductory science processes course for preservice teachers has been organized around techniques for establishing dates for a wide range of phenomena throughout geological time.

Davis, Elizabeth A., University of Michigan betsyd@umich.edu Kenyon, Lisa, Wright State University Hug, Barbara, University of Illinois at Urbana-Champaign Nelson, Michele, University of Michigan Beyer, Carrie, University of Michigan Schwarz, Christina V., Michigan State University Reiser, Brian J., Northwestern University

MoDeLS: Designing Supports for Teachers Using Scientific Modeling

Our teacher learning goals for using scientific modeling drive our innovations in teacher education and curriculum materials; we discuss these and our design challenges.

Demir, Abdulkadir, University of Toledo Czerniak, Charlene M., University of Toledo Templin, Mark, University of Toledo Weber, William B., University of Toledo

mark.templin@utoledo.edu

Lessons learned from designing and researching a program that aims to recruit, better prepare, and retain urban science and mathematics teachers

The session invites audience participation in a discussion of issues associated with recruiting and retaining science and mathematics teachers for urban schools.

Deniz, Hasan, University of Nevada, Las Vegas hdeniz@gmail.com Donnelly, Lisa A., University of Nevada, Las Vegas Phillipson-Mower, Teddy, University of Nevada, Las Vegas

Relationships of Preservice Secondary Science Teachers?? Acceptance of Evolutionary Theory, Personal Epistemology, Actively Open-minded Thinking, and Understanding of Evolutionary Theory

This study explored the nature of relationship between acceptance of evolutionary theory and potential predictors of acceptance of evolutionary theory among preservice secondary science teachers.

Diana, Thomas J., Utica College tdiana@utica.edu Ochanji, Moses K., California State University San Marcos

What "Science" Should Elementary Teachers Know? Meeting the Challenges of Teaching Elementary Science Methods.

This study examines factors influencing elementary science methods courses and how to

overcome the obstacles often found in preparing preservice elementary teachers to teach science.

Dias, Michael, Kennesaw State University Eick, Charles, Auburn University mdias@kennesaw.edu

Practicing what we teach: Interpreting a teacher educator's experiences with 8th grade physical science students

Case study details practical knowledge developed while implementing a guided inquiry/conceptual change curriculum and offers implications for preservice and inservice professional development of science teachers.

DiBiase, Warren J., UNC Charlotte Steck, Todd R., UNC Charlotte Hilger, Helene, UNC Charlotte Wang, Chuang, UNC Charlotte wjdibias@uncc.edu

Multi-Campus Design and Implementation of Open-Ended PBL Courses in Environmental Biotechnology with Interdisciplinary Learning

Tis session will provide an overivew of a three-year study involving the design and implementation of an interdisciplinary course in environmental biotechnology.

Dickerson, Daniel L., Old Dominion University Stewart, Craig O., Old Dominion University Cutshaw, Daniel V., Old Dominion University ddickers@odu.edu

donna010@umn.edu

Rhetorical Analysis of Socioscientific Issues in Popular News Media

This study investigates the rhetorical outcomes of different frames for presenting science to non-specialists in media (informal educational contexts).

Donna, Joel D., University of Minnesota Roehrig, Gillian H., University of Minnesota Struss, Herbert, University of Minnesota McDonald, Eric, University of Minnesota Bang, Eun, Arizona State University Luft, Julie, Arizona State University

Online Induction: Working to meet the needs of beginning science teachers

This session explains how theory and data influenced the iterative design of an online induction program designed to support in-service science teachers.

Donnelly, Lisa A., Kent State University Sadler, Troy D., University of Florida ldonnell@kent.edu

Indiana High School Science Teachers' Views of Standards and Accountability: "Is It Better to Feed the Hogs or to Weigh 'Em?"

This study investigates how secondary science teachers regard state science standards, modify curricula according to standards, and characterize impacts of standards on students and teachers.

Eick, Charles J., Auburn University Dias, Michael, Kennesaw State University eickcha@auburn.edu

Evaluation of the Interactions in Physical Science? guided inquiry curriculum

A science teacher educator teaches and evaluates the effectiveness of a new reform-based curriculum, Interactions in Physical Science?, on eighth-graders' engagement and conceptual learning.

Ellis, James D., The University of Kansas Bulgren, Janis, University of Kansas jdellis@ku.edu

A design study to develop strategies for teaching scientific argumentation skills

We will share work on a design study, supported by NSF, to produce teacher education materials for middle school science to enhance student scientific argumentation.

Everett, Susan A., University of Michigan-Dearborneveretts@umd.umich.eduLuera, Gail R., University of Michigan-Dearbornotto, Charlotte A, University of Michigan-Dearborn

Using a functional model to develop a mathematical formula

A functional model of a teeter-totter is used to help pre-service elementary teachers develop the mathematical relationship of a Class 1 lever.

Everett, Susan A., University of Michigan-Dearborn everetts@umd.umich.edu Moyer, Richard H., University of Michigan-Dearborn

Pre-Service Elementary Teachers' 5E Learning Cycle Science Lesson Plans

An analysis of 5E learning cycle lesson plans revealed that pre-service elementary teachers were least successful in developing an appropriate question for students to investigate.

Farland, Donna L., The Ohio State University farland.3@osu.edu

Middle School Girls' Speak out about Scientists II: Longitudinal Study from a Summer Camp Experience

This study examined how middle school girls' perceptions of scientists were modified as a result of consecutive years participation with a university science summer camp.

Farland, Donna L., The Ohio State University

farland.3@osu.edu

A Cross-National Descriptive Study: Comparing The Who, What and Where of Scientists between Two Cultures

The purpose of this study was to identify and analyze students' perceptions of scientists (N=450) and compare how the two different educational systems view scientists.

Fazio, Xavier, Brock University Karrow, Doug, Brock University xavier.fazio@brocku.ca

Implementation of "NatureWatch" Ecological Monitoring Program within a Local Elementary School

This paper reports upon the implementation processes and outcomes of Environment Canada's "NatureWatch" ecological monitoring program within a local elementary school.

Fazio, Xavier, Brock University

xavier.fazio@brocku.ca

Pre-service science teachers' challenges during their practicum: supporting innovative practices

This research study explores secondary pre-service science teachers' challenges identified during their practicum experience and the role of the practicum in supporting innovative practices.

Feldman, Allan, University of Massachusetts Amherst Beatty, Ian D., University of Massachusetts Amherst Leonard, William J., University of Massachusetts Amherst Gerace, William J., University of Massachusetts Amherst

Technology-Enhanced Formative Assessment: An Innovative Approach to Student-Centered Science Teaching

We integrate question-driven instruction, formative assessment, dialogical discourse, and classroom response technology into a unified pedagogical method, with an intensive, sustained professional development program.

Fetters, Marcia K., Western Michigan University Isola, Drew, Allegam Public Schools Lantz, Tammy, Traverse City Public Schools

Infusing Inquiry into Science Methods Courses

Strategies for the inclusion of inquiry activities in methods courses supporting pre-service teachers in developing inquiry activities for their students.

Fetters, Marcia K., Western Michigan University Hickman, Paul, PhysTEC

PhysTEC: Building a Coalition to Support Physics Teacher Preparation

This presentation highlights the work of a national coalition of colleges and universities designed to improve the quality and quantity of physics and physical science teachers.

Fidler, Chuck G., Syracuse University Dotger, Sharon, Syracuse University

Pre-Service Elementary Teachers Conceptions of Scale

Evaluate misconceptions among pre-service elementary teachers to inform the development of undergraduate curricula that model themes of scale and prepare future elementary teachers teaching science.

Finson, Kevin D., Bradley University

finson@bradley.edu

Case Study Course Project Between Secondary Science Methods and Special Education Methods

Described will be a planned collaborative effort between secondary science methods and special education methods courses to improve pre-service teachers' instruction

ner Preparation

marcia.fetters@wmich.edu

cgfidler@syr.edu

marcia.fetters@wmich.edu

Fleming, Michelle A., University of Minnesota

bake0101@umn.edu

Preservice Elementary Teachers' Intersecting Views of the Natures of Science and Art and Teaching Science and Art

This study examines preservice elementary teachers' perceptions of science, art, and elementary teaching, as well as views of connecting or integrating disciplines.

Fletcher, Steven S., St. Edward's University Roehrig, Gillian, University of Minnesota Tobin, Kenneth, City University of New York Bell, Randy, University of Virginia Beeth, Michael, University of Wisconsin at Oshkosh

Lost in the crevasse : Perspectives on the relationship between theory and practice in science education.

This presentation will explore the relationship between theory and practice in science education from four perspectives: Induction; urban schools; NOS; and the conceptual change model.

Flick, Lawrence B., Oregon State University

FlickL@science.oregonstate.edu

Teaching cognitive strategies to students: A missing element in policy and practice

Participants will contrast current, reform-based conceptions of instruction with a proposed framework for explicitly teaching students about the nature of strategic thinking in science.

Forbes , Cory T., University of Michigan Davis, Elizabeth A., University of Michigan ctforbes@umich.edu

Preservice elementary teachers' curricular role identity for science teaching: A multi-year study

In this study we examine two years of results from a survey designed to illuminate preservice elementary teachers' curricular role identity for science teaching.

Fortney, Brian S., The University of Texas at Austin Barufaldi, James P., The University of Texas at Austin bfortney@mail.utexas.edu

Evaluating Change in Pre-service Teacher Beliefs through Differential Cognitive Maps

This paper discusses differential cognitive mapping used to develop the underlying structure of pre-service teacher beliefs, with interpretations informed by Epistemological, Ontological, and Social/Affective lenses.

Foster, Patrick N., Central Connecticut State Universityfosterp@ccsu.eduSianez, David M., Central Connecticut State UniversityDischino, Michele, Central Connecticut State University

Integrating Engineering Concepts in Science Education

Preservice teachers develop and use engineering-design activities to introduce scientific concepts to K-12 students. Elementary-, middle-, and high-school examples will include biological and physical-science content.

Foster, Rachel, Knowles Science Teaching Foundation r.foster@kstf.org Henson, Kevin, Lenape High School

One day at a time: An early-career teacher's evolving beliefs about using inquiry to teach chemistry.

As an early-career teacher, Kevin's beliefs about inquiry are evolving through interplay between professional development and opportunities to put his beliefs into practice.

Freed, Andrea B., University of Maine at Farmington andrea.freed@maine.edu

Environmental Service Learning: Clean Air Zone Campaign

The No Idling Project focused on reducing vehicle idling at schools. Preservice teachers worked with the Maine Department of Environmental Protection to educate local students.

Freed, Andrea B., University of Maine at Farmington andrea.freed@maine.edu Acheson, Julianna, University of Maine at Farmington Berger, Rebecca, University of Maine at Farmington

Teacher Reflections on NCLB

Teachers from the state of Maine were interviewed about the effect of NCLB on teaching practice, especially on the teaching of science and social science.

A Logic Model and Review of Metrics and Measures for the NSF - Research on Gender in Science and Engineering

Principal investigator interviews provide qualitative input for the further development of the NSF-GSE program logic model. Measures of broader impact for the program are identified.

Friedrichsen, Pat, University of Missouri – Columbia Abell, Sandra, University of Missouri - Columbia Brown, Patrick, University of Missouri - Columbia Lankford, Deanna, University of Missouri - Columbia Pareja, Enrique, University of Missouri - Columbia Volkmann, Mark, University of Missouri - Columbia

FriedrichsenP@missouri.edu

PCK Data Collection Tools: Using a Lesson Planning Task to Elicit Pre-Service Teachers' Prior Knowledge for Teaching

We will share a lesson planning task and interview protocol for collecting data on teachers' prior knowledge for teaching, as well as examine data samples.

Galganski, Martha H., Washington University in St. Louismhgalg@yahoo.comTurner, Tommie Y., Washington University in St. LouisHogrebe, Mark, Washington University in St. Louis

A teacher observation protocol examining teachers' practice and student learning in science inquiry through Lesson Study.

Scientists and educators collaborated in the construction of an observation protocol, used with Lesson Study teams, that examined teacher-student engagement in science inquiry.

Gatling, Anne L., Boston College

pfitzner@bc.edu

Connecting Teacher Preparation More Closely to Practice and Diverse Learners

Conversations generated by an elementary science teacher preparation literature review could highlight strengths and inspire new approaches connecting preparation more to practice and diverse learners.

agay@csu.edu

Elmesky, Rowhea, Washington University in St. Louis

Conflicting Ideologies in Science Education: Cooperation Across Cognitive and Sociocultural Discourses in the Development of Reform Initiatives

This self-ethnographic study examines conflicts that arose in the development of a learning progression in cellular biology, the process of their resolution, and possible implications.

Gilbert, Andrew, Kent State University

agilber1@kent.edu

Using teacher candidates' philosophy statements to facilitate the development of inquirybased science practice.

This study represents my efforts to utilize pre-service teachers' philosophy statements to facilitate connecting their beliefs on science teaching with inquiry-based constructivist classroom practice.

Gilmer, Penny J., Florida State University Balinsky, Martin, Florida State University Chitwood, Susan A., Florida State University gilmer@chem.fsu.edu

Science Graduate Students? Ideas on the Nature Of Science and Their Progression and Graduation from Graduate School

We compare science graduate students? early and later ideas on nature of science and their progression and graduation while in graduate school.

Giscombe, Claudette L., University of Massachusetts Amherst cgiscombe@aol.com

Pathways To Success In Science: A Phenomenological Study, Examining The Life Experiences Of African-American Women In Higher Education

The life experiences of African American women faculty were explored to gain an understanding of how they negotiated pathways to successful science careers.

Glen, Nicole J., Syracuse University Dotger, Sharon, Syracuse University nszwejbk@syr.edu

The Use of Scientific Language in Three Elementary Classrooms: Teachers' Expectations and Beliefs about Science Vocabulary

This qualitative study examined three elementary teachers' rationale for, and expectations of, their students' science vocabulary use during classroom lessons.

Goubeaud, Karleen R., Clemson University krg@clemson.edu

How do High School Science Teachers Adapt Their Instructional Strategies for English Language Learners?

This multiple-case study examined the instructional practices of a novice and veteran high school science teacher in their first experience teaching English Language Learners.

Govett, Aimee L., East Tennessee State University govett@etsu.edu

Teaching Force and Motion to Elementary Teacher Candidates

How do we effectively teach elementary teacher candidates difficult physical science concepts in a non-threatening environment, combining pedagogy with science content and addressing misconceptions.

Grove, Crissie M., Florida State University Dixon, Patricia J., Florida State University crissiegrove@yahoo.com

Research Experiences for Teachers: Sustained Influences to Practice, Career, and Retention

This study investigated changes to previous participants of a professional development program such as changes to classroom practices and teacher retention due to program participation.

Guzey, Siddika Selcen, , University Of Minnesota Roehrig, Gillian H., University Of Minnesota Luft, Julie A., Arizona State University kendi003@umn.edu

The influences on inquiry-based teaching: Pedagogical content knowledge, teaching beliefs, and teaching experience

This study examines the influence of pedagogical content knowledge, teaching beliefs, and teaching experience on the inquiry-based practices of eight secondary science teachers.

Hagedorn, Eric A., University of Texas at El Paso Hunt, Bill, Big Pine High School Suskavcevic, Milijana, University of Texas at El Paso ehagedorn@utep.edu

Manciu, Felicia, University of Texas at El Paso Manciu, Mickey, University of Texas at El Paso Kapoor, Vishal, University of Texas at El Paso

Teaching Nanoscience to High School and Middle School Teachers: Two Year Evaluation of an Innovative Professional Development Program

The formative and summative mixed method evaluation of an innovative program to introduce high school and middle school teachers to nanoscience & technology is presented.

Hagevik, Rita A., University of Tennessee Roberson, James, University of Tennessee

rhagevik@utk.edu

Preservice elementary science teachers' understanding of the Nature of Science through use of inscriptions in science notebooks

This study determined if through the use of inscriptions in science notebooks elementary preservice teachers could better understand the Nature of Science.

Hand, Brian, University of Iowa Martin, Anita M., University of Iowa Choi, Aeran, University of Iowa brian-hand@uiowa.edu

Critical Elements in Implementing Argument in the Science Classroom

This paper set discusses 3 studies related to the pedagogical shift necessary for the implementation of scientific argument in the classroom.

Hanson, Deborah L., Hanover College Rubino, Darrin, Hanover College Worchester, Pete, Hanover College Bohman, Danette, Southwestern Elementary Datillo, Shannon, Southwestern Elementary Pflaumer, Jodi, Southwestern Elementary Traylor, Cindy, Southwestern Elementary hanson@hanover.edu

Teachers Helping Teachers: A professional development model

This presentation details a collaborative professional development program developed and implemented by a group of elementary teachers for other elementary teachers.

Hanuscin, Deborah L., University of Missouri-Columbia hanuscind@missouri.edu Nehm, Ross, City University of New York

Working in Two Worlds: Perspectives on Joint Appointment in Science & Education

Through an interactive panel discussion we will discuss the nature of joint appointments, interdisciplinary work, and faculty roles in science teacher education.

Harkins, Heather K., University of Connecticut/CT Science Center hharkins@gmail.com

Bringing the mindset and practice of professional development to preservice teacher education

Professional development experiences were incorporated into a elementary science methods course in an attempt to develop a continuum of professional development anchored in preservice education.

Harris, Tina A., Indiana University

tiaharri@indiana.edu

Science Teacher Professionals: How do Science Teachers View Themselves?

Science teachers were interviewed concerning community perceptions of themselves and how current reforms influence those perceptions and their ability to teach inquiry science.

Hechter, Richard, University of North Dakota Guy, Mark, University of North Dakota richard.hechter@und.edu

Promoting creative thinking and communication of science concepts among elementary teacher candidates

This study explored the potential benefit of video editing as a tool to support creative thinking and communication of science concepts among elementary teacher candidates.

Heddle, Mandy L., Bowling Green State University
Burgoon, Jake, University of Toledo
Shafer, Michelle, Bowling Green State University
Haney, Jodi J., Bowling Green State University
Ballone-Duran, Lena, Bowling Green State University
Duran, Emilio, Bowling Green State University

Elementary Teacher Misconceptions in Physical and Earth Sciences

Teacher's misconceptions in earth and physical science were explored. Teachers exhibited misconceptions similar to their students and, in some cases, revealed previously unrecognized misconceptions.

Hemler, Deb, Fairmont State University dhemler@fairmontstate.edu Repine, Tom, West Virginia Geological and Economic Survey McKeen, Angela, Fairmont State University

Did We Really Go To the Moon? Teaching Skepticism and Scientific Habits of Mind.

Activity conducted with elementary preservice teachers using a discrepant event to alter science perceptions while conveying lessons about scientific habits of mind will be discussed.

Henrie, Andrea W., The University of Tennessee Melear, Claudia T., The University of Tennessee

awentwor@utk.edu

Let's Start at the Very Beginning: How Preservice Teachers Plan for Instruction and What Processes Influence Them as They Engage in Lesson Planning

This research pursued a line of inquiry in order to empirically describe the prominent features of the lesson planning processes of preservice secondary science teachers.

Hermann, Ronald S., Harford Community College/Harford County Public Schools ronald.hermann@hcps.org

Utilizing Worldview Theory to Determine the Factors Infuencing an Understanding of Evolutionary Concepts

Exporatory research was conducted to determine the scientific and religious factors that influence the development of worldview perspectives and their role in understanding of evolution.

Hick, Sarah R., Hamline University Roehrig, Gillian, University of Minnesota Roehrig, Julie, Arizona State University hick0192@umn.edu

Portrait of a New Reformer: A Case study of a new science teacher with reform-based teaching practices.

2 year case study examines the life experiences, beliefs, and induction support that guide the practice of an exemplary reform-based new middle school science teacher.

Hintz, Rachel S., The Ohio State University

hintz.11@osu.edu

This study investigates geology knowledge acquisition by Boy Scouts through use of the Boy Scout Geology Merit Book.

This pilot study investigates geology knowledge acquisition by Boy Scouts through use of the Boy Scout Geology Merit Book.

Koomen, Michele Hollingsworth, Gustavus Adolphus College mkoomen@gac.edu

Science for all and inclusion: Learning for Dion

Classroom constructs, challenges of learning and intent of science for all are pertinent findings of this study of one exceptional student in a life-science classroom

Horvath, Larry, San Francisco State University Passmore, Cindy, University of California, Davis lchorvath@ucdavis.edu

Tangled Up in Inquiry: Prospective science teacher's changing perspectives on inquiry during student teaching

Perspectives on inquiry were identified for 13 prospective science teachers. Changes in perspectives were documented in the context of planning and teaching inquiry based lessons.

Hsu, Ting-Fang, Indiana University Bloomington thsu@indiana.edu

School-based Nutrition Education in K-12: A Survey of Teacher Perspectives

The aim of this study is to examine the present situation of K-12 nutrition education in Indiana from teachers?? perspectives through a quantitative survey.

Humphrey, Robert J., Cornell University

rjh48@cornell.edu

Giving agency to natural selection in biology textbooks - a possible stumbling block in student understanding of evolution.

Biology textbooks were examined to determine how they presented natural selection and evolution. The results indicate that natural selection is often presented as an agent.

Inan, Hatice Z., The Ohio State University Trundle, Kathy C., The Ohio State University Kantor, Rebecca, The Ohio State University haticezeynep@hotmail.com

Quality Environment and Quality Science Education in a Reggio Emilia-inspired Preschool

This ethnographic study examines and explores the physical environment in relevant to natural sciences in a Reggio Emilia-inspired preschool classroom.

Irving, Karen E., Ohio State University Sanalan, Vehbi A., Ohio State University irving.8@osu.edu

Technology-Facilitated Formative Assessment in Physical Science Connected Classrooms: Case Studies

Case studies describe physical science teachers' implementation of technology-facilitated formative assessment practice in connected classrooms in the first year of a national multi-year study.

Isabelle, Aaron D., The State University of New York at New Paltz isabella@newpaltz.edu

Pre-service Teachers' Experiential Conceptualization of Inquiry

The majority of pre-service teachers in our science methods courses reported no familiarity with inquiry; utilizing an experiential approach we enhanced their conceptualization of inquiry.

Jablon, Paul C., Lesley University

pjablon@lesley.edu

Designing College Science Laboratory Facilities for Inquiry Teaching: Process, Form and Function

A three-year collaborative process between science and science education faculty and university administration that resulted in undergraduate science laboratories designed specifically for inquiry science teaching.

Jeanpierre, Bobby J., University of Central Florida McDonald, Frank, University of Central Florida bjeanpie@mail.ucf.edu

Middle School Science Teaching in Urban Low SES Schools

The purpose of the case studies was to document the journey of eight novice career change science inductees in urban low SES schools.

Johnson-Whitt, Eugenia S., University of Akron ej9@uakron.edu

Urban students view of Science through a Botanicool Lens

The purpose of this paper is to investigate the impact of students' interest and understanding of science through Botany using an "adopt a school model".

Johnston, Carol C., Mount St Mary's College cjohnston@msmc.la.edu Grier, Jeanne M., California State University Channel Islands

Personal narratives and professional identities of second career STEM teachers: Perspectives on retention

This case study presents the perspectives of two STEM career changers on the development of their teacher identities and future plans in the profession.

Jones, Bill, Cedarville University

jonesw@cedarville.edu

The logic model as a framework to evaluate preservice science teacher education programs and nature of science outcomes.

Examines the use of the Logic Model as an integrative framework to evaluate science teacher education programs regarding preservice science teachers' understandings of the NOS.

Kang, Hosun, Michigan State University Anderson, Charles W., Michigan State University Tuckey, Steven F., Michigan State University Merritt, Kelly, Michigan State University Conley, Mark, Michigan State University kanghosu@msu.edu

Science teacher candidates?? interpretations of problems of practice and scientific literacy

Science teacher candidates interpretations of video cases reveal their understandings of the role of teachers, students, the nature of scientific literacy, and science texts.

Keen-Rocha, Linda S., University of South Florida Zeidler, Dana, USF chem1130@yahoo.com

Personal Epsitemological Beliefs in College Chemistry Laboratory Course

Epistemological beliefs improved in 4 of the 5 dimensions. The participants?? ranked laboratory work, post-lab, followed by pre-lab as the most essential to lab instruction.

Kelly, Mary Kay, University of Dayton

kellymaz@notes.udayton.edu

Developing Classroom Experiences for Middle Level Pre-service Science Teachers: Building a Community of Practice

Pre-service and in-service science teachers and university science teacher educators develop a community of practice to support science teaching and learning and teacher preparation.

Kim, Sun Young, The Ohio State University Irving, Karen E., The Ohio State University

kim.1962@osu.edu

Teaching Genetics in Secondary Biology with Historical Materials: Nature of Science Learning

Teaching high school genetics with primary and secondary historical materials leads to student achievement in biology and increased knowledge of nature of science.

Kim, Youngmin, Pusan National University Lim, Gilsun, University of Iowa Yager, Robert E., University of Iowa

Korean Pre-service Science Teachers' Attitudes about Students Learning, Teaching Science, Classroom Environment, and Science Curriculum

The purpose of the study is to investigate the Korean pre-service science teachers' attitudes about science teaching and learning using qusetionnaire. The subjects were 58.

King, Kenneth P., Roosevelt University

kking@roosevelt.edu

Examining staff development practices in science within the context of the National Science Education Standards

During a one-year return to secondary science teaching, a science educator examines local staff development practices and their congruence with the National Science Education Standards

Kirch, Susan A., New York University susan.kirch@nyu.edu Siry, Christina, Manhattanville College and The Graduate Center of the City University of New York

"Maybe the algae was from the filter": Theorizing ?maybe' and its use by young children in conversation

Early childhood and elementary school children coproduced sophisticated science process skills and utilized ?maybe' in conversations as a gateway term to possibility and potentiality.

Kirchhoff, Allison L., University of Minnesota Sande, Mary E., University of Minnesota Nam, Younkyeong, University of Minnesota Roehrig, Gillian, University of Minnesota Luft, Julie, Arizona State University reese098@umn.edu

Nature of Science, Pedagogical Content Knowledge, and Beliefs: Influences on classroom teaching for beginning teachers

The relationship between reform-based teaching practices and pedagogical content knowledge, teaching beliefs and nature of science views was investigated in beginning science teachers.

Klein, Beth Shiner, SUNY Cortland Weaver, Starlin D., Salisbury University **Using Podcasting to Combat Nature-Deficit Disorder** KleinE@cortland.edu

This presentation will illustrate how preservice teachers developed podcasts to encourage elementary and middle school students and teachers to go outside and do inquiry science.

Ko, Eunkyung, Illinois Institute of Technology Lederman, Norman, Illinois Institute of Technology koeunky@iit.edu

Is there a gap between students' abilities to do inquiry and understandings about inquiry?

The purpose of this research is to assess the assumption that students' understandings about inquiry reflect their abilities to do inquiry.

Koballa, Thomas R., University of Georgia

tkoballa@uga.edu

Mentoring in Support of Science Teaching

Analysis of the literature on school-based mentoring revealed understandings that have the potential to inform the practice and study of science teacher mentoring.

Koehler, Catherine M., University of Cincinnati Veronese, Peter, SUNY-Brockport

sissianne@aol.com

Don't Leave Us Behind: Addressing the Needs of a Global Climate Change (GCC) Curriculum

This experimental session will address ASTE members who are interested in developing a global climate change curriculum. It will be a hands-on workshop.

Koehler, Catherine M., University of Cincinnati Moss, David M., University of Connecticut

sissianne@aol.com

Can You Force Feed NOS Enlightenment? Two Experienced Secondary Teachers' Pedagogical Journey Teaching the Nature of Science

This year long case study focuses on two secondary science teachers' experiences while fostering the nature of science in their classrooms.

Kohlhaas, Kay A., University of Houston – Victoria kohlhaask@uhv.edu Lin, Hsin-Hui, University of Houston - Victoria Chu, Kwang-Lee, Harcourt Assessment, Inc.

The Impact of Gender and Poverty on Elementary Science Performance

Data from the Early Childhood Longitudinal Study were utilized to explore gender and poverty with the science performance of third graders. Statistical significances were found.

Kraus, Rudolf V., Illinois Institute of Technology rkraus@iit.edu Lederman, Norman G., Illinois Institute of Technology

Implementing inquiry through coaching

Schools failing NCLB were offered an inquiry curriculum. This study hoped to overcome previous mixed results by using full-time coaches to find and solve problems.

Krissek, Lawrence, The Ohio State University Sackes, Mesut, The Ohio State University Trundle, Kathy C., The Ohio State University krissek@mps.ohio-state.edu

Early Childhood Teachers' Understanding of the Earth Science Concepts Before and After Instruction

This study investigated the effects of an institute on PreK to Grade 2 teachers' understanding of earth science concepts they are expected to teach.

Kruse, Jerrid W., Iowa State University

jerridkruse@gmail.com

Integrating and Assessing Nature of Science Instruction in Middle Level Secondary Science.

Clough notes the need to continually scaffold along the decontentualized-contextualized continuum in NOS instruction. I will present implementation/assessment of this framework in middle grades.

Kuerbis, Paul J., Colorado College pkuerbis@coloradocollege.edu Mooney, Linda B., Harrison School District Two Revak, Marie, Lewis Palmer School District Getty, Steve, Biological Study Curriculum Study Shaw, Jerome M., University of California, Santa Cruz Nagashima, Sam O., University of California, Los Angeles

Designing and implementing science professional development that impacts classroom practices and (K-5) student achievement in science, writing, reading and mathematics.

This session reports on a reform effort in a urban-suburban area of central Colorado and four studies that substantiate the importance of quality professional development.

Kumar, David D., Florida Atlantic University Morris, John D., Florida Atlantic University Tobias, Karen, Sheridan Technical Center david@fau.edu

Simulation Supported Learning and Teacher Conceptual Understanding of Current Electricity

Effect of simulations on the conceptual understanding of elementary and secondary teachers is reported. Results showed significant pre to post test gains, and two interactions.

Lamp, David, Texas Tech University Narayan, Ratna, Texas Tech University david.lamp@ttu.edu

Sinking and Floating With Elementary Preservice Science Teachers

The purpose of this study is to explore elementary preservice science teachers?? understanding of ??Sink and Float?? in a constructivist inquiry-based science content course.

Lankford, Deanna M., University of Missouri-Columbia Science Education Center dmld80@mizzou.edu

Challenging students to think 'outside the box'

This paper discusses the implementation of problem based learning to actively engage students in learning science, support life-learning skills, and provide application for knowledge.

Lee, Eunmi, Northwestern University

yjsmom@gmail.com

Learning by Doing: Curriculum Enactment and a Teacher's PCK

This paper explores how a teacher uses and adapts reform-based curriculum materials. It also examines how curriculum materials can support a teacher's PCK during enactment.

Libidinsky, Lisa J., Pembroke Pines-FSU Charter School lisalib@bellsouth.net Kumar, David D., Florida Atlantic University Altschuld, James W., Ohio State University

Effective Collaborative Efforts Between Colleges of Education and Science and K-12 Schools

Professionals in the colleges of science, colleges of education, and schools need to dialogue, collaborate, and be empowered to jointly prepare pre-service teachers.

Lightbody, Mary, The Ohio State University Newark Lightbody.1@osu.edu

On-Site Professional Development: Using Differentiation to Support Instruction in Middle School Science

This research investigated the degree to which science teachers modified their instruction before and after learning how to differentiate to meet the needs of students.

gilsun-lim@uiowa.edu

The Effects of Constructivist Teaching Approach in Middle School Science Classrooms

A series of video recordings and questionnaire were used to verify effects of constructivist teaching approach in middle school science classrooms.

Lorsbach, Tony, Illinois State University

awlorsb@ilstu.edu

A school district's adoption of an elementary science curriculum and its implications for science educators

Presents the results of a case study of a school district's decisions and processes regarding adoption of a new curriculum.

Lott, Kimberly H., Utah State University

khlott@gmail.com

Science Excel: An Effective Teacher Recruitment Program for Rural Schools?

This study explored the possibility of using an Excel program to identify and recruit teachers into the profession at the secondary level.

Lotter, Christine R., University of South Carolina Rushton, Greg, Kennesaw State University lotter@gwm.sc.edu

Secondary Science Teachers' Beliefs and Use of Inquiry-based Instruction After a Yearlong Professional Development Program

The research describes the influence of a year-long professional development program on secondary science teachers' beliefs and use of inquiry-based teaching practices.

Lumpe, Andrew T., Seattle Pacific Universitylumpea@spu.eduRiley-Black, Dana, Center for Inquiry Science-Institute for Systems Biology

A Professional Development Continuum for Science Education

A professional development continuum is outlined that describes the attributes of teachers while engaged in the implementation of innovative science programs.

Marbach-Ad, Gili, University of Maryland McGinnis, J. Randy, University of Maryland Benson, Spencer, University of Maryland gilim@umd.edu

Schalk, Kelly A., University of Maryland Dai, Amy, University of Maryland Pease, Rebecca, University of Maryland

Connecting Learners' Area Of Interest In A Microbiology Course For Non-Majors And Teachers' Interns: Project Nexus (Y2)

A pedagogical innovation in an undergraduate microbiology course for non-majors (with teacher interns) is described. Student interest was used to enact "Teach for all."

Marrero, Meghan E., Teachers College, Columbia University/U.S. Satellite Laboratory, Inc. mmarrero@us-satellite.net

Riccio, Jessica F., Teachers College, Columbia University Woodruff, Karen A., U.S. Satellite Laboratory Scuster, Glen S., U.S. Satellite Laboratory

Live, Online Professional Development: Creating Teacher Communities across Contexts

Study examines teacher views on the effectiveness of live and online 'Short-courses' teaching STEM content. Results suggest the format to be highly successful across contexts.

Marshall, Jeff C., Clemson University

marsha9@clemson.edu

4E x 2 Instructional Model: Uniting Three Learning Constructs to Improve Praxis in Science and Mathematics Classrooms

The proposed 4E x 2 Instructional Model provides a new paradigm created from three learning constructs to improve conceptual change through inquiry learning experiences.

Martin-Dunlop, Catherine, California State University, Long Beach cmartin7@csulb.edu

Using Concept Maps to Assess Understanding of the Nature of Science

Using concept mapping for assessment in a course designed for prospective elementary teachers, students' representations of NOS were scored and then described in interpretive narratives.

Martin-Hansen, Lisa M., Georgia State University lmartinhansen@gsu.edu Placanica, Joseph V., Georgia State University Kelty, Tom, California State University at Long Beach Henriques, Laura, California State University at Long Beach

Identification of Earth Science Misconceptions Through Videotaped Interviews

Researchers identified common earth science misconceptions by creating and carrying out videotaped interviews focusing upon earth processes including erosion, deposition, and river systems.

Mason, Cheryl L., San Diego State University Sunal, Dennis W., University of Alabama Sunal, Cynthia S, University of Alabama Zollman, Dean, Kansas State University Lardy, Corinne, San Diego State University

Reformation of Undergraduate Science Courses

Research-based PCK strategies and results from a national study of reformed and non-reformed undergraduate science courses, and issues of reform will be shared.

McCann, Florence F., University of Oklahoma Pedersen, Jon E., University of Oklahoma McCann, Patrick J., University of Oklahoma fmccann@sbcglobal.net

cmason@mail.sdsu.edu

Learning About Light: A Science Education - Electrical Engineering Collaboration

Pre-service elementary teachers enhanced their content knowledge as they advised engineers on the pedagogical efficacy of a "Teaching Spectrometer" being developed for K-5 outreach.

McConnell, Tom J., Michigan State University Lundeberg, Mary A., Michigan State University Koehler, Matthew J., Michigan State University Eberhardt, Jan, Michigan State University tommac@msu.edu

Video-based Teacher Reflection ? What is the real effect on reflections of inservice teachers?

This study examines the impact on reflections of pre-service teachers when teachers use videotaped records of practice as a tool for professional development.

McConnell, Tom J., Michigan State University Stanaway, Jeannine C., Michigan State University Parker, Joyce M., Michigan State University Eberhardt, Jan, Michigan State University

tommac@msu.edu

Influencing pedagogical content knowledge of inservice science teachers through problembased learning

This study examines the influence of literature research and discourse with peers on the science PCK of practicing teachers engaged in problem-based learning.

McCormack, Alan J., San Diego State University

amccorma@mail.sdsu.edu

Hogwart's Academy for Teachers: Inspiring Teachers with Magic and Science Based on the Harry Potter Series

Magic and fantasy from the Harry Potter stories are used in a preservice methods course as springboards to exciting science lessons for K-6 children.

McDermott, Mark A., University of Iowa Hand, Brian, University of Iowa mcdermott.mark@iccsd.k12.ia.us

A Secondary Analysis of Writing-to-Learn Studies in Science: Focus on the Student Voice

Student interviews from writing-to-learn studies in science were analyzed to determine connections between what students say about writing-to-learn experiences and cognitive models of writing.

McDonald, Eric J., University of Minnesota

mcdon414@umn.edu

New Teachers in Alternative Environments, Preparation for Perseverance

This paper reports interviews addressing the lived experience of new teachers who have persevered in alternative environments. How this informs teacher preparation programs is discussed.

McGregor, Lynette, Wartburg College

lynette.mcgregor@wartburg.edu

The Evolution of Undergraduate Science Education Research Conducted by Pre-Service Teachers at a Liberal Arts College

As the senior research capstone requirement for their science major, undergraduate pre-service science teachers plan, conduct and present science education research.

jane.mcnicholl@edstud.ox.ac.uk

Learning science to teach science: the role of school subject departments in ITE

This study reports a naturalistic study within two secondary school science departments that investigated the factors that afford student-teachers' learning of subject specific pedagogical knowledge.

Meadows, Lee, University of Alabama at Birmingham lmeadows@uab.edu Eick, Charles J., Auburn University Guy, Mark, University of North Dakota Czerniak, Charlene M., University of Toledo Jablon, Paul, Lesley University Townsend, Scott, Eastern Kentucky University Melear, Claudia, University of Tennessee

Back to the Trenches: Teacher Educators and the Impact of Returning to Classroom Practice (A Panel Discussion)

The panelists have become science teachers again, many via sabbaticals as full time teachers. We focus on the implications for science teacher education.

Melear, Claudia T., The University of Tennessee Perkins, Matthew P., The University of Tennessee ctmelear@utk.edu

Teachers as Scientists: What Teachers Learn from Experiences in Scientific Laboratories

Each summer a distinguished national laboratory enlists inservice teachers to assist professional scientists in their research. How do these experiences influence their view of science?

Melville, Wayne S., Lakehead University Bartley, Anthony, Lakehead University wmelvill@lakeheadu.ca

Biography and the teaching of science as inquiry.

Our research investigates the role of personal biography in the promotion of science as inquiry across three generations of science teachers within Thunder Bay, Ontario.

Meyer, Janice D., University of Houston Clear Lake meyerj@uhcl.edu Weiser, Brenda, University of Houston Clear Lake

Engaging Pre-Service Teachers in Professional Development

This session discusses part of a study that investigates the impact of participation by preservice teachers in professional development on their practice as inservice teachers.

Miller, Brant G., University of Minnesota mill3770@umn.edu

RET Site: Inspiring Educators in Rural America through Research

Research Experience for Teachers programs represent a paradigm shift in science teacher professional development. Gain insight into successful program implementation strategies and lessons learned.

Miller, Maria D., SUNY Fredonia

Maria.Miller@fredonia.edu

Science Self-Efficacy Perceptions in Minority Female Science Students

Racial/ethnic females exhibit patterns of opting out of upper-level secondary science coursework. The paper targets female minorities and their self-efficacy in secondary science education settings.

Minogue, James, North Carolina State University minogue8@gmail.com

What is the Teacher Doing? What are the Students Doing?

This study documents the use of the Draw-a-Science-Teacher-Test as diagnostic tool for both preservice teacher beliefs about science instruction and science methods course effectiveness.

Miranda, Rommel J., Towson University

rmiranda@towson.edu

Urban Stakeholders' Perceptions of Quality in Science Teaching

This qualitative study sought to determine urban stakeholders' views of what constitutes high quality in science teaching in urban high school settings.

Monet, Julie A., California State University Chico jmonet@csuchico.edu Etkina, Eugenia, Rutgers the State University of New Jersey

Using Structured Journals to Improve Conceptual Understanding of Science Content

In-service middle school teachers use structured journals to deepen their conceptual understanding of science content and ability to reason from evidence.

Moore, Felicia M., Teachers College, Columbia University Riccio, Jessica F., Teachers College, Columbia University Catlin, Janell N., Teachers College, Columbia University moorefe@tc.columbia.edu

Strategies for Learning and Enhancing Scientific Literacy in Science Education

This interactive symposium highlights use of digital photos and content-based literacy approaches to enhance science learning experiences for urban preservice teachers and middle school students.

Morrell, Patricia D., University of Portland

morrell@up.edu

"Project"ing EE into Elementary Preservice Programs

This paper set explores a variety ways to use Projects Wet, Wild and Learning Tree to help prepare elementary preservice teachers teach environmental education. Please note that all authors are listed here (rather than in alphabetic order with the other papers) to maintain the integity of this paper set.

Morrell, Patricia D., University of Portland

Linking Literacy with the Project Guides

Preservice teachers used lessons from the Projects as a starting point and saw how easily they could incorporate both literacy and mathematical skills into the lessons.

Schepige, Adele, Wesern Oregon Universityschepia@wou.eduLessons from pre-service teachers: Project Guides Implementation and ReflectionsThis paper focuses on how the pre-service teachers implement the guides in their field classesand reflect on the experience.

Morrison, Judith A., Washington State University TriCities jmorriso@tricity.wsu.edu Developing the PLT Activity "Planet Diversity"

Using PLT activities, preservice teachers were engaged in both designing field investigations and explaining the earth's rotation.

Smith-Walters, Cindi, Middle Tennessee State University ksadler@mtsu.edu Sadler, Kim Cleary, Middle Tennessee State University

Getting WILD with K-8 Preservice Teachers in a Life Science Course

This paper will describe the integration of environmental education curriculum materials into a pre-service elementary life science course to improve student confidence and knowledge.

Munck, Miriam, Eastern Oregon University

mmunck@eou.edu

Rainboth, Donna, Eastern Oregon University

Using Project Guides to Promote and Facilitate Developmental Inquiry

Lessons from WET and PLT were used to introduce inquiry, analyze the inquiry components of lessons, and modifying lessons to fit the inquiry model.

Dimeo-Ediger, Norie, Oregon Forest Resources Institute dimeo-ediger@ofri.com Sahnow, Susan, Oregon State University **Communities of Practice-A Social Context for Creating Best Practices** This paper describes the efforts of Oregon university faculty in creating a community of practice that was identified as the pre-service consortium.

Paznokas, Linda, Washington State Universitylpaznokas@wsu.edu**Pre-Service Teacher Environmental Education Project**

This paper describes the development of the Pre-Service Teacher Environmental Education Project, which established communication and collaboration across 18 universities responsible for science teacher preparation.

Morrisette, Sharon J., University of Illinois- Urbana/Champaign morristt@uiuc.edu

Preservice Teachers' Web-Based Inquiry Science Units And A Critique Of Why They Did Not Use "New Media".

This article focuses on the web-based inquiry science units that elementary preservice teachers produced for me their instructor and a small survey that they completed.

Morrison, Judith A., Washington State University jmorriso@tricity.wsu.edu

Teachers' Conversations with Scientists about Teaching Science

After conversations with scientists about teaching/learning science, teachers reported changes in their ideas about students' understanding of science and how they would teach science.

Moscovici, Hedy, California State University - Dominguez Hills hmoscovici@csudh.edu Osisioma, Irene, California State University - Dominguez Hills Tucker, Susan, Evaluation & Development Associates, San Francisco, CA

Collaborative Science Professional Development in Urban Centers: Challenges and Solutions

This study explores the effect of a collaborative professional development with follow-ups on the ability of practicing teachers to use inquiry science in their classrooms.

Moscovici, Hedy, California State University - Dominguez Hills hmoscovici@csudh.edu Osisioma, Irene, California State University - Dominguez Hills

Designing the Best Preservice Urban Elementary Science Methods Course ? Dilemmas and Considerations

This paper addresses the dilemmas encountered by two secondary science faculty designing a course for urban pre-service elementary teachers.

Mueller, Michael P., University of Georgia

mmueller@uga.edu

The Case for Chet Bowers' Ecojustice Philosophy in Science Education

This philosophical research argues that Chet Bowers' ethical theory of ecojustice should play a vital role in science education to renew and revitalize the commons.

Mumba, Frackson, Southern Illinois University frackson@siu.edu Chabalengula, Vivien M., Southern Illinois University, Dept. C&I Carbondale, IL 62901 Hunter, William J. F., Illinois State University, Dept of Chemistry, Normal, IL 61790

Graphing Skills Among Pre-Service Elementary Science Teachers

This study assessed the effect of explicit instruction on graphing on pre-service teachers. Experimental group performed better than control group. Both groups showed graphing preferences.

Muskin, Joseph, Nano-CEMMS, University of Illinois jmuskin@uiuc.edu Hug, Barbara, College of Education, University of Illinois Carroll, Kathleen, Nano-CEMMS, University of Illinois Grenda, Patrick, Nano-CEMMS, University of Illinois

Integrating Nanoscience into Secondary Education: A model for curriculum development using a wide range of experts

We describe innovative programs integrating nanoscience into school curriculum involving individuals at all levels of education from students, undergraduates, teachers, graduate students, researchers, and professors.

Nam, Younkyeong, University of Minnesota

namxx020@umn.edu

Developing a Systems Thinking Framework for Teacher Education in Earth System Context

This paper proposes a systems thinking framework for teacher education in earth system context

by integrating earth systems framework and systems thinking framwork.

Nehm, Ross H., The Ohio State University

rnehm@ccny.cuny.edu

The effects of explicit NOS instruction on biology teachers' misconceptions about evolution

This proposal reports on an intervention study designed to increase biology teachers' NOS knowledge and to evaluate its effects on evolutionary understanding.

Nelson, Tamara H., Washington State University Vancouver tnelson@vancouver.wsu.edu Waters, Charlotte, Heritage High School Schaadt, Anne, Chinook Middle School White, Kristin, Shahala Middle School

Learning about science teaching, learning, and standards through collaborative inquiry.

Secondary science teachers engaged in collaborative inquiry to better understand how to help students be more successful in relation to science standards.

Nichols, Dianne K., Education Queensland Appleton, Ken, Central Queensland University dianne.nichols@postgrad.curtin.edu.au

Teaching Literacy in the Middle Years Using Science as the Host

This study traces a group of middleschool science teachers from schools within Biloela, Australia, who implemented broard strategies for literacy development in their science lessons.

Norman, Kathy I., California State University San Marcos knorman@csusm.edu Flores, Ingrid M., California State University San Marcos

Integrating the Visual and Performing Arts Standards into Science and Math Methods

Presenters will share lesson activities in science and math methods that infuse the visual and performing arts, and describe their arts-integrated credential program.

Notebaert, Andrew, University of Iowa

andrew-notebaert@uiowa.edu

Implications for using student centered teaching methods in anatomy education

Educators using student centered methods instead of traditional methods may promote a deeper

understanding of science, particularly human anatomy, and may increase interest in science.

O'Brien, Thomas P., Binghamton University

tobrien@binghamton.edu

The Nature Of Science via Paper and Pencil Puzzles

Paper and pencil puzzles that develop teachers' content and pedagogical content knowledge about the nature of science will be modeled with active engagement of participants.

O'Sullivan, Kathleen A., San Francisco State University (emerita) kaosul@sfsu.edu DeVore, Edna, SETI Institute Harman, Pamela, SETI Institute

ASSET: Use of the Design Framework for successful professional development institutes

Using the Design Framework (Loucks-Horsley etal, 2003) led to successful summer institutes on astrobiology for teachers (ASSET). Planning, implementation, and assessments are addressed.

Olson, Eric A., State University of New York – Oswego olson@oswego.edu

Consumer Product Testing as a means of promoting authentic inquiry in adolescent and childhood science methods classes.

Consumer product testing in methods courses challenges students to design their own authentic investigation, promoting understanding of science, technology and social justice.

Olson, Eric A., State University of New York – Oswego olson@oswego.edu

Professional development for science teachers using a constructivist framework

Presentation will focus on the framework and results of a 6 year long professional development inquiry group with a group of urban high-needs teachers.

Olson, Joanne K., Iowa State University jkolson@iastate Clough, Michael P., Iowa State University Vanderlinden, David, Des Moines Area Community College

The Entangled Nature of Students' NOS Conceptions

Even when historical stories explicitly draw attention to key NOS ideas, students may use other

general and NOS specific misconceptions to resist desired conceptual change.

Olson, Joanne K., Iowa State University

jkolson@iastate

Elementary Teachers Gone Wild? Preservice Teachers' Self-Portrayals on the Internet and Public Expectations of Elementary Teachers

This study analyzed preservice teachers' publicly-accessible webpages to determine the extent to which they model the good character expected by parents and public schools.

Osisioma, Irene U., Division of Teacher Education, California State University Dominguez Hills iosisioma@csudh.edu

Moscovici, Hedy, Division of Teacher Education, California State University, Dominguez Hills, Carson, California Ndunda, Mutindi, School of Education, College of Charleston, Charleston, South Carolina

Critical Issues in Urban High Schools: Exploring Factors That Influence Students' Achievement in Mathematics and Science.

This study compares the contextual factors that are prevalent in two urban schools and explores how these influence the students' achievement in mathematics and science.

Pagan, Tina W., University Of Georgia, Department Of Mathematics & Science Education tpagan@engr.uga.edu

Understanding River Advocacy: Suggestions for Building Human-River Relationships with High School and College Students

This presentation describes how river advocates understand their relationship with a river. Research findings provide suggestions on how educators can build human-river relationships with students.

Park, Soonhye, University of Iowa Chen, Ying-Chih, University of Iowa so on hye-park @uiowa.edu

Developing Measures of Teachers Pedagogical Content Knowledge for Teaching High School Biology

This roundtable session is to discuss the procedure by which measures of teachers?? pedagogical content knowledge for teaching high school biology were developed and validated.

Rogers, Meredith A. Park, Indiana University

mparkrog@indiana.edu

Developing preservice elementary teachers' understanding of science as argument and explanation: Rethinking appropriate methods

This action research study examines the design of an assignment given to elementary preservice teachers' for developing their abilities in using evidence to formulate explanations.

Parrish, Jennifer L., University of Northern Colorado jenniferparrish22@yahoo.com Saunders, Gerald, Unity College, Unity Maine Higgins, Teresa, University of Northern Colorado, Greeley, Colorado

The Effect of Tiered Lessons on Academic Achievement in an 8th Grade Physical Science Classroom as Measured by Assessment Performance

This study examined one method of curriculum differentiation, lessons tiered by readiness, for effectiveness in improvement of student achievement in a middle school science classroom.

Paulson, Patricia C., Bethel University

patricia-paulson@bethel.edu

The Inquiry-Based Elementary Science Methods Course: What Attitudes Do Preservice Teachers Bring To The Experience And How Prepared Do They Feel Upon Completion?

Preservice teacher reflections describe initial attitudes, struggles with inquiry, perceived lack of content knowledge, inability to focus lesson outcomes, and frustrations with developing quality assessments.

Payne, Diana L., University of Connecticut

diana.payne@uconn.edu

Changes in Science Teacher Beliefs About Science and Science Teaching After Participation in a Teacher Research Experience

This concurrent mixed methods study examined the impact of a Teacher Research Experience (TRE) on science teacher beliefs about science, scientific research, and science teaching.

Pease, Rebecca S., University of Maryland Holliday, William G., University of Maryland Sheckells, Daniel J., University of Maryland rspease@umd.edu

Assisting Science Educators Searching for Research-based Information

Prototypical tools designed to assist educators in search of relevant research-based articles published in two, top-rated science education journals are described and analyzed.

Pegg, Jerine M., University of Idaho

peggj@uidaho.edu

An Examination of Students' Causal Reasoning in Written Explanations Involving Theory Articulation

In this study, a method of analyzing students' written explanations was developed for identifying patterns in causal reasoning during a theory articulation inquiry task.

Pegg, Jerine M., University of Idaho Adams, Anne, University of Idaho McConnell, Rodney, University of Idaho peggj@uidaho.edu

An Initial Survey of Secondary Science and Mathematics Teachers Content Area Literacy Practices

This paper describes the development and initial results from a survey of content area literacy practices of secondary science and mathematics teachers.

Perkins, Catherine J., Oregon State University

cperkins@archdpdx.org

Attaching the Meaning: Exploring the Perspectives and Methodologies of Science Teaching Self-Efficacy

This presentation reviews the past science teaching self-efficacy research and offers a glimpse into how the power of efficacy can be explored in the future.

Pinder, Patrice J., Morgan State University

patricepinder@comcast.net

A Critique Analysis of NCLB, Increase Testing, and Past Maryland Science and Mathematics HSA Exams: What are Maryland Practitioners' Perspectives?

The study essentially explored and seeked to understand some of Maryland's mathematics and science practitioners' perspectives on increase testing, NCLB, and past Maryland assessments.

Pinder, Patrice J., Morgan state University

patricepinder@comcast.net

Teaching the Concept of Animate Versus Inanimate Objects to k-1 Students: Can Game Playing Facilitate Younger Students' Conceptualization of Biology Concepts?

This study discusses the implementation of game board activities as apart of a school lesson. Positive effects of game playing on science achievement are explored.

Pomeroy, J. Richard, University of California, Davis jrpomeroy@ucdavis.edu Smolleck, Lori, Department of Education Bucknell University

Best Practice-What I didn't learn about teaching and supervision from my mentor

Experienced faculty will share best practices about teaching and supervision for new faculty and soon to finish graduate students

Posnanski, Tracy J., University of Wisconsin-Milwaukee tjp@uwm.edu

Balancing Literacy in Elementary Science Classrooms (Project BLESC)

This presentation will discuss the implementation and evaluation of a program for elementary teachers that developed literacy instructional skills with language arts and science.

Preczewski, Paul J., Syracuse University Tillotson, John W., Syracuse University Young, Monica J., Syracuse University pjprecze@syr.edu

Determination and correlation of factors influencing the Reformed Science Teaching and Learning Questionnaire

Using principle factors analysis, the IMPPACT Project found the new BARSTL questionnaire shows four factors not congruous with the prescribed BARSTL subscales.

Ramsey, Sarah J., The University of North Carolina at Charlotte sramsey3@uncc.edu

The Culture of Inquiry in Elementary Classrooms

In this study, elementary teachers communicated a culture of inquiry based on autonomy, respect, trust, critical thinking, dialogue, questioning, and learning through experience.

Rivas, Mike G., California State University, Northridge mike.rivas@csun.edu

The Nature of Science and the Preservice Elementary Teacher: Changes in Understanding and Practice

This action research project attempted to enhance the understanding of specific nature of science tenets to promote equity and access in the science classroom.

Robinson, Scott D., University of Hawaii at Manoa scottdr@hawaii.edu

A Narrative Inquiry of Two Student Teachers: Impact, Mentorship, & Identity

The qualitative study explores two student teachers' impact on pupil learning, perceptions of being mentored, and professional identity development.

Rodney, Desmond, Miami Dade College Kumar, David, Florida Atlantic University Binder, Andrew, Florida Atlantic University drodney@comcast.net

Synchronized Instructional Video Observation System (SIVOS): Analyzing TIMSS Classroom Interactions

This paper deals with the development and research involving the Synchronized Instructional Video Observation System (SIVOS) to investigate foundational principles of instruction in classroom settings.

Ross, Donna L., San Diego State University

DLRoss@mail.sdsu.edu

Integrating Literacy and Secondary Science: The Real Deal

Results of team-teaching high school biology and English using podcasts, fiction, and non-fiction related to science instead of simply adding informational text strategies.

Sackes, Mesut, The Ohio State University Trundle, Kathy C., The Ohio State University Krissek, Lawrence, The Ohio State University

sackes.1@osu.edu

Early Childhood Teachers' Understanding of the Lunar Concepts Before and After Instruction

This reports the effects of a short-term instruction on teachers' understanding of lunar concepts for PreK to grade 2 education.

Sadler, Troy D., University of Florida

tsadler@coe.ufl.edu

Science for Life: A Multidisciplinary Program to Strengthen and Transform Undergraduate Science Education

This poster presentation will provide an overview and emerging results of a multidisciplinary program designed to transform science education at a research extensive university.

Sanalan, Vehbi A., Ohio State University Irving, Kare E., Ohio State University Pape, Stephen J., University of Florida Owens, Douglas T., Ohio State University sanalavi@gmail.com

Classroom Communication Technology in Science: A Multi-faceted Professional Development Program

This paper presents the design and initial evaluation of a multi-faceted professional development program for connected classroom technology implementation in physical science classrooms.

Sawey, April T., Texas Christian University Holden, Mary E., Texas Christian University Bloom, Mark A., Texas Christian University Weinburgh, Molly H., Texas Christian University Huckaby, M. Francyne, Texas Christian University a.t.sawey@tcu.edu

Pre-service Teachers' Conception and Application of Inquiry and Nature of Science

Pre-service teachers' conceptions of inquiry and nature of science and their application of these concepts in teaching were investigated following methods courses emphasizing their use.

Scantlebury,Kathryn Kate, University of Delaware kscantle@udel.edu Gallo-Fox, Jennifer, University of Delaware

Coteaching in a Secondary Science Professional Development School

This paper examines the use of coteaching as a professional development experience for cooperating and student teachers within a secondary science professional school.

Scarola, Kimberly K., Pembroke Pines Charter School kscarola@pinescharter.com Kumar, David D., Florida Atlantic University

Closed Captions for Teaching Nanotechnology to Students with Special Needs

This presentation argues for using closed captions for teaching nanotechnology to students with

special needs (ESE, ESL). Curriculum and instructional implications are included.

Schack, Mark B., Morehead State University

m.schack@morehead-st.edu

Students Join the Search for Intelligent Life in the Universe

The SETI@home project is an ongoing experiment using computers on the Internet to process data captured by the Arecibo radio telescope in Puerto Rico.

Schroeder, Cindy J., The Ohio State University Trundle, Kathy Cabe, The Ohio State University schroeder.224@osu.edu

What is Informal Science Education and how can it be Effective for Learning?

This literature review defines informal science learning, describes types of informal settings, includes results of effective and ineffective science programs and suggests future research.

Schwartz, Renee S., Western Michigan University Skjold, Brandy, Western Michigan University Hong Hang-Hwa, Western Michigan University George, Akom, Western Michigan University Fang, Huang, Western Mighigan University Kagumba, Robert, Western Mighigan University r.schwartz@wmich.edu

Exploring the professional development of science teacher educators: Graduate students' journeys to embrace NOS

We explore influences on NOS conceptions and commitments to NOS teaching during science education graduate studies. Findings relate to self awareness, motivation, and culture.

Scott, Anna K., University of Georgiaakscott@uga.eduRecesso, Art M., University of Georgia, Learning Performance and Support LaboratoryOliver, Steve, University of Georgia, Department of Mathematics and Science EducationUsing the Video Analysis Tool to Prompt Critical Reflection in Science Teacher Education

We share how we used a technological innovation, the Video Analysis Tool in aiding the development of core identity in our course for student teachers.

Sederberg, David, Purdue University Bryan, Lynn A., Purdue University Giordano, Nicholas, Purdue University dsederbe@purdue.edu

Teaching and Learning About Ferrofluids in the High School Science Classroom

In this experiential session, we will engage science teacher educators in part of a ferrofluids lesson that we developed for high school science.

Seiler, Gale, McGill University Emdin, Christopher, Teachers College Elmesky, Rowhea, Washington University in St. Louis

Hybridized Teacher And Student Identities, Creolized Science And Emotionality In Urban Science Classrooms

Three studies provide classroom examples of the generation of hybrid communities of creolized science and the central role of teacher identity hybridization in this process.

Settlage, John, Univ of Connecticut Odom, Louis, Univ Missouri-Kansas City

john.settlage@uconn.edu

gale.seiler@mcgill.ca

Learning Cycle: Bringing in Diversity and Building an Updated Assessment Tool

Updates to the Learning Cycle in terms of multicultural considerations, educational theory, and assessment procedures are all included within this session. Field test sites needed.

Seung, Eulsun, Indiana State University Bryan, Lynn A., Purdue University Haugan, Mark P., Purdue University esseung@gmail.com

Factors That Influence Physics TAs' Knowledge Development for Teaching a Novel Physics Curriculum

This study explored factors that influenced physics teaching assistants' development of professional knowledge as they learned to teach a novel physics curriculum.

Shanahan, Therese B., UC Irvine Hyde, Karajean, UC Irvine Marshall, Sue K., UC Irvine tshanaha@uci.edu

Early Development of a Student-Centered Perspective in Science and Math Pre-Service Teachers

This study investigates the influence of instructor modeling on future math and science teachers'

student-centered perspective as evidenced in planning and reflecting on classroom lessons.

Shane, Joseph W., Shippensburg University of Pennsylvania jwshan@ship.edu

Coupling Hermeneutics And Narrative Analysis In Teacher-Centered Qualitative Research

Hermeneutics and narrative analysis are discussed as complementary theoretical frameworks for defining the researcher's roles and for representing the results of teacher-centered qualitative inquiries.

Sharkawy, Azza, Queen's University

sharkawa@educ.queensu.ca

Students' stereotypic images of scientists: moving beyond stereotypes

This qualitative study examines the influence of stories about scientists from diverse sociocultural backgrounds (i.e., class, gender) on grade one students' images of scientists.

Sheppard, Keith, Stony Brook University

keith.sheppard@stonybrook.edu

The History of Science Education: A Call for Inclusion.

This position paper advocates for the inclusion of more science educational history in intoductory science teacher education methods courses.

Shope, Richard, Jet Propulsion Laboratory, Principal Investigator, Arctica Science ResearchProjects for Urban Youthmime@shope.comBrown, Shakira, Urban Science Corps

Science Coaching for Urban Youth: Reporting Results of the Implementation of the Urban Science Corps Nationwide

We report on the results of a nationwide project to engage urban youth in scientific inquiry bringing together Scientists and Science Educators as project teams.

Shume, Teresa J., Minnesota State University Moorhead shume@mnstate.edu

Computer Savvy but Technologically Illiterate: Rethinking Technology Literacy

This position paper seeks to reconceptualize technology literacy in the context of democracy, commercialism in electronic media, and ecological sustainability.

Shymansky, James A., University of Missouri-St. Louis jshymansky@umsl.edu Annetta, Leonard A., North Carolina State University Everett, Susan, University of Michigan-Dearborn Yore, Larry D., University of Victoria

The impact of a five-year, K-6 systemic reform effort on rural elementary school students' achievement in science

The impact on student achievement of a multi-school district LSC project called the "Science Cooperatives: Effecting Local Systemic Change in Rural Missouri and Iowa."

Simpson, Jamila R., NC State University Parsons, Eileen C., UNC Chapel Hill jamila.simpson@gmail.com

Listening to African American Parents and Their Desires for Informal Science Education

The purpose of this study was to determine the characteristics African American parents wanted in an ideal informal science education enrichment program.

Slough, Scott, Texas A&M University Milam, John, Texas A&M University sslough@tamu.edu

Exploring the Levels of Complexity within Problem-Based Learning: Implications for Teaching and Learning

This philosophical discussion examines the complexities of problem-based learning by discerning its different levels, understanding their implications, assessing teacher/student, and strategies for incremental change.

Smith, Todd B., University of Dayton Kelly, Mary K., University of Dayton Jang, Jeongyoon, University of Iowa Todd.Smith@notes.udayton.edu

Owning the Course: Improving Pre-service Science Teacher Preparation in the Physics

A general education physics course was re-designed to provide education majors with an opportunity to simultaneously learn physics and how to teach physics.

Smithenry, Dennis W., Santa Clara University Gallagher-Bolos, Joan A., Glenbrook North High School dsmithenry@scu.edu

Video Cases of Whole-Class Inquiry

We propose to present video case segments developed from research on an enactment of the "whole-class inquiry" curriculum, and obtain reactions and feedback from attendees.

Smolleck, Lori D., Bucknell University

lsmollec@bucknell.edu

From Science Methods to Student Teaching: Changes in Self-Efficacy

This research follows five preservice elementary teachers through one academic year to determine how a science methods course and student teaching impact self-efficacy beliefs.

Spector, Barbara S., University of South Florida spector@coedu.usf.edu Zimmerman, Timothy D., Lawrence Hall of Science, University of California-Berkeley, Hotaling, Liesl, Stevens Institute of Technology Sullivan, Deidre, Monterey Peninsula College, Marine Advanced Techno McDonnell, Janice, Rutgers University Education and Outreach Thomas, Carrie, North Caroline State University Dept of Marine, Ea Duncan, Ravit G., Rutgers University, Graduate School of Education

Helping Teachers Bring Ocean Sciences into the Science Classroom: The Role of the Centers for Ocean Science Education Excellence (COSEE)

How COSEE can assist science teacher educators with content, processes, technology, partnerships, and human and material resources will be discussed in a five part panel

Staples, Kimberly A., Kansas State University

kstaples@ksu.edu

Developing Multicultural Competencies Among Pre-Service Teachers of Science Through Interactive Evaluation of Children's Literature

This study describes the effect of an interactive approach to critiquing children's literature on pre-service teacher multicultural competencies to enhance science instruction for "ALL" learners

Steiner, Robert V., American Museum of Natural History rsteiner@amnh.org

Online Resources from the American Museum of Natural History

An array of accessible and innovative science education resources from the American Museum of Natural History is discussed, including online courses for teacher education.

Stratton, Susan K., SUNY Cortland

strattons@cortland.edu

dastroup@mail.uh.edu

Richard Louv's "Last Child in the Woods: Saving our Children from Nature Deficit Disorder": Implications for Teachers

Session discusses issues in Richard Louv's book, Last Child in the Woods. Disucssion geared for both those who have and have not read the book.

Stroupe, David A., University of Houston

"As the Solar System orbits the Earth": Do urban high school science teachers know their science content?

Twenty-six high school science teachers in Houston took the 2005 NAEP science exam. Their results necessitate debate about the future of effective urban science teaching.

Subramaniam, Karthigeyan, Penn State Harrisburg kus19@psu.edu

Theory to Practice Transitions: Mapping the apprenticeship experiences of preservice teachers during the science methods field experience.

The purpose of this study was to investigate the nature of the apprenticeship between preservice teachers and their university-based teacher educator during field experiences.

Svec, Michael T., Furman University

michael.svec@furman.edu

Using international science education case narratives

Describes the use of case-based pedagogies using an international context to engage pre-service and practicing teachers in critical reflection and decision making.

Talsma, Valerie L., Northern Illinois University vtalsma@niu.edu

A Spider is an Animal? Elementary teacher candidates' ideas of "what is an animal?"

Explores teacher candidates' ideas of animals in an introductory activity prior to a course assignment where they investigate children's ideas in science.

Thomas, Jeff A., University of Southern Indiana

jathomas@usi.edu

Perspectives into using videocases in science methods training for preservice elementary teachers.

A group of preservice elementary teachers recently used online videocases to investigate how students learn about electricity. This proposal summarizes their perception of the experience.

Thomas, Julie, Oklahoma State University

jtbirdwatcher@gmail.com

Pintail Partners: A Case Study in the Development of a Model for the Professional Development of Classroom Teachers in STEM Fields

This case study proposes a model of teacher professional development in STEM that focuses on research partnerships, informal learning opportunities, and professional learning communities.

Thomas, Susan Elizabeth, The University of Alabama Stanton, Marietta P., The University of Alabama Lammon, Carol B., The University of Alabama

beththomas@bama.ua.edu

I'm Not A Nurse, I'm A Science Teacher Educator: A Collaborative Effort To Address A Shortage Of Nurse Educators

To address America's nursing shortage, Colleges of Education and Nursing are collaborating to produce nurse educators. This innovative program's liaison is a science teacher educator.

Thomson, Norman F., University of Georgia nthomson@uga.edu Chomchid, Panwilai, Kasetsart University, Bangkok, Thailand

Developing and Investigating VAST-Models for Learning Atomic Structure: What do Students Learn and Use?

Models are essential for doing chemistry. We are developing and investigating VAST-Models and video animations for learning atomic structure: What do students learn and use?

Tippins, Deborah J., University of Georgia Johnson, Amy, University of South Carolina Hodges, Georgia, University of Georgia dtippins@uga.edu

Living on the Back Street: Pathways to science education in a rural Georgia Community

The purpose of this action ethnography is to understand the impact of segregation on educational opportunity and science literacy learning in a rural community.

Tippins, Deborah J., University of Georgia dtippins@uga.edu Handa, Vicente C., West Visayas State University, Iloilo City, Phillipines

Community immersion: Answering the call for relevance in science teacher preparation

Using collaborative action ethnography we explore questions of 'relevance' in relation to community immersion, a science teacher preparation model which integrates discourses of social justice.

Tobin, Kenneth G., Graduate Center of CUNY ktobin@gc.cuny.edu Emdin, Christopher, Teacher?s College, Columbia University Pitts, Wesley, Lehman College, CUNY Shady, Ashraf, The Graduate Center of CUNY Bayne, Gillian, Lehman College, CUNY

Producing success in science through culturally adaptive teaching and learning

Students, teachers, and the nature of science change in a longitudinal program of research in urban schools that employed cogenerative dialogues to produce success.

Toolin, Regina E., University of Vermont Flank, Sandra, Pace University

Rtoolin@UVM.Edu

A Tale of Two City Schools: Supporting project-based inquiry in secondary science education

This study examines the process by which two secondary schools in New York State develop and implement project-based inquiry in their science curriculum.

Townsend, Jeffery S., Eastern Kentucky University scott.townsend@eku.edu Boone, William J., Miami University

Teachers' Reporting of Factors Which Positively Impacted Their Science Teacher Preparation

A school-based, experiential science methods class has a more long-term, positive impact on teachers' epistemological foundations. A mixed methods approach with Rasch Analysis was utilized.

nmt2@cornell.edu

Blank, Lisa M., University of Montana MaKinster, James G, Hobart and William Smith Colleges Crews, Jeff, University of Montana Loehman, Rachel, University of Montana Knuth, Randy, University of Montana

Professional Development Models Using Geospatial Technologies

Delineation of three professional development models, each designed to promote curricular integration of geospatial technologies including GIS and Google Earth into secondary science teaching.

Tse, Kenneth, University of Southern California

ktse68@gmail.com

Middle School Science Teachers' Pedagogical Response To High Stakes Accountability: A Multiple Case Study

A multiple case study examined how middle school science teachers reacted to the current high stakes accountability and standardized testing in California.

Tuckey, Steven F., Michigan State University Kang, Hosun, Michigan State University Merritt, Kelly M., Michigan State University tuckeys1@msu.edu

Framing the discussion and future research on science literacy

This paper presents a theoretical framework relating research traditions in literacy and science education through commonplaces for discussion, and proposes strong sites for future research.

Turner, Tommie Y., Washington University in St. Louis tturner@wustl.edu Galganski, Martha H., Washington University in St. Louis Hogrebe, Mark, Washington University in St. Louis

A Teacher Questionnaire Reflecting Teachers' Beliefs and Perceptions of their Best Practices in Science Teaching through Lesson Study.

Our research establishes a sustained collaboration between local elementary teachers and informal science educators to enhance teachers' practice and beliefs in classroom science instruction.

Upadhyay, Bhaskar, University of Minnesota Fortney, Brian, University of Texas at Austin upadh006@umn.edu

Kirchhoff, Allison, University of Minnesota Ryan, Mark, University of Minnesota

Assessing Preservice Elementary Teachers' Personal and Professional Beliefs About Diversity During and After Science Methods Course

This study shows that elementary pre-service teachers' personal beliefs about diversity during science methods courses don't change but their professional beliefs about diversity do change.

Upadhyay, Bhaskar, University of Minnesota upadh006@umn.edu

Culturally-Sensitive Pedagogy: A Case Study of Hmong Elementary Teacher

This study explores how a Hmong female elementary teacher enacts culturally-sensitive pedagogy to teach science to empower students from minority groups.

Valanides, Nicos, Department of Education, University of Cyprus nichri@ucy.ac.cy Angeli, Charoula, Department of Education, University of Cyprus

Examining Learners' Reasoning in a Text-Based Online Conference for a Science Education Course

The study reports on students' reasoning when they were asked to participate in a text-based online conference to resolve conflicting ideas about a puzzling observation.

Verma, Geeta, Georgia State University gverma@gsu.edu Hernandez, Gypsy, Gwinnett County Public Schools, GA McCrary, Termerion, Atlanta Public Schools, GA Mcdowell, Amy, Douglas County School System, GA Miller, Katrina, Clayton County Public Schools, GA Voss, Kelly, Dekalb County Schools

Using case based pedagogy for professional development in science education

Study explored science teachers' engagement in case-based pedagogy. Data included participants' case narratives and discussion postings. The narratives intersected their professional work and personal struggles.

Veronesi, Peter, State University of New York, College at Brockport pverones@brockport.edu

Digital Video Editing: Reflections on Effective Teaching Using iMovies.

Science teacher candidates were provided a camcorder, 256GB-HD, and iMovie and asked to self-reflect on their teaching of NSTA (SPA) criteria and effective teaching strategies.

Vincent, Daniel E., University of Central Oklahoma dvincent@ucok.edu Allan, Elizabeth A., University of Central Oklahoma Babb, Marie E., University of Central Oklahoma

Connecting the Content: Merging Pedagogy with Content Knowledge

This paper reports on a project that aligned a content course and a methods course for elementary teachers to be able to teach science effectively.

Viviano, Carolyn M., Loyola Marymount University cviviano@lmu.edu

Curriculum Development as a Relevant Learning Experience for Pre-Service Elementary Teachers

This poster presents the benefits and outcomes of a pilot project in which pre-service elementary teachers were required to create, evaluate and teach science curriculum.

Volkmann, Mark, University of Missouri-Columbia volkmannmj@missouri.edu West, Andrew, University of Missouri-Columbia

Structuring Professional Development in Physics Through Lesson Study

Most teachers plan and teach lessons in private. Lesson study is a teacher-led professional development strategy where teachers collaboratively design research lessons to support student learning.

Wavering, Michael J., University of Arkansas Sweeney, Sophia J., University of Arkansas wavering@uark.edu

How do we know that?

Challenges, strategies and results of teaching preservice teachers one aspect of the nature of science, how science knowledge is created, will be discussed.

Weinburgh, Molly H., Texas Christian University Smith, Kathy H., Texas Christian University m.weinburgh@tcu.edu

Silva, Cecilia, Texas Christian University Oliver, Tammy, Texas Christian University Gabel, Joanne, Fort Worth Independent School District

Is it a delta or data? Building academic language in science and mathematics for English Language Learners

We investigated the intersection of content and academic language acquisition in science and mathematics with nineteen elementary ELL students participating in a summer program.

Weinburgh, Molly H., Texas Christian University Reynolds, Shrrie, Texas Christian University Sawey, April, Texas Christian University Holden, Molly, Texas Christian University m.weinburgh@tcu.edu

If it is brown, it must dead: student data informing instructional decisions

Goethe's delicate empiricism informed instruction designed to enhance elementary preservice students' understanding of plants. We used action research to revise and improve the course.

Weiss, Tarin H., Westfield State College

tweiss@wsc.ma.edu

"When does the Chihuahua go fastest?": Urban Students' Science Investigations ? What Do They Tell Us?

This study examined urban middle school students' inquiry projects about mammals to explore student interest, mandated learning standards, and students' life worlds.

Weld, Jeffrey D., Department of Biology DelCarlo, Dawn, University of Northern Iowa Ophus, John, University of Northern Iowa jeff.weld@uni.edu

Effects of a research experience for science teachers

Now in its second year, Project RAISE matches science teachers to university researchers for a troika's benefit: updated teachers, enlightened faculty, and enlivened students.

Westerlund, Julie F., Texas State University Lien, Violetta, Texas State University jwesterlund@austin.rr.com

Last Child in the Texas Woods: Future Science Teachers' Childhood Nature Experiences

In this study, the childhood nature experiences of 50 future elementary teachers are examined through the use of science experience autobiographies.

White, Orvil L., The State University of New York at Cortland (SUNY Cortland) whiteo@cortland.edu

Uncovering students lack of understanding of geological time and the apperience (order) of life on the Earth.

Teachers' and students' lack of understanding of geological time and related concepts must be uncovered for learning to take place in geoscience at all levels.

Wild, Tiffany A., The Ohio State University Paul, Peter, The Ohio State University wild.13@osu.edu

Teachers' Beliefs Concerning Standards, Practices, Assessment, and Collaboration in Implementing Science Education for Students with Visual Impairments

This investigation examines the beliefs of teachers of students with visual impairments regarding standards, pedagogical practices, inclusion, assessment, and collaboration in implementing science education

Wissehr, Cathy F., University of Missouri-Columbia cfwx82@mizzou.edu Hanuscin, Deborah L., University of Missouri-Columbia

Science Museums & Specialized Content Courses for Prospective Elementary Teachers: Implications for Learning to Teach Science

This study explores opportunities to learn about science teaching in informal settings and how these complement prospective teachers' learning in a specialized content course.

Wissehr, Cathy F., University of Missouri-Columbiacfwx82@mizzou.eduSiegel, Marcelle A., University of Missouri-Columbia

Unlocking Assessment Secrets: What are Preservice Teachers' Views of Assessment?

This study examines preservice teachers' recognition of different types of assessment, as well as their purposes, advantages, and disadvantages within a classroom setting.

Wyss, Vanessa L., University of Virginia Tai, Robert H., University of Virginia vlw3y@virginia.edu

Textbook use in high school biology classes and student learning

This study investigates how the amount of time spent reading the text influences student learning in high school biology classes.

Young, Monica J., Syracuse University Tillotson, John W., Syracuse University Yager, Robert, University of Iowa Penick, John, North Carolina State University Holtz, Kevin, Syracuse University Preczewski, Paul, Syracuse University Glowacki, Julia, North Carolina State University Maher, Terry, North Carolina State University Ploegstra, Jeffrey, University of Iowa Sadeghpour-Kramer, Margaret, University of Iowa Soldat, Christopher, University of Iowa

Investigating the Meaningfulness of Preservice Programs Across the Continuum of Teaching (IMPPACT) in Science Education: Year One Results, Issues, and Reflections

IMPPACT, a 5-year study of preservice science teacher education, began in 2005. This symposium will discuss the current results, issues raised, reflections, and insights.

Zhang, Tianyi, Michigan State University McConnell, Tom J., Michigan State University Eberhardt, Jan, Michigan State University zhangti3@msu.edu

moyoung@syr.edu

If you build it, why will they come back? Motivation of teachers to re-enroll in a professional development project

This qualitative study explores factors motivating science teachersto continuously participate in an five-year extended professional development program.