

The Math–Science Connector

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Cheyenne Mountain Resort
3225 Broadmoor Valley Road
Colorado Springs, CO 80906

110th Annual Convention
“Taking Math and Science
to New Heights”
Colorado Springs, CO

Make hotel reservations on the Website:

[Cheyenne Mountain Resort](#)

group code SSM

or call 719 - 538 - 4000

Make your reservations by Oct. 6th for the discounted rates in the room block (\$99 + mandatory \$8 resort fee).

➤ Look for an email with convention registration information in mid July or check the website: <http://www.ssma.org/>

Convention Travel Information

Colorado Springs Airport (COS) -- Travelers can get to and from Colorado Springs with ease. COS boasts multiple carriers that offer varied routes to virtually all cities in North America and major cities worldwide. This ultimately allows the airport to provide convenient flight schedules and competitive airfares. The airport handles around 106 arrivals and departures per day and is served by eight airlines.

The Hotel offers Airport shuttle service for \$18 each way or \$30 roundtrip. Call the hotel (719 – 538 - 4000) to pre-arrange for the shuttle and they will pick you up at door.

Reference the following websites for other transportation options in the Colorado Springs area:

<http://www.coloradoshuttle.com> - 1207 South Nevada Avenue, Colorado Springs - (719) 687-3456

<http://www.yccos.com> - (Yellow Cab) - 4625 Town Center Drive, Colorado Springs - (719) 777-7777

<http://www.arideinluxury.com> - 2216 West Vermijo Avenue, Colorado Springs - (719) 243-3365

<http://www.ramblinexpress.com> - 3465 Astrozon Place, Colorado Springs - (719) 590-8687



Convention Preview

The theme for the 2011 annual SSMA Convention is *TAKING MATH AND SCIENCE TO NEW HEIGHTS*. The Convention starts with 8:00 A.M. sessions Thursday morning and concludes Saturday afternoon.

In addition to regular sessions, we will offer special sessions related to STEM education sustainability issues, as well as contemporary issues in math, science, and technology.

Convention Social Activities: The following two social activities will require advance registration and payment to ensure accurate counts for planning purposes.

Friday Evening – 5:30 to 9:30 PM - *Flying W Ranch- Where the Old West Comes Alive*

Enjoy a brief ride through the Garden of the Gods, dinner and an evening show.

(Cost is \$50.00 per person including transportation)

Saturday Afternoon - *Air Force Football Game vs. Wyoming*

Game ticket, transportation, light snack and US Air Force Academy t-shirt provided.

(Cost is \$45.00 per person)

Saturday Afternoon - *Expert Guided Tour of Garden of the Gods*

Dr. Paul Grogger, Professor of Geology at the University of Colorado at Colorado Springs, will lead an expert tour focusing on the geology of Garden of the Gods. Wear shoes for hiking, bring water and a snack. **(Cost is \$20.00 per person for transportation)**

Saturday Afternoon On Your Own - You can take advantage of the great shopping in historical Old Colorado City or Manitou Springs or you can go to one of the local shopping malls. You may also want to take the Ramblin' Express to Cripple Creek for some mountain high experiences and a little gambling! Please look over the options below and enjoy your time in Colorado Springs.

Planning your trip to Colorado Springs –Bring the family or spend an extra couple of days visiting the many interesting and educational attractions in the area.



Cripple Creek Casinos	2864 South Circle Drive, Colorado Springs, CO	24-Hour Tel: 719.590.8687 x777	http://www.casinoshuttle.com/schedules-cripple-creek-colorado-springs-south.asp
Air Force Football (vs. Wyoming at 12pm)	Air Force Academy	800-666-8723 719-472-1895	goairforcefalcons.com
Cave of the Winds	100 Cave of the Winds Road Manitou Springs, CO	719-685-5444	caveofthewinds.com
Cheyenne Mountain Zoo (9am - 5pm)	4250 Cheyenne Mountain Zoo Rd. Colorado Springs, CO	719-633-9925	cmzoo.org
Cliff Dwellings	10 Cliff Dwellings Road Manitou Springs, CO	719-685-5242	cliffdwellingsmuseum.com
Fine Arts Museum	30 West Dale Street Colorado Springs, CO	719-634-5583	csfineartscenter.org
Garden of the Gods	1805 30th street	Visitor Center 719-634-6666	gardenofgods.com
Golden Bee - Piano Bar (piano @ 8:30pm)	1 Lake Avenue Colorado Springs, CO	866-381-8432 719-577-5776	broadmoor.com
Michael Garman Gallery (Magic Town)	2418 W. Colorado Ave. Colorado Springs, CO	800-731-3908 719-471-9391	michaelgarman.com
Mini Golf & Batting cages	Adventure Mini Golf 6550 Corporate Drive Colorado Springs	719-528-5430	adventuregolfandbattingcages.com
North Pole	5050 Pikes Peak Hwy Cascade, CO	719-684-9432	santas-colo.com/
Pikes Peak Cog Railway	515 Ruxton Ave. Manitou Springs, CO	719-685-5401	cograilway.com/
Pro Rodeo Hall of Fame	101 Pro Rodeo Drive Colorado Springs, CO	719-528-4764	prorodeohalloffame.com
Seven Falls	7 Falls Colorado Springs, CO	719-632-0765	sevenfalls.com

We look forward to seeing everyone in cool Colorado Springs!



City of Colorado Springs <http://www.springsgov.com/>

Colorado Chamber of Commerce <http://www.visitcos.com/>

The Best Things to Do in Colorado Springs <http://www.coloradosprings.com/>

SSMA is now on Facebook! See:

<http://www.facebook.com/home.php#!/pages/School-Science-and-Mathematics-Association/110197605734717>

SSMA President's Column: Don Balka

Standards of Mathematical Practice and STEM

In April, the NCTM annual convention was held in Indianapolis. As President of SSMA, I was invited to speak as part of the Presidential Series. The topic I chose was *STEM Education: Standards, Programs, and Then?* Since that time, I have been writing, along with two colleagues, about implementation of the Common Core State Standards and the Standards for Mathematical Practice. As might be expected, there are many ideas in both arenas (STEM and CCSS) that relate to the teaching many of us do in our positions of science and mathematics educators.

The eight Standards of Mathematical Practice delineate what teachers of mathematics would like students to develop as they learn mathematics. In much the same way that the National Science Education Standards (1996) and the Principles and Standards for School Mathematics (2000) had an impact on teaching and learning, the practices also have the potential for changing instruction and learning. These standards are:

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Based on preliminary information, the Next Generation Science Standards and the Conceptual Framework for Science Education that are currently under development will also include scientific practices important for students learning science.

Even with limited knowledge of the science standards, I was able to find correspondences between the practices and ideas emphasized in the current standards, such as observing, inferring, reasoning, experimenting, constructing explanations, testing explanations, communicating ideas, and using critical and logical thinking. Similarly, the strands of scientific proficiency described by the National Research Council (2007) include portions directly related to the mathematical practices:

1. Know, use and interpret scientific explanations of the natural world;
2. Generate and evaluate scientific evidence and explanations;
3. Understand the nature and development of scientific knowledge; and
4. Participate productively in scientific practice and discourse (p. 37).

Implementing the Common Core State Standards for mathematics is a high priority for those who have signed on to the initiative. In many school districts across the United States, leaders will

initially ignore the mathematical practices and focus their attention on the mathematical content, as the assessment portion of the Common Core Initiative continues to develop. What, in fact, might help students learn and understand mathematics will be set aside.

Now, however, we face the challenge of providing STEM education. Unfortunately, there is little consensus on what STEM education is all about as I discovered in Indianapolis. In my introduction, I pointed out to the audience that SSMA has been doing STEM education before there was STEM. The organization's view has not been one of four silos (Science, Technology, Engineering, Mathematics), but one of true integration. Consequently, those stakeholders who use the phrase "stem literacy" are much more aligned to what SSMA has discussed for many years. A commonly used definition of stem literacy is the following:

STEM literacy is the ability to identify, apply, and integrate concepts from science, technology, engineering, and mathematics to understand complex problems and to innovate to solve them. To understand and address the challenge of achieving STEM literacy for all students begins with understanding and defining its component parts and the relationships between them.

The definition suggests components of stem literacy that, in turn, lead back to the standards of mathematical practice. Certainly, learning and understanding subject matter content in the four disciplines is critical, along with a variety of necessary skills in each discipline. Communication and applications provide additional components. In science, we have students exploring/observing systems, modeling scientific phenomena, looking for structure, finding patterns, evaluating evidence, developing explanations, and reasoning about change, constancy, and equilibrium. For technology and engineering, students are learning how to evaluate and use available technology, solving real-world problems, building prototypes and products, and making decisions.

Leigh R. Abts (2008) provides a list of "first principles" for STEM literacy. Those provided below are similar to the standards of mathematical practice:

- Solve (complex) problems.
- Apply and interpret information utilizing fundamental mathematics and science concepts.
- Think logically.
- Communicate information and ideas.
- Use and apply technological tools.
- Make informed decisions.
- Sort relevant and reliable information.

Regardless of where our individual talents as STEM educators lie, we continue to read and hear that providing opportunities for reasoning, discussion, and debate among students and teachers, implementing inquiry as an instructional strategy in all fields, and communicating understanding of ideas are important. The Standards for Mathematical Practice described by the CCSS development teams are pertinent for all of us to consider as our organization advances the integration of science and mathematics.

References:

- Common Core State Standards*. (2010). Retrieved May 25, 2011, from www.corestandards.org.
- Leigh R. Abts (2008). *STEM literacy: Pathways to education, workforce and innovation*. Retrieved May 25, 2011, from www.orau.org/leadershipsummit/pdf/abts.pdf
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.
- National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.
- National Research Council. (2007). *Taking science to school: Learning and teaching science in grades K-8*. Committee on Science Learning, Kindergarten through Eighth Grade. R. A. Duschl, H. A. Sweingruber, & A. W. Shouse (Eds.). Board on Science Education, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.



Welcome

Melanie Shores has been appointed to the Board of Directors, replacing Carla Johnson who is now the Journal Editor. Melanie is an Assistant Professor of Human Studies at the University of Alabama Birmingham, School of Education. Her specialization is in educational measurement and evaluation with research interests focusing on gender issues, attribution, test anxiety, and mathematics achievement.

The Board of Directors will be suggesting some minor changes to the bylaws. Look for a By-Laws ballot in the fall.

Report of the 2011 Spring SSMA Board of Directors Meeting: Don Balka

The Board of Directors met May 15 – 17 at the Cheyenne Mountain Resort in Colorado Springs, the location of our 2011 Annual Convention.

The venue for the convention is outstanding. Catherine Kelly and her committee have put together an exciting program for our members.

Our membership remains about 300. The organization remains financially stable. Although our dues have not increased for many years, the Board made no changes.

The transfer of editorship of the *School Science and Mathematics Journal* from Gerald Kulm at Texas A & M to Carla Johnson at the University of Cincinnati continues.

The Board spent quality time in a strategic planning session. One action item that members will soon see was to create a regular SSMA electronic news bulletin that will be sent via email.

Melanie Shores, University of Alabama Birmingham, has been appointed by President Balka to fill the remaining term of Carla Johnson on the Board of Directors. Melanie will also chair the 2012 Annual Convention in Birmingham, AL.

Several Bylaws changes were proposed by the Board and will be sent to members for approval.

The Board approved a new logo for the organization based on the current Website logo, but also including the phrase “Founded 1901.”

The Board discussed possible position papers for the organization, along with mechanisms for creating them.

Past president Zollman created a Wikipedia entry for SSMA that includes a great amount of our past history. Additionally, board member Melanie Shores created a Facebook site for SSMA.

John Park, President-Elect, North Carolina State University; Lynn Columba, Lehigh University; and Suzanne Nesmith, Baylor University will begin their terms on the SSMA Board at the conclusion of the Annual Convention this fall.

Don S. Balka
SSMA President

School Science and Mathematics Journal Information

New Journal Leadership

The School Science and Mathematics Journal has a new Editorial Team that has assumed leadership of the publication. Dr. Carla C. Johnson, Associate Professor of Science Education, University of Cincinnati is the new Editor and Dr. Shelly M. Harkness, Associate Professor of Mathematics Education, University of Cincinnati is the new Co-Editor.

The new website for the journal is hosted directly on the Wiley-Blackwell website at: <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291949-8594>

Visit this site to read information for authors, search recent articles, and learn more about the new Editorial Team or submit an article for review.

Currently we have about 18 months backlog of journal articles that are in the lineup to be published. SSMA is working to remedy the backlog and has contracted with the publisher to increase the size of journal issues in the 2012 year.

Additional reminders from the new Editors that authors need to be aware of include the maximum of 25 pages for manuscripts and the requirement that all submissions must be in APA 6th edition format. Any manuscripts submitted that exceed the page limitation or are not in APA 6th edition format will be returned without review.

Manuscript Submission

Authors who wish to submit manuscripts to the Journal should use the ScholarOne website <http://mc.manuscriptcentral.com/ssm> or click “the submit an article” link on the journal website. For manuscript guidelines, see the inside back cover of the Journal, or the journal website.

Call for SSMA 2011 Awards

Deadline for submission of nominations: September 15, 2011

The SSMA Awards Committee invites the membership to submit nominees to be considered for the following awards:

- **GEORGE G. MALLINSON DISTINGUISHED SERVICE AWARD**
 - How nominee has shown substantial participation and leadership in SSMA activities
 - How nominee has exhibited scholarship, leadership, and/or teaching excellence in mathematics/science education
- **AWARD FOR EXCELLENCE IN INTEGRATING SCIENCE AND MATHEMATICS**
 - How person or group has fostered, promoted, and extended the integration of mathematics/science at the elementary, secondary, or university level
 - How person or group has impacted science/mathematics education
- **SSMA SCIENCE AND MATH GRANT AWARD**
- **OUTSTANDING EARLY CAREER SCHOLAR AWARD**
- **OUTSTANDING SSM DISSERTATION AWARD**

The criteria for each award can be found online at <http://www.ssma.org/award-descriptions-and-requirements> . Any member of SSMA is free to nominate a person(s) satisfying the criteria noted above. As the Early career and Dissertation awards are given in alternating years, application may remain active for three years. Winner receives a complimentary conference registration. The recipients of these awards will be recognized at the SSMA Annual Convention.

Materials (for each award) are to be sent electronically to **Zhonghe Wu** (zwu@nu.edu) prior to **September 15, 2011**.

Nominations for SSMA Board of Directors

Members may suggest candidates to serve on the SSMA Board of Directors, by contacting Georgia Cobbs, Chair of the Nomination and Election Committee by October 1, 2011. Self-nominations are accepted as well.

This year we will elect two Board members.

If you are interested, or would like to nominate someone, contact.

Georgia Cobbs
Department of Curriculum & Instruction
The University of Montana
105 Education
Missoula, MT 59812
georgia.cobbs@mso.umt.edu

Additional nominations for Officers and Directors-at-Large may be made if a petition is presented to the Executive Director(s) bearing the signatures of at least twenty-five (25) Active Members (except for Sustaining Members) in good standing. All additional nominations must be received by the Executive Director(s) on or before the first (1st) day of January following the Annual Board Meeting.

The Association always seeks volunteers for its six standing committees of Awards & Endowment, Conventions, Finance, Nomination & Election, Policy, and Publications. If you are interested in any of the committee positions, just contact the SSMA Office at office@ssma.org.

Save the Date:

**SSMA 2012 Annual Convention
Birmingham, AL**

November 8 - 10, 2012

Where: Sheraton Birmingham Hotel
See view from the hotel below.

[Sheraton Birmingham](#)

CALL FOR PROPOSALS - Look for the proposal announcement at the fall convention. ***The proposal due date will be January 31, 2012.*** This will ensure that speakers are notified of their acceptance prior to the ending of the academic year.



[SSMA 2013 – San Antonio – Details coming soon.](#)

About Our Organization...

SCHOOL SCIENCE AND MATHEMATICS ASSOCIATION

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Oklahoma State University

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Stillwater, OK 74078

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(405) 744-6290

E-Mail:
office@ssma.org
We're on the Web!

See us at:

<http://www.ssma.org/>

Membership in the School Science and Mathematics Association is open to any person who supports the objectives of the Association, who has paid membership dues, and completed an application.

Benefits of SSMA Membership include:

- Membership in an association encompassing both science and mathematics teaching and learning.
- Choice of electronic or print subscription to the 8 issues of the official journal *School Science and Mathematics*.
- Free electronic access to archive articles of the previous 110 years of Journal
- 2 issues of the SSMA newsletter *The Math-Science Connector*.
- Opportunities to submit presentation proposals for the Annual Convention.
- Voting privileges for Association business and election of officers.
- Opportunities to serve on an SSMA Committee or Leadership Team.

Additional information about SSMA is available at our website (<http://www.ssma.org>) or by contacting **Julie Thomas and Juliana Utley** (office@ssma.org).



To contribute news items for inclusion in the SSMA newsletter (*The Math-Science Connector*), please contact **Gil Naizer** (gilbert_naizer@tamu-commerce.edu).

Contact information for all SSMA Board Members and Committee Members can be found online at <http://www.ssma.org/>