With the recent release of the public draft of the *Next Generation Science Standards* (NGSS), [http://nextgenscience.org](http://nextgenscience.org), many science educators have spent significant time considering how these new standards will ultimately shape the future of science teaching and learning in the United States. ASTE members will play a central role in preparing and supporting science teachers at all levels to meet the expectations outlined in these new standards. We should also view this as an optimal time to step back and reflect on the future direction of science teacher education as a disciplinary field and how we as individuals, and collectively as an organization, must respond accordingly. Our failure to do so will continue to leave us vulnerable to the attacks of critics and policymakers who cite that the lack of empirical evidence regarding the efficacy of teacher education programs. Furthermore, such critics may cite a lack of evidence as the justification for the explosion of rapid-entry alternative pathway programs into the teaching profession.

Many teacher education scholars, including several of our own ASTE colleagues, have argued fervently that our ability to have a direct influence on policy development related to the recruitment, preparation, and support of science teachers hinges on our efforts to establish a credible research base that identifies the efficacy of teacher education programs and the links to new teacher performance and student achievement outcomes in a variety of contexts. Grossman and McDonald (2008) propose several important steps that must
be taken for the field of teacher education research to gain meaningful ground in this effort. First, they note that building the field of teacher education research requires the development of programmatic research that addresses key research questions over time and establishes a common set of research methodologies, data collection tools, and standardized practices for generating knowledge about teaching and teacher education. Second, they advocate for the pooling of resources across institutions to conduct parallel studies that will explore common research questions across a variety of teacher education program and K-12 school contexts. Third, Grossman and McDonald (2008) argue that we need more large-scale, longitudinal research investigations that monitor the impact of pre-service program experiences over time across key stages of teacher development. Finally, they contend the field of teacher education could advance more uniformly if teacher educators would connect with colleagues across subject area and certification level boundaries to explore broader, more complex questions related to the preparation of all teachers.

The recommendations offered by Grossman and McDonald have many direct implications for how ASTE can play a substantial role in helping further develop the field of teacher education research. One of our greatest strengths as an organization is the professional diversity of our membership. ASTE is comprised of members who hail from teacher education programs of varying size and structure from all across the United States, as well as internationally. We also boast a membership that consists of those who specialize in education research and those who have a greater focus on teaching within their respective institutions. This diversity provides fertile ground for creating several research collaboratives across states, regions, and internationally to respond to the call for the establishment of common research studies carried out across a variety of pre-service and professional development programs. And, as Grossman and McDonald point out, these critical research collaboratives can result in more powerful research results for the further development of our field. Additionally, these collaborative efforts would broaden the access of all teacher educators to participate in teacher education research studies given the mutually beneficial partnerships that could be developed where ASTE members at smaller institutions could partner with peers at larger doctoral-granting universities to design and carry out large multi-site studies that produce large sample sizes and more varied program contexts to examine, while also capturing greater sensitivity to both the local and national influences on science teacher development over time. It is likely that regionalized research collaborative, such as these, would be attractive to both federal and state funding agencies when applying for research grants.

As President, I am establishing an ad hoc committee on regional research collaboratives to explore how ASTE can take the next steps to foster these important partnerships. If anyone is interested in serving on this committee, I encourage you to let me know as soon as possible. In the next issue, I will share the latest news regarding ASTE’s efforts to increase the impact that the *Journal of Science Teacher Education* has on the field of teacher education research.

Reference

ASTE Publications Inclusion for NSTA Research Highlights

The Publications Committee of ASTE made a selection of 3 articles from all published 2011 articles from the Journal of Science Teacher Education, including the Elementary Science Education special issues, and the Science Section in Contemporary Issues in Technology and Teacher Education for inclusion in the NSTA reading list. The articles were selected on the basis of relevance and readability for science teachers. These three articles, together with articles from other journals, have now been made available to NSTA members.

Quigley, C., Pongsanon, K., & Akerson, V. If we teach them, they can learn: Young students views of nature of science during an informal science education program. Journal of Science Teacher Education, 22(2), 129-149.

Abstract: There have been substantial reform efforts in science education to improve students’ understandings of science and its processes and provide continual support for students becoming scientifically literate (AAAS, Benchmarks for science literacy, Oxford University Press, New York, 1993; NRC, National Academy Press, Washington, DC, 1996; NSTA, NSTA position statement: The nature of science, www.nsta.org/159&psid=22, 2000). Despite previous research, it is still unclear whether young children are actually developmentally ready to conceptualize the ideas that are recommended in the reforms (Akerson and Volrich, J Res Sci Teach 43:377–394, 2006). The purpose of this study was to explore how explicit-reflective instruction could improve young students’ understanding of NOS. During an informal education setting, the authors taught NOS aspects using explicit-reflective instruction. Overall the students participating in the program improved their understanding of the target aspects of NOS through use of explicit reflective instruction. However, the levels of improvement varied across different aspects. Students improved the most in their understanding of the tentative nature of science and the roles of observation in scientific work, although there was still some confusion regarding the distinction between observation and inference. More work needs to be done exploring these specific topics and the role explicit reflective practice can play in identifying the particular problems students have in distinguishing these constructs.


Abstract: This study investigates the beliefs and practices of seven high school chemistry teachers as a result of their participation in a year-long inquiry professional development (PD) project. An analysis of oral interviews, written reflections, and in-class observations were used to determine the extent to which the PD affected the teachers’ beliefs and practice. The data indicated that the teachers developed more complete conceptions of classroom inquiry, valued a “phenomena first” approach to scientific investigations, and viewed inquiry approaches as helpful for facilitating improved student thinking. Analysis of classroom observations with the Reformed Teaching Observation Protocol indicated that features of the PD were observed in the teachers’ practice during the academic year follow-up. Implications for effective science teacher professional development models are discussed.

This paper explores one district’s attempt to implement a blended science and English Language Development (ELD) elementary program, designed to provide English language learners opportunities to develop proficiency in English through participation in inquiry-based science. This process resulted in a blended program that utilized a combined science/ELD lesson plan format to structure and guide teachers’ efforts to use science as the context for language development. Data, collected throughout the first 2 years of the program, include teacher-generated lesson plans, observation notes, and interviews with teachers and principals. The process by which the blended program was developed, the initial implementation of the program, the resulting science/ELD lesson plan format, and teachers’ perceptions about the program and its impact on their students are described.

**An Invitation to the January 9-12, 2013 ASTE International Conference in Charleston, South Carolina**

The ASTE Conference Planning Committee and President John Tillotson cordially invite you to attend this year’s conference. We launched the first standalone conference in Charleston, South Carolina in January of 1993 and are returning for our twentieth anniversary. The conference will begin with pre-conference activities on January 9 and continue through Saturday, January 12th. Charleston is filled with wonderful sights, sounds and culture. Thus, our theme: Science Education through a Historical and Cultural Lens, will help us enjoy our own history and culture as well as the history and cultural capital that you will bring! We truly appreciate the diversity among our members and find the possibilities for dialog intriguing. Consider submitting proposals for inclusion on the program. We are looking forward to another exciting year as we talk with old friends and make new ones.

Meta Van Sickle and William Veal, 2013 ASTE Conference Planning Committee Co-Chairs

**ASTE North Central Regional Meeting Reminder**

The 2012 regional meeting of NC-ASTE will be on October 11 – 13 at the University of Northern Iowa in Cedar Falls, IA. Please consider attending, presenting and inviting others to attend/present.
Reviewers Needed for the January 9-12, 2013 ASTE International Conference in Charleston, South Carolina

ASTE relies on members to help produce a high quality conference program by submitting proposals, attending and participating in conference sessions, and supporting the conference team. Please help make Charleston the best possible 20th Anniversary conference by volunteering to review concurrent session proposals.

Each reviewer will examine 4-8 proposals in preferred strands (as much as possible). All review processes are online, so there are no forms to look for in the mail, or materials to send any place. You will receive an email with links to your assigned proposals and the online rubrics. **You will need to complete your reviews between July 15 and August 10, 2012.**

To volunteer as a reviewer, please go to the link below and complete the form. It is important that your email be accurate and that messages don't end up in the junk files as all review communication will be based on the information you submit.

http://theaste.org/meetings/2013conference/2013reviewerssignup.htm

Thank you for supporting ASTE!
William Veal
Meta Van Sickle
mutindi ndunda
Courtney Howard
ASTE 2013 Conference Program Committee

**ASTE 2013**
**International Conference**

*Science Education through a Historical and Cultural Lens*

January 9-12, 2013

[Francis Marion Hotel](#)
387 King Street
Charleston, SC 20403
843-722-0600
Call for Papers

The CITE Journal is an online, peer-reviewed journal, established and jointly sponsored by five professional associations (AMTE, ASTE, NCSS-CUFA, CEE, and SITE). This is the only joint venture of this kind in the field of teacher education. Each professional association has sole responsibility for editorial review of articles in its discipline:

- Educational Technology: General (SITE)
- Technology and Science Education (ASTE)
- Technology and Mathematics Education (AMTE)
- Technology and Social Studies Education (NCSS-CUFA)
- Technology and English Education (CEE)

The CITE Journal has a unique Commentary feature, which permits readers to author short responses to articles published in a commentary strand linked to the article. This feature takes advantage of an interactive medium to develop an ongoing, peer-reviewed dialog.

About CITE—Science

Cite—Science is a peer-reviewed online journal for science teacher educators. The journal is co-sponsored by ASTE to publish research reports and theoretical articles on the use of innovative technologies in science teacher education. Authors can include interactive technologies for the readers’ direct access to the example technologies such as video, audio, animation or external links.

Manuscript Information

Manuscripts should directly address technology within science teacher education. Papers may focus on science teachers at any career stage including preservice, new, continuing, or teacher leaders and any grade level including college science science teachers. Manuscripts that examine how technologies can improve programs, courses, or professional development as well as collaboration and partnerships are welcome. Papers that describe innovative approaches to technology enhanced science teacher education are specifically encouraged.

Submission Guidelines

1. Go to http://aace.org/publish
2. Login with your AACE login information or create a new login.
3. Select ‘submit article’. Be sure to select CITE (science), as the journal.

Editor: Rebecca Schneider, University of Toledo
As we noted in the Winter newsletter and as was reiterated in the most recent NSTA Reports, there is little happening on the national scene with respect to new education policy because negotiations on reauthorizing the Elementary and Secondary Education Act (ESEA) are largely on hold during the election year. Two bills came out of the House Education and Workforce Committee, but they are unlikely to be brought up for a vote: the Student Success Act which removes science testing requirements from state-level accountability and the Encouraging Innovation and Effective Teachers Act part of which requires school districts to develop rigorous teacher evaluation systems (keep reading for more on this topic). Representatives from NSTA and the STEM Education Coalition will continue to press for the inclusion of science in accountability measures and for having funds earmarked for professional development for science teachers.

States continue to apply for waivers from existing ESEA mandates, but certain strings are attached. One of these is teacher evaluation systems that are being considered both for pre- and in-service teachers. One that appears to be gaining momentum is the Teacher Performance Assessment (TPA) that has been developed by Stanford University and Pearson. In short, a teacher submits a portfolio, including video clips, from a 3-5 day period and the portfolio is then scored by trained external reviewers. Researchers from Stanford have developed the instrument and Pearson is providing the technical support for web-based submission and reporting. There is naturally some controversy about using the TPA to evaluate teachers and teacher preparation programs. Some of the problematic issues (e.g. costs to students, non-representative nature of a 3-5 day window of teaching) were noted in the May 6 edition of the New York Times in an article describing how a group of pre-service teachers refused to submit portfolios as part of a TPA pilot project at the University of Massachusetts.

Defining quality teaching and quality teacher preparation has always been a difficult task. Even the federal Department of Education was recently unable to arrive at a consensus on new teacher preparation rules (follow Stephen Sawchuk’s blog called Teacher Beat at the Education Week website, http://blogs.edweek.org/edweek/teacherbeat/).

This harks back to our Winter newsletter submission where we noted that science teacher preparation has a relatively weak evidence base for effectiveness. As states continue to consider and adopt standardized teacher evaluation and reporting systems, our involvement in advocacy work continues to be essential. So, keep informed and send your suggestions our way (Joe Shane, jwshan@ship.edu) as we continue our important work of preparing and developing science teachers in our schools.
Short Course focused on Access and Inclusion for Students with Disabilities offered to All Science Educators

Course 508. **Instructional Approaches to Access, Accommodation, and Inclusion of Students with Disabilities in the Geosciences.**

*Location:* Geological Society of America Annual Meeting, Charlotte, NC. Courses will be offered at the UNC City Center (http://centercity.uncc.edu/). This location is about 1 mile (10 city blocks) from the Charlotte Convention Center where the meeting will be held.

*When:* Sat., 3 Nov., 8 a.m.–5 p.m. US$35; includes lunch. Participants will be reimbursed for the expense of the short course registration after attending. **Limit: 50.** CEU: 0.8.

*Instructors:* Christopher Atchison, Georgia State University; Brett Gilley, University of British Columbia; Gina Ceylan, University of Missouri.

*Cosponsors:* National Science Foundation; National Association of Geoscience Teachers; The International Advisory for Geoscience Diversity; IUGS Commission on Geoscience Education (COGE)

This course is designed to instruct current geoscience faculty and graduate teaching assistants to apply the principles of universal design to their own lessons, labs, and field trips in order to accommodate students with physical, cognitive, and emotional disabilities. The presentation of this course will include first-hand perspectives of negotiating the rigor of a geoscience curriculum while managing one’s disability. Key topics will include: accommodation in the geosciences; the physical barriers to access and inclusion; and the personal, psychological and social challenges that students may face away from the classroom.

Registration opens in early June, 2012. Please visit: http://geosociety.org/meetings/2012/courses.htm

Early registration deadline: **1 October**  
**Registration after 1 October costs an additional US$30**  
Cancellation deadline: 9 October

Short courses are open to all. Early registration is highly recommended to ensure course viability. Contact Jennifer Nocerino, jnocerino@geosociety.org, for additional information.

**Can I take a short course if I am not registered for the meeting?**  
**YES!** You’re welcome to—just add the meeting nonregistrant fee (US$40 by 1 Oct.) to your course enrollment cost. Should you then decide to attend the meeting, your nonregistrant payment will be applied toward meeting registration.

**GSA K-12 teacher members:** You are welcome to take short courses without registering for the meeting or paying the nonregistrant fee.
Online Distance Learning Graduate Certificate
Informal Science Institutions
Environmental Education Graduate Certificate
Program

Do you want to
• Increase your career opportunities in informal science education and science outreach
• Create a career ladder
• Understand how individuals and communities learn science
• Address learning styles for multiple audiences
• Enhance relationships between ISIs/ISEIs and K-16 schools
• Understand the science education reform movement and standards in depth
• Build an ISI/ISEI community professional network
• Professionalize informal science education

This Informal Science Education Program is for you!

The program is for
• Professionals who educate the public about science
• Science teachers who want to go beyond traditional coursework and delve into the field of informal science

Courses can be used toward Ph.D., M.A. and M.Ed. degrees

Register now to become a part of the cohort beginning August 2012. Spaces are limited. Visit http://www.gradcerts.usf.edu/certificates/xev.html

For more information about this groundbreaking program, contact the program director Barbara Spector, Ph.D. at spector2@usf.edu or 813.971.1856 or program alumnus Lois Ball at laball@mail.usf.edu or 813.767-2175.
Legislative attacks on the teaching of evolution and climate change

In 2008, Louisiana became the first state to pass an “academic freedom” law called the Louisiana Science Education Act (LSEA). The law uses language that any science educator and teacher would support, such as: “promotes critical thinking” and “logical analysis.” Additionally, proponents of this law always refer to the importance of students understanding the “strengths and weaknesses” of scientific theories, “including, but not limited to, evolution, the origins of life, global warming, and human cloning.” Finally, to help support the argument that the LSEA and similar legislation is not religiously motivated, the following clause is always included: “This section shall not be construed to promote any religious doctrine, promote discrimination for or against a particular set of religious beliefs, or promote discrimination for or against religion or nonreligion.”

As ASTE members, we all need to be aware that this effort to undermine science education at the state level is not limited to just Louisiana. On April 10, 2012, Tennessee Governor Bill Haslam failed to veto HB 368/SB 893, Tennessee’s “academic freedom” legislation, allowing Tennessee to become the second state to pass this type of legislation. The Tennessee law has similar wording to the Louisiana law.

Unfortunately, Louisiana and Tennessee are not the only two states with this problem. Since the beginning of 2012, several other states have seen similar legislation that were either based on the “academic freedom” model or attempted to undermine science education in another manner. Two bills were introduced in Oklahoma, both died in committee, two were introduced in New Hampshire, both were defeated by the NH House of Representatives, two were introduced in Missouri, both died at the end of the legislative session on 5/18/12, and two were introduced in Indiana, one died in committee and one was “shelved” by the speaker of the house.

This second bill in Indiana, Senate Bill 89, was very troubling considering that the purpose was to include creation science in schools. Thankfully it was “shelved,” but not until the speaker of the house stepped in. Another interesting part of Indiana SB 89 is that ASTE member, John Staver from Purdue University, spoke against this proposed legislation publicly. According to an article on January 31, 2012 in The Exponent, Purdue’s student newspaper, John Staver said that “he will continue to publicly speak against” this type of legislation. He should be applauded for his efforts.

Keeping important science topics such as evolution and climate change in the classroom and keeping creationism and climate change denial out of our science classrooms are important issues for ASTE members. The National Center for Science Education (NCSE) contains a wealth of resources on their Web site that can help us stay informed about these critical issues. I encourage you to visit http://ncse.com/ to continue to be informed about these important issues pertaining to teaching climate change science and evolution in public school settings.

Update provided by Ian C. Binns, Ian.Binns@uncc.edu

ASTE Newsletter

Published by the Association for Science Teacher Education. All members are invited to submit items.

Editor: Todd Campbell
Phone: 435-797-7038
Email: todd.campbell@usu.edu