



**The PSTA Annual Convention
December 1-2, 2011
Hershey Lodge and Convention Center
Hershey, PA**

**Advance Program and
Registration Materials**

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Letter of Invitation

The theme of the 2011 Convention of the Pennsylvania Science Teachers' Conference is "Science Is the Essence of STEM." STEM stands for Science, Technology, Engineering, and Mathematics," and is a new acronym for many educators.

However, the concept of STEM education is not new. In November 23, 2009, President Barack Obama launched the "Educate to Innovate" Campaign for Excellence in Science, Technology, Engineering & Math (STEM) Education. The nationwide effort included over \$260 million in public-private investments, all designed to move American students to the top of the pack in science and math achievement over the next decade. Unfortunately, news of the campaign and its unfolding has been slow to percolate to the ranks of K-12 and higher education educators and administrators.

President Obama has identified three overarching priorities for STEM education: (1) increasing STEM literacy so all students can think critically in science, math, engineering and technology; (2) improving the quality of math and science teaching so American students are no longer outperformed by those in other nations; and (3) expanding STEM education and career opportunities for underrepresented groups, including women and minorities. The much publicized \$4.35 billion "Race to the Top" school grant program includes a competitive preference to states that commit to improving STEM education. Obama reiterated his emphasis on STEM education in his January 25, 2011 State of the Union address, emphasizing its importance in the future economic well-being of the country and re-issuing his call for recruiting 100,000 new STEM teachers over the next decade.

The March 2011 edition of "Educational Leadership," the monthly publication of the Association for Supervision and Curriculum Development (ASCD), included an article on STEM education. The authors, Gary Hoachlander and Dave Yanofsky, characterized the STEM initiative as crucial to the school improvement agenda. They emphasized the "learning by doing" aspect of STEM, and advocated project-based learning as a pathway to integrating the disciplines of STEM. Although their emphasis was on STEM education as an important and necessary part of the high school curriculum, the National Academy of Engineering in 2010 published "Standards for K-12 Engineering Education?," presented a strong argument that STEM education be a K-12 initiative.

However, with the mandates of No Child Left Behind pressuring districts to achieve proficiency in Language Arts and Mathematics, many school districts have greatly reduced their emphasis on science. Although Pennsylvania's state assessments include science, school scores in science do not count toward achieving Adequate Yearly Performance. If even basic science is being neglected, teachers ask what chance do they have of being able to include technology and engineering in an already-crowded teaching schedule? In Pennsylvania only one university remains that prepares pre-service teachers for initial certification in technology education. And how many pre-service teachers have received even minimal introduction to engineering principles in their training? Moreover, continuing education and inservices rarely involve science topics, much less technology and engineering.

Many of Pennsylvania's elementary school teachers do have resources available through its statewide "Science: It's Elementary" program. Managed by ASSET, Inc., a nonprofit organization, the program partners with the Pennsylvania Department of Education to provide hands-on science instruction to over 2,000 elementary teachers in over 100 districts (http://pa.gov/portal/server.pt/community/science_it%E2%80%99s_elementary/19138). In addition,

Project Lead the Way (www.pltw.org) provides guidance for middle and high school teachers who want to integrate authentic performance tasks into their curriculum.

STEM education can tap into students' creativity and increase motivation. STEM projects can be as simple and fun as having students construct Rube Goldberg machines, Egg Drops or Pumpkin Catapults; or as sophisticated as studying the role of microorganisms in disease transmission and its relationship to the existing healthcare infrastructure or building a wind turbine or performing an energy audit of the school. The key is to tie the STEM projects to the mandated curriculum for each grade: e.g., Rube Goldberg machines to the topic of simple machines, Egg Drops to the gravitational force, Pumpkin Catapults to projectile motion. Of course, some applications are even more evident, like the role of microorganisms as a biology topic.

The importance of STEM education projects is not only that they engage students, but that they teach students to consider design as an iterative process, a problem solving process that repeatedly tweaks and re-designs proposed solutions until they effect a doable and realistic solution to the problem. Along the way, they teach students patience and persistence and engender a sense of self-direction and ownership of learning. Wouldn't those goals be appropriate for every subject, from Language Arts to Social Studies? STEM education has the potential to really lead not simply to Adequate Yearly Progress, but to EXEMPLARY Yearly progress.

Kathleen Conn, Ph.D., J. D., LL.M.
PSTA Convention Chair, 2011

Registration Hours

The registration area will be open during the following times to pick up your registration materials. Please save time and money and preregister!

Wednesday, November 30, 2011

7:00 p.m. -10:00 p.m.

Thursday, December 1, 2011

7:30 a.m. – 3:00 p.m.

Friday, December 2, 2011

7:30 a.m. – 12:00 p.m.

Conference Information

What do you get for your Conference Registration Fee?

For your conference registration fee, you can attend any of the sessions offered on Thursday and Friday at the convention. Participants are not scheduled into sessions, thus allowing you to attend any session of your choice. Please note that there are a few sessions, which limit the number of participants at the presenter's request. If these sessions are of interest to you, it is suggested that you arrive early. Your conference badge also admits you to the Exhibit Hall, where you will find nearly 75 vendors most of whom specialize in science education at all levels. PSTA has scheduled several refreshment breaks throughout the convention as well for your convenience.

What do you get for your hotel fee?

PSTA has returned to using the Modified American Plan following input after last year's conference. The Hershey Lodge and Convention Center offers comfortable rooms and ideal accommodations as it places everything under one roof. For each day, you receive dinner on the night of arrival, your night's lodging, and breakfast the following morning. Please note the Hershey Lodge and Convention Center reservation policy. When you make your housing reservations, they will bill your credit card for one night's lodging when the reservation is made.

Why are there different registration fee amounts?

The different fees represent member and non-member rates as well as the level of conference participation. Conference attendees who are not PSTA members have the opportunity to join PSTA to receive the lower registration rate. People are encouraged to renew their membership at the same time they register by completing a membership form and mailing to the address indicated.

How to Reserve a Room

PSTA has reserved rooms at the Hershey Lodge at a nightly rate of **\$232** plus tax for single occupancy and \$155 per person for double occupancy. Participants are encouraged to stay at the hotel.

Phone in Reservations: Please call (717) 533-3311 or 800-533-3131 on or before October 27, 2011 and identify yourself as part of your PSTA group. Credit card information is required at the time reservations are made and one night's room and tax will be charged as a deposit. Any requests for special room arrangement must be made at the time of this call. Guest arrival will be available after 4:00 PM on arrival day and reserved until 11:00 AM on departure day.

Science Leadership Dinner

Thirteenth Annual Leadership Dinner and Roundtable Discussion

Wednesday, November 30, 2011

5:30 – 9:30 p.m.

Who is invited?

All Science Chairpersons, Lead Teachers, Supervisors, Administrators and anyone interested in science/environmental education in Pennsylvania.

Topics for roundtable discussions include:

The cost for the Leadership Dinner which includes the roundtable discussions and related materials is \$25.00 for PSTA Members and \$45.00 for non-members. If you are staying at the Hershey Lodge on Wednesday evening, your ticket as part of your room cost will be collected and therefore there will be no charge. If you are not a member of PSTA, this would be a perfect opportunity to join. This event is sponsored by the Pennsylvania Department of Education, Delta Education, and the Pennsylvania Science Teachers Association. There is limited seating available and registrations will be accepted first come – first served. Checks should be made out to “PA Project Learning Tree”

Name: _____ PSTA Member # _____

School: _____

Position: _____ Email: _____

Address: _____

I am a member of PSTA Yes No

I need a vegetarian meal Yes No

I am staying at the Hershey Lodge on Wednesday evening and will be turning in my meal ticket Yes No

An issue related to science education in Pennsylvania I am interested in discussing is _____

Send your registration to

Dr. Patricia Vathis (ATTN: Leadership Dinner) – 333 Market Street – Harrisburg, Pa 17126

Questions: [Patti Vathis \(pvathis@state.pa.us\)](mailto:pvathis@state.pa.us) or [Kathy Blouch \(kkblouch@aol.com\)](mailto:kkblouch@aol.com)

NSTA Science Store in a Box

The NSTA Science Store in a Box will be back at the PSTA Convention this year to provide literature and resources to help our Pennsylvania Science Teachers stay on the cutting edge. Covering all aspects of science as well as pedagogy, the NSTA store is a valuable resource for you. So take some time to browse the resources we have to offer. We hope you will come by and see us in the Exhibit Hall during your stay at the PSTA Convention. Sorry, no purchase orders can be accepted at the NSTA Science Store. Cash, credit cards, and personal checks will be accepted for your convenience.

Act 48 Credit at the PSTA Convention

Act 48 attendance verification will once again be available at the PSTA Convention. PSTA is not an approved Act 48 provider and thus cannot offer official Act 48 credit. PSTA will, however, provide you with verification of attendance at conference sessions. If you intend to use your attendance at the convention for Act 48 credits, it is your responsibility to make sure your district accepts your convention attendance as part of their approved program.

You will find an Act 48 verification record page in your convention program. This page will consist of a grid where you can place session attendance verification labels. At the end of each breakout session, PSTA personnel will distribute a self-adhesive label which must be applied to this verification form. The labels will only be distributed to those persons who have attended the entire session and are present at the end of the session. If you enter the session late or leave early, you will not receive verification. Verification labels will only be available at the session location. Lost verification sheets cannot be reconstructed by convention officials.

Exhibit Hall

Part of the PSTA Convention will feature an exhibit hall representing nearly 75 vendors of science education materials. Under one roof, you will have the opportunity to view the latest in textbooks, audiovisual equipment, software, scientific equipment, and other science classroom materials. This is also the location of the NSTA Science Store in a Box.

Annual Banquet and Awards Recognition

Thursday, December 1, 2011 – 6:00pm – 8:30pm

Finicky Females and Macho Males: The Science of Sexual Selection

Speaker

Vikram K. Iyengar, Ph.D.

Associate Professor of Biology, Villanova University

Dr. Vikram K. Iyengar is a professor in the Biology Department at Villanova University, where he teaches undergraduate and graduate courses in ecology, entomology, and animal behavior. Vik received his bachelor's degree from Stanford University in 1993 and his doctorate from Cornell University in 2001, and he traces his interest in behavioral ecology back to formative outdoor experiences in high school. His research involves studying the reproductive biology of insects and other arthropods, with an emphasis on the evolution of exaggerated male traits and female mating preferences. Vik has received grants from the National Science Foundation and the U.S. Department of Agriculture, and his research has led to 15 publications in peer-reviewed journals including *Nature* and *Evolution*. The breadth of his interests is well-represented in his current projects, which include a laboratory project regarding pheromones and chemical defenses in a brightly-colored moth, a local field project investigating the role of interspecific male aggression in reproductive isolation of two damselfly species, and a marine project studying the harem mating system of an amphipod found in Washington.

The following will be recognized:

PSTA Awardees

PAEMST State Winner & Finalist

Thursday Sessions

Listed in this book are sessions that will be offered at the convention. The times and dates are tentative and may change. PSTA makes every effort to keep the schedule as it appears, but changes do occur. Please check the final program for day, time, and room assignments.

The following proposals were received through mid August. PSTA expects additional proposals.

Thursday, December 1, 2011 – 8:00-9:00 a.m.

- #44 Developing 21st Century Skills for Students through District-wide Collaborative Implementation of Guided Inquiry Elementary Science Curriculum
Presenter: Paul Joyce and Bill Vossburg, West Chester Area School District, West Chester, PA
Demonstration—K-4—Other
Elementary science leadership team implements guided inquiry science curricula utilizing kits, customized texts, non-fiction readers, library connections, on-line resources and science notebooks; a four year process involving elementary teacher leaders as the principle trainers and building level implementers of change.
- #84 “Time” 4 Science!
Presenter: Angela Hoover, Independent Consultant, Lebanon, PA
Instructional strategies will be presented to elementary teachers that focus on how to use the elementary curriculum creatively to make time for engaging, inquiry-based science that is relevant and standards based.
- #49 Introduction to Wisconsin Fast Plants
Presenter: Carolina Teaching Partner, Carolina Biological Supply Company, Burlington, NC
Hands-On—Other—Biology
Study complete life cycles in less than 40 days with Wisconsin Fast Plants! These quick-growing plants are ideal classroom tools for exploring genetics, life cycle, symbiosis, and environmental effects, Participants work hands-on through several activities. Free materials and samples provided.
- #27 Raising the Bar on 4-8 Guided Inquiry
Presenter: Bill Metz, Science Education Consultant
Hands-On—5-8—Inquiry
This interactive 4-8 workshop will examine ways to enhance the inquiry level of selected FOSS lessons through student centered applications. These modifications turn more of the responsibility for learning to the shoulders of the students. Program sponsored by Delta Education.

Thursday, December 1, 2011 – 8:00-10:00 a.m.

- #62 MAKE-IT AND TAKE-IT: The Unseen World of Macro
Presenter: Mitch Batoff, Professor Emeritus, New Jersey City University, Jersey City, NJ
Hands-On—Other—Other
In this NEW hands-on workshop you will go beyond the naked eye to explore an amazing world that few people experience and take samples of your work back to your classroom. You need to bring a digital camera, and, if possible, the instruction booklet. Fascinating workshop. Limited to first 20 people. Useful handouts.

Thursday, December 1, 2011 – 10:00-11:00 a.m.

- #7 Use of Metacognition as an Assessment Tool: I Failed the Test...Now What??
Presenter: Jeremy Wolf, Todd Kellman, and Jaime Guthier, Palisades High School, Kintnersville, PA
Lecture—11-12—Pedagogy
Metacognition, or the ability to think about one's own thinking, is a valuable way of developing and confirming understanding. Learn how we have taken our students beyond a re-test, to true remediation of understanding of science concepts.
- #16 Sing a Little, Play a Little, Learn a LOT!
Presenter: Robin Zecca and Christy Ware, Delaware County Christian School, Newtown Square, PA
Lecture—5-8—Other
Middle school teachers: Join us for a lively and interactive presentation with classroom-tested activities and projects for Earth, Life and Physical Science topics. Lots of copy-ready handouts will be provided.
- #21 New TI-Nspire Data Collection Solutions
Presenter: Bruce S. Karpe, Swenson Arts & Technology High School, Philadelphia, PA
Demonstration/Hands-On—9-12, College—Other
See the latest data collection technology from TI. An opportunity to explore the new TI-Nspire, which features a backlit screen, rechargeable battery, and built-in Vernier DataQuest App. Wireless networking will also be demonstrated. Software trial CDs will be distributed to attendees.
- #58 Do You Have What it Takes?
Presenter: Patty McGinnis, Arcola Intermediate School, Eaglesville, PA
Lecture—Other—Other
Interested in becoming a National Board Certified Teacher? A national board certification will take you through the ultimate professional development experience and may increase your salary; many districts reward NBCTs with stipends.
- #71 EACAP: Promoting Environmental Awareness and Social Responsibility in an Environment Science Course for Pre-service Teachers and Non-Science Majors
Presenter: Mahsa Kazempour, Penn State Berks, Reading, PA
Lecture—College—Environmental
The session will describe the Environmental Awareness and Community Action Project (EACAP) in which students researched an environmental issue and took actions to combat the problem. Students selected issues, actions, and reflections on the impact of EACAP will be discussed.
- #72 You Can Be a Presidential Awardee
Presenter: Patti Vathis, Harriburg, PA
Panel/Discussion—K-4—Other
Attend this session to find out how you can earn this prestigious award which includes a check for \$10,000 and a visit to Washington, DC. Patti Vathis, Pennsylvania State Coordinator for Presidential Award in Excellence in Science Teaching, will lead the discussion accompanied by former Presidential Awardees. You will learn firsthand what you need to do to complete the application by going through an application on-line. You will receive tips on what makes a good application and things to avoid. The 2012 program is for elementary teachers.

Thursday, December 1, 2011 – 11:15 a.m. -12:15 p.m.

- #19 **REALLY EASY Physical Science using RED Probeware Technology**
Presenter: Julia Gooding, Hopewell High School, Aliquippa, PA
Hands-On—5-8—Physical Science
Learn how to integrate the RED units into your classroom/laboratory. Hands-on activities include: – Buoyancy using the force probe – Friction using the force probe – Centripetal force using the force probe – Pressure in a Column Inquiry activity.
- #37 **Build a Human Body and Create Greater Understanding of Anatomy**
Presenter: Chuck Roney, Eastern Camden County High School, Retired 6/11, Voorhees, NJ
Hands-On—11-12—Biology
This workshop will provide educators with a new method of teaching anatomy. Through building body systems in clay, students understand the size, shape, location, purpose, and function of everything they build. Learn tips and techniques to implement this hands-on curriculum.
- #39 **Nanoscale Modeling using Bubbleology Techniques**
Presenter: Joyce Hubert-Theriot, Rustin High School, West Chester, PA
Hands-On—9-10—Physical Science
Student utilization of bubble plating in order to understand the interaction of nanosized materials has been successfully implemented from elementary activities to complex high school labs. Participants will actively use materials, review nanoscale models and connect curriculums, (Packets, & electronic access provided).
- #60 **STEM: Humpy Dumpty Fell off the Wall**
Presenter: Carla Johnson, PASCO Scientific, Roseville, CA
Hands-On—Other—Physical Science
Experience one of PASCO's new STEM Modules using probeware. Walk through the process of designing a solution to a problem, testing it, analyzing it and sharing the results. Lab activity is aligned to State and National Standards.
- #66 **Super Park!**
Presenter: Kent Brusstar, Lebanon Valley College-MSE Program, Annville, PA
Imagine that you have been asked to design a theme park based on a world biome. Which biome would you choose? What rides would you have? To design the park, produce an advertising brochure and model, students must become experts on the biome they selected as their theme.
- #73 **Social Bookmarking Using Diigo**
Presenter: Michael F. Ruffini, Viola Supon, Bloomsburg University of Pennsylvania, Bloomsburg, PA
Demonstration—Other—Other
Social bookmarking in the science classrooms is a popular tool for locating and managing information on the Internet. This presentation focuses on the features and benefits of using Diigo, relative to student motivation, enthusiastic discussions, and concept attainment.
- #76 **Genetics: Crazy Traits and Adaptation Survivor**
Presenter: Lisa Bowman, CPO Science, Nashua, NH
Hands-On—9-10—Biology

Students learn new vocabulary when they study genetics such as: traits, alleles, and genotypes. How can you predict the traits offspring when you know the genetic makeup of the parents? These ideas will come alive when you create crazy creatures using a unique kit and study the resulting population.

Thursday, December 1, 2011 – 1:00-2:00 p.m.

- #10 Removing the Mask of Inquiry
Presenter: Barbara Lorenzon, Delaware Valley Science Fairs, Inc., Philadelphia, PA
Hands-On—Other—Inquiry
Teachers attending this workshop will experience science through Inquiry discussion and hands on experiences to see and evaluate what true Inquiry in the classroom looks like. This workshop is designed as a vehicle for stimulating interest in Science, Technology, Engineering and Mathematics (STEM).
- #13 Developing Skepticism as an Essential Strategy for Science
Presenter: Julia Gooding, Hopewell High School, Aliquippa, PA, Bill Metz, Science Education Consultant
Thinking critically in science is an essential process for crafting higher level questions and drawing reasonable conclusions. This workshop will demonstrate approaches and strategies used in advertising and their use for increasing the questioning skills and skepticism of school students.
- #40 Extra, Extra, Read All About It! Taking Biology from the News to the Classroom
Presenter: Dr. Stephen Nowicki, Duke University, Raleigh, NC
Lecture—9-10—Biology
Join Holt-McDougal Biology author, Dr. Steve Nowicki, in an interactive session as he presents a variety of strategies for bringing the real world into your classroom. Session will focus on using a full range of media resources to connect events, recent scientific discoveries, and fun quirks of nature with your biology classroom and the everyday lives of your students.
- #42 Metacognitive Strategies to Foster Deep Understanding
Presenter: Joyce Hubert-Theriot, Rustin High School, West Chester, PA
Demonstration—9-10—Physical Science
Students need to explain, demonstrate, and connect what they are thinking in science. Metacognitive frames used this year have been more productive simple tests or quizzes. Participants will experience metacognitive strategies and models applied in physical science and chemistry classes, (packets provided).
- #43 The Myth of the Super Moon
Presenter: Christopher Palma, Penn State University Astronomy, University Park, PA
Hands-On—5-8—Other
In this session we will investigate the Moon's appearance in Earth's sky using a kinesthetic demo and a software simulation. We will compare the results of these investigations with claims from March 2011 about the appearance of the "Super Moon".
- #70 Science Demonstrations: A Presentation by Millersville University Students
Presenter: Nanette Dietrich, Millersville University of Pennsylvania, Millersville, PA
Demonstration—9-10—Other

Come enjoy the show as Millersville University Students present their best science demonstrations. MU pre-service teachers will provide each attendee with complete instructions and student guides for each demonstration.

- #75 Subseafloor Research – How Science is Done There and How to Connect Your Students to It.
Presenter: James Ringlein, North Museum of Natural History and Science, Lancaster, PA
Demonstration—Other—Other
During the summer of 2011 I joined several educators aboard the research vessel Atlantis carrying the underwater ROV Jason. This session describes the science done on this mission to the Juan de Fuca ridge flank, and the resources available to teachers who want to connect with this cutting edge ocean research.

Thursday, December 1, 2011 – 1:00-2:30 p.m.

- #68 Common Objects to Teach Physics Principles
Presenter: Fred Pidgeon, STANYS President, Rensselaer, NY
Hands-On—9-12—other
Through the use of playground balls (baseballs, softballs, etc.) and marbles we will construct and use these materials to understand potential and kinetic energy.

Thursday, December 1, 2011 – 1:00-4:00 p.m.

- #56 LIGHT, COLOR, AND SPECTROSCOPY FOR KIDS
Presenter: John A. Varine and Hubert C. MacDonald, Spectroscopy Society of Pittsburgh, Pittsburgh, PA
Demonstration—K-4—Physical Science
Teachers will receive instructions and the necessary materials to perform a variety of fun-filled, intellectually-stimulating, exciting lecture/demonstrations in the fundamentals of light, color, and spectroscopy. Workshop aligned with PA Science Standards. Limited to 15 teachers.

Thursday, December 1, 2011 – 2:15 p.m. -3:15 p.m.

- #11 Inquiry Project Lesson Plan: Steps in Doing a Science Research Project
Presenter: Barbara Lorenzon and Dick Close Delaware Valley Science Fairs, Inc., Philadelphia, PA
Hands-On—Other—Other
Teachers will be taken through the process of using inquiry to design a lesson plan for students to complete a science research project. This workshop is designed as a vehicle for stimulating interest in Science, Technology, Engineering and Mathematics (STEM).
- #20 Photography without A Darkroom
Presenter: Bruce S. Karpe, Swenson Arts & Technology High School, Philadelphia, PA
Demonstration/Hands-On—K-12, College—Other
Explore a historical method of alternative process photography – cyanotypes. The technique uses inexpensive, readily available materials. We will discuss chemicals, digital negatives, paper selection, exposure methods, development, and toning effects. A hands-on opportunity to try it out yourself.
- #26 REALLY EASY Middle School Science using RED Probeware Technology
Presenter: William Metz, Science Education Consultant
Hands-On—5-8—Other

Learn how to integrate the RED units into your classroom/laboratory. Hands-on activities include: – Cooling water activity using the temperature probe – Cartesian Diver activity using the gas sensor – Pressure in a Column Inquiry activity.

- #38 Earth and Space Science Web-Based Resources for Pennsylvania Educators
Presenter: Cecelia Merkel, Penn State, University Park, PA, Dr. Laura Guertin, Penn State Brandywine
Demonstration—Other—Earth Science
The Pennsylvania Earth Science Teachers Association (PAESTA) is working to advance excellence in Earth and Space Science education. This session will feature web-based resources available on the PAESTA website (<http://www.paesta.psu.edu>) to teach Earth and Space Science content, from elementary grades through college.
- #48 Collaboration with Researchers: Our “SAVE Science” Experience
Presenter: Uma Natarajan, Temple University, Philadelphia, PA
Lecture—5-8—Inquiry
This presentation will be about sharing our experience as a teacher community collaborating, designing and implementing inquiry-based lessons and activities in science. The experience evolves as part of our participation in a technology-based university research project called SAVE Science.
- #59 Using Models and Movements to Effectively Teach Mitosis
Presenter: Nicole Stants, Punxsutawney Area Middle School, Punxsutawney, PA
Hands-On—9-10—Biology
Mitosis is particularly difficult for students because it is a nearly invisible phenomenon. Participants will learn visual and kinesthetic strategies to make this concept concrete. This included creating mitosis models and learning a cheer about the steps of mitosis.

Thursday, December 1, 2011 – 3:30 p.m. -4:30 p.m.

- #1 PSTA Board of Directors Meeting
Panel/Discussion – All Levels – Other
The convention business meeting of the governing body, as are all PSTA Board Meetings, is open to any member wishing to attend. If you have considered running for a position but would like to see this body in action first, this may be a great opportunity. Brief reports will be presented by committee chairs as well as association business that needs to be addressed will be handled at this meeting.
- #14 Moving from Misconceptions to Conceptual Change
Presenter: Julia Gooding, Hopewell High School, Aliquippa, PA, Bill Metz, Science Education Consultant
Hands-On—Other—Pedagogy
Misconceptions are personal notions that we create in an effort to make meaning of our world. This workshop investigates how student misconceptions might occur and what strategies teachers might employ to help students move toward conceptual change.
- #18 Forensic Toxicology: An interdisciplinary approach to enhance understandings in biology
Presenter: Alexis A. Bizzaro, Franklin Towne Charter High School, Philadelphia, PA, Kristen Harris, Charles Carroll High School, Philadelphia, PA, Diane Welsch, Ridley High School, Folsom, PA
Hands-On—11-12—Inquiry

This professional development will present activities that will enable teachers to provide students with unique opportunities to explore forensic toxicology. Teachers will explore ways to incorporating case studies and the use of Process-Oriented Guide Inquiry Learning (POGIL) into their lessons.

- #34 Partnerships between Industry, Universities and Schools
Presenter: Kenneth Francis, Program Director – SAE International, Warrendale, PA
Lecture—5-8—Physical Science
The presentation will describe an initiative between industry, universities and schools to promote engineering education. This collaboration has seen very positive impacts for students in the classrooms that participated. The opportunity to be involved in 2011-2012 will be presented.
- #45 Scavenger Hunts with GPS and Google Earth
Presenter: Laura Guertin, Penn State Brandywine
Demonstration—9-10—STS
GPS and Google Earth are tools that can be used with students to increase geographic and geospatial literacy. Learn how your students can engage with GPS technology outdoors or through Google Earth for interdisciplinary challengers.
- #51 New Tools for STEM Education from Carolina Curriculum
Presenter: Carolina Teaching Partner, Carolina Biological Supply Company, Burlington, NC
Hands-On—Other—Other
Explore new STEM resources including STC Secondary Building Blocks of Science kindergarten units, and the elementary math intervention program, Math Out of the Box. Participants will complete hands-on activities and leave with lessons to take back to their classrooms.
- #64 Team Building Challenges: Making it fun to work together!
Presenter: Audrey Preston, South Mountain YMCA Camps, Wernersville, PA
Hands-On—5-8—Inquiry
Do you have students who are great thinkers, but struggle on group assignments? This workshop guides you through games and activities to build teamwork skills and motivation to work with others. (Even works with adults!) Be prepared to move and play!
- #80 Science Communication Skill Development Exercises
Presenter: James Ringlein, North Museum of Natural History and Science, Lancaster, PA
Demonstration—Other—Other
The Portal to the Public project is an award winning program designed to improve research scientists' informal communication skills. We have found that the programs exercises are actually beneficial for all types of science communicators. Come to learn about the project and experience one of these exercises!

Friday Sessions:

Friday, December 2, 2011 – 9:00-10:00 a.m.

- #5 Scale the Universe
Hand-on – 9-10 – Earth Science
Presenter: Christine Royce
This cross-curricular activity will give participants a method by which to demonstrate to students orders of magnitude and how science deals with extremely large and extremely small numbers.
- #8 Previewing Science Vocabulary
Presenter: Kelly Fringer, Dauphin County Technical School, Harrisburg, PA
Hands-On—9-10—Chemistry
Research states students need to write, read, and communicate with peers to improve literacy skills. This interactive workshop shows teachers how to improve literacy through: word splash, list-sort-group, and work attack. Teachers should bring vocabulary words for an upcoming unit.
- #24 REALLY EASY Life Science using RED Probeware Technology
Presenter: Patricia McGinnis, Arcola Intermediate School, Eaglesville, PA
Panel/Discussion—5-8—Biology
Learn how to integrate the RED units into your classroom/laboratory. Hands-on activities include: – Phototaxis in animal behavior using a light sensor – Muscle fatigue using a gas sensor.
- #46 What Can Today’s Teachers Learn from Sir Isaac Newton’s Education?
Presenter: Helen E. Martin, NBCT, Consultant
Lecture—Other—Other
Newton, one of the foremost scientists of all times, had a classical education, supplemental with books, and modeling activities. This Keynote presentation with over 100 original photographs prepares the teacher for the next Newton who be in his/her classroom.
- #65 Reebop Genetics
Presenter: Kent Brusstar, Master of Science Ed. Program, Lebanon Valley College, Annville, PA
Hands-On—Other—Biology
Reebops are imaginary creatures made of marshmallows and a few household items. Though imaginary, their genes work like real genes. A new baby Reebop is about to be born! Students show their understanding of genetics principals to make a unique Reebop with “inherited” traits. All materials provided.
- #67 Biomedical Research in the Classroom
Presenter: Paula Clifford, Camp Hill, PA
Lecture—Other—Other
Biomedical research, specifically the animals used in research, is an often unknown or misunderstood subject in the classroom. This session will provide an interactive approach to learning about biomedical research and how animals are used in advance medicine and science. Participants will receive the Rx for Science Literacy’s curriculum manual. This manual consists of lessons that teach various aspects of biomedical research for K-12 classrooms. The presentation will incorporate some to these lessons so participants can feel the student experience facilitating implementation of information learned back to the classroom.

- #77 Light and optics: A series of EnLIGHTening Experiences!
Presenter: Lisa Bowman, CPO Science, Nashua, NH
Hands-On—11-12—Physics
Experience Optics with Light and Color kit, LED flashlights, lasers, filters, and more. Try color mixing, related it to human vision, and see different spectra of light with diffraction glasses. See the phenomenon of internal reflection by shining a laser through a prism and tracing incident and refracted rays.

Friday, December 2, 2011 – 9:00 -11:00 a.m.

- #61 MAKE-IT AND TAKE-IT: The Sex Organs of Flowers Up-Close and Intimate
Presenter: Mitch Batoff, Professor Emeritus, New Jersey City University, Jersey City, NJ
Hands-On—Other—Other
In this NEW hands-on workshop you will gain information and insights into the commonplace. Discover a fascinating world of beauty, awe, and wonder that perhaps will provide some new and stimulating experiences that can enhance your teaching. You need to bring a digital camera and, if possible, the instruction booklet. Limited to first 20 people.

Friday, December 2, 2011 – 9:00a.m. -12:00 p.m.

- #57 Using Journal of Chemical Education Software in the Classroom
Presenter: Hubert C. MacDonald, Society for Analytical Chemists of Pittsburgh, Pittsburgh, PA
Demonstration—11-12—Chemistry
Participants will have the opportunity to work with and receive two JCP: Software CD's, "General Chemistry and Advanced Chemistry," a subscription to JCP web-based software, plus Vernier's graphical analysis. Session limited to 15 participants and is aligned with PA Science & Technology Standards.

Friday, December 2, 2011 – 10:15-11:15 a.m.

- #9 Dimensional Analysis: Interactive Hands on Method
Presenter: Kelly Fringer, Dauphin County Technical School, Harrisburg, PA
Hands-On—9-10—Chemistry
This workshop will show you an interactive hands on approach to teach dimensional analysis to your chemistry students. You will leave with all the resources used within this presentation.
- #17 PA Keystone Exams: An Update
Presenter: Drue Feilmeier, Lancaster-Lebanon IU 13, Lancaster, PA
Panel/Discussion—Other—Other
Participants in this session will discuss the most up-to-date information available on the PA Keystone Exams including the Project Based Assessment OPTION for students who fail to demonstrate proficiency after two attempts.
- #22 TI-NSpire Technology for the Science Classroom
Presenter: Dina Dormer, Strath Haven High School, Wallington, PA
Hands-On—11-12—Chemistry
Texas Instruments NSpire technology will be presented in a hands-on, user friendly format. The applications of this technology are extraordinary and complement the use of probes and other data collection methods very well.
- #35 Perils of Pollution
Presenter: Donna Kowalczyk, University of Pittsburgh at Johnstown, Johnstown, PA
Hands-On—K-4—Environmental

Explore the perils of a polluted environment through reading and storytelling. Designed for the K-4 classroom teacher, this presentation features an integrated hands-on activity designed to build awareness of environmental problems and stimulate thinking. Participants will be provided with new ideas for lessons about pollution and environmental problems.

#69 Chemistry and The Atom

Presenter: Lisa Bowman, CPO Science, Nashua, NH

Hands-On—9-10—Chemistry

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop you will experience innovative games and activities that gives students with different learning styles opportunities to explore and grasp atomic structure and periodic table.

#79 Stream Quality and the Northern Dusky Salamander

Presenter: Robert Michalow, Saint Vincent College, Latrobe, PA

Lecture—11-12—Environmental

This presentation will discuss the results of a study that determines which stream side habitat characteristics impact the northern dusky salamander density. Furthermore, how do the results of this study impact wildlife management practices.

#82 Stem Cell Differentiation

Presenter: Nathan Alfred, Parkersburg South High School, Parkersburg, WV

Hands-On—9-10—Biology

SGI Biology is the new high school biology course from SEPUP! Developed with NSF support, the course has five units – sustainability, ecology, cell biology, genetics, and evolution – and provides full support for literacy, assessment, and technology. In this workshop from the cell biology unit, participants use a card sort will find out how stem cells produce specialized cells and the potential for using stem cells to cure diseases. Take home an activity to use in class next week.

Friday, December 2, 2011 – 11:30 a.m. 12:30 p.m.

#25 Chemistry In-the-Bag Inquiry Activities Workshop

Presenter: Patricia McGinnis, Arcola Intermediate School, Eaglesville, PA

Hands-On—9-10—Chemistry

Learn how to easily incorporate inquiry activities into your classrooms using ScholAR's In-the-Bag Inquiry Activity series. These easy-to-perform demonstrations are designed to engage your students and incorporate guided inquiry exercises.

#36 POGIL, POGIL, POGIL! I've heard of it but how do you IMPLEMENT it in the classroom??

Presenter: Leigh Foy, York Suburban High School, York, PA, Laura Trout

Hands-On—9-10—Other

POGIL activities – Process Oriented Guided Inquiry Learning – are proven effective classroom “tools” for incorporating cooperative learning strategies coupled with learning cycle aligned activities to guide students through content in biology and chemistry. Many teachers are already utilizing the HSPI (High School POGIL Initiative) activities or writing their own. Come hear and experience some great IMPLEMENTATION tips from the chief HSPI editor Laura Trout and associate editor Leigh Foy, What does POGIL look like in the classroom? How can you effectively guide your students to POGIL success?

- #41 **EcoExpress: Fostering a New Generation of Environmental Stewards**
 Presenter: Brie Knight, GreenTreks Network, Philadelphia, PA
 Lecture—5-8—Environmental
 EcoExpress.org is an Online Resource Center for Educators that uses short, age appropriate, Pennsylvania based educational video stories and supplemental curriculum materials all tied to the PA Standards and connects students to local organizations to aid with service learning projects.
- #52 **Learning to Read, Reading to Learn: Increasing Test Scores through Literacy, Notebooks, and the Power of Inquiry**
 Presenter: Carolina Teaching Partner, Carolina Biological Supply Company, Burlington, NC
 Hands-On—K-4—Other
 Increase test scores and student engagement through notebooking! Using materials from the STC Program and Carolina Curriculum, this session will explore how science notebooking can develop and improve math, social studies, and language arts skills. Free classroom materials provided.
- #53 **Practical Applications of Scanning Electron Microscopy in a Public School**
 Presenter: Lurea Doody, West Greene High School, Waynesburg, PA
 Lecture—Other—Inquiry
 Catalytic synthesis of cyanoacrylate nanofibers is just one of the research projects students at a small rural Pennsylvania high school have working on this year. The types of projects and experiments that have been done are as dynamic and diverse as the personalities of the students. Other activities centered around the SEM lab include: A local Ugly Buga competition, Pennsylvania Junior Academy of Science projects, and demonstrations of middle school science students.
- #74 **Biodiversity of PA: A curriculum supplement**
 Presenter: Theresa Alberici, Pennsylvania Game Commission, Harrisburg, PA
 Hands-On—5-8—Environmental
 Pennsylvania's Biodiversity is vital to the health of people, wildlife and the environment. Through hands-on activities, participants will explore biodiversity at a genetic, species and ecosystem level, address critical concepts and standards and receive the Pennsylvania biodiversity guide.
- #78 **CPO SmartTrack with Velocity Sensor and Energy Car**
 Presenter: Lisa Bowman, CPO Science, Nashua, NH
 Hands-On—11-12—Physics
 Our new velocity sensor uses sound waves to measure and display position, velocity, and acceleration data of moving objects. We investigate how the Energy Cars moves on our SmartTrack to explore Newton's Laws, kinematics, friction, and the law of conservation of energy in this inquiry-based learning activity.
- #83 **Photosynthesis and Respiration Shuffle**
 Presenter: Nathan Alfred, Parkersburg South High School, Parkersburg, WV
 SGI Biology is the new high school biology course from SEPUP! Developed with NSF support for literacy, assessment, and technology. In this workshop from the ecology unit, participants will use a sort activity to examine photosynthesis and respiration at the level of the cell and organism. Take home and activity to use in class next week!

Friday, December 2, 2011 – 12:45-1:45 p.m.

- #2 PSTA General Membership Meeting
Panel/ Discussion – All Levels – Other
Presenter: Keith Butler, PSTA President, Whitehall, PA
As designated in the PSTA Constitution, each year one General Membership Meeting is to be held and presided over by the President. The purpose of this meeting is to gather input from the membership at large, summarize activities of the organization for the year, and act on any business requiring action of the membership. Your attendance and input are encouraged.
- #12 Separation of Church and State in the Public Schools
Presenter: Jim Wise, Retired from General McLane, Erie, PA
Lecture—Other—Biology
This program provides the educator with current information regarding the separation of church and state as it applies to the school setting. Participants are able to apply their knowledge to classroom situations at all levels of the school environment.
- #15 Chef’s Don’t Use Cookbooks, Why Should Students?
Presenter: Julia Gooding, Hopewell High School, Aliquippa, PA, Bill Metz, Science Education Consultant
Hands-On—5-8—Inquiry
In this interactive workshop attendees will assess the current levels of inquiry in common perfunctory cookbook lessons then utilize uncomplicated teacher strategies that could be applied to convert cognitively low-level laboratory activities to minds-on, student-centered inquiry investigations.
- #23 Bird Olympics
Presenter: Kristin Rodkey, Juniata College, PA
Panel/Discussion—5-8—Other
Pre-student teachers develop a field trip based on birds for an 8th grade class, held at the Juniata College Field Station. The pre-student teachers broke up into five groups and each group planned an activity on their content area.
- #50 Comparative Vertebrate Anatomy with Carolina’s Perfect Solution Specimens
Presenter: Carolina Teaching Partner, Carolina Biological Supply Company, Burlington, NC
Hands-On—9-10—Biology
Hands-on, inquiry-based cooperative learning has been proven the most effective method to teach comparative anatomy. Participants use this scientific inquiry to observe, describe, and discover characteristics of vertebrates. Experience Carolina’s Perfect Solution specimens, which offer a safe alternative to formaldehyde.
- #63 Robotics Competitions – Getting Started
Presenter: Patrick Young, Harrisburg University of Science and Technology, Harrisburg, PA
Hands-On—Other—Other
Discover the various robotics competitions in Pennsylvania and learn how to start a low-budget robotics team at your middle or high school. Participants will be able to examine the hardware and software available from several different companies.

Friday, December 2, 2011 – 2:00-3:00 p.m.

- #28 Raising the Bar on K-3 Guided Inquiry
Presenter: Bill Metz, Science Education Consultant
Hands-On—K-4—Inquiry
This interactive K-3 workshop will examine ways to enhance the inquiry level of selected FOSS lessons through student centered applications. These modifications turn more of the responsibility for learning to the shoulders of the students. Program sponsored by Delta Education.
- #33 Social Media Extends Laboratory Inquiry Outside of Class
Presenter: James Endres Howell, The Pennsylvania State University – Department of Veterinary and Biomedical Sciences, University Park, PA
Lecture—11-12—Biology
The eTOXIC (Environmental Toxicology Inquiry Curriculum) project exploits environmental toxicology to introduce students to the practice of research. Social media extends and enhances active classroom and laboratory learning, continuing deliberative thinking and collaboration outside of class.
- #81 The Bird Olympics: Student teachers create a field trip experience
Presenter: Kathleen Jones, Ph.D., Kim Amrod, Sara Garside, Danielle Partsch, Juniata College, Huntingdon, PA
Panel/Discussion—5-8—Environmental
Join a group of Juniata College pre-service teachers as they share their experiences developing and executing a field trip for secondary students to teach about PA songbirds. From start to finish, they designed the concept, developed a video to show in a pre-trip visit and then created hands-on, mind engaging activities for the Bird Olympics.

PENNSYLVANIA SCIENCE TEACHERS ASSOCIATION 2011 Convention Registration Form
 Hershey Lodge and Convention Center, Hershey, PA December 1-2, 2011

Membership Number: _____ New Address: Yes ___ No ___ Dr. Mr. Mrs. Miss Ms.
(obtained from a mailing label on PSTA materials) (Circle one)

First Name: _____ MI: _____ Last Name: _____
 Home Address: _____ Grade Level Taught: _____
 City: _____ State: _____ Zip: _____ County: (Needed for PSTA Region) _____
 School Name: _____ City: _____ State: _____ Zip: _____
 Home Phone: (____) _____ Work Phone: (____) _____
 Email Address: _____ Fax: (____) _____

Registration Fees: Fees are determined by postmark on the envelope. All forms postmarked after November 15 are treated as on-site registrations. Registrants must provide their membership ID Number found on mailing labels to receive membership rates. PSTA cannot accept purchase orders. Credit cards will ONLY be accepted at the convention for on-site registrations and purchases.

PLEASE CIRCLE APPROPRIATE REGISTRATION FEE

MEMBERS	Postmarked by Nov 15	On Site Registration	NON MEMBERS	Postmarked by Nov 15	On Site Registration	Circle day	Registration Fees
Regular 2-day	\$75	\$100	Regular 2-day	\$100	\$125		
Regular 1-day	\$60	\$85	Regular 1-day	\$85	\$110	Th or F	
Student 2-day*	\$45	\$70	Student 2-day*	\$70	\$95		
Student 1-day*	\$40	\$65	Student 1-day*	\$65	\$90	Th or F	
Retired 2-day	\$55	\$80	Retired 2-day	\$80	\$105		
Retired 1-day	\$50	\$75	Retired 1-day	\$75	\$100	Th or F	
Life 2-day	\$60	\$85	Guest **	\$50	\$50		
Life 1-day	\$55	\$80				Th or F	

*Full time student who has **never** taught. **Non-teaching guest.

TOTAL REGISTRATION ENCLOSED: \$ _____
PSTA CANNOT accept purchase orders or credit cards for pre-registration.
Please do not send cash –Make checks Payable to PSTA .

IMPORTANT: Registration Fees **NO LONGER INCLUDE** PSTA Membership Dues. To join or renew a PSTA membership, registrants must complete a membership form. Forms can be found in the Exchange or online at www.pascience.org

I have special needs listed below which fall under ADA.

MAIL COMPLETED REGISTRATION FORM AND PAYMENT TO:

William Ayers
PSTA Convention Registration
5330 Overlook Road
Slatington, PA 18080
weahea@enter.net

Please do not mail form after November 15

Christine Anne Royce
PO Box 305
Newburg, PA 17240

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2011 PSTA Annual Convention

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