



OUR STUDENTS, OUR FUTURE:

the social responsibility to effectively teach science



Iowa Academy of Science • Iowa Science Teaching Section

October 15 & 16, 2012 • Scheman Center • Ames, IA





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Each year, EBSCO fulfills its financial obligation to the community by contributing five percent of the company's profit before profit-sharing and taxes to worthwhile causes. It is their hope that by doing so, they can continue for many years to help make our community a better place to live.

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Mark your calendars for the
**2013 IAS-ISTS
Fall Conference!**

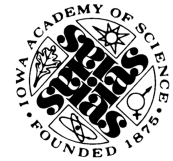
**Come.
Learn.
Share.
Implement.**

**October 14-15, 2013
Scheman Center, ISU**



Welcome to the Fall 2012 ISTS Conference!

The entire ISTS leadership team thanks you for your commitment to teaching and for attending this conference to further your professional development!



Adam Puderbaugh
Conference Chair

Dear Colleagues,
Welcome to the 2012 ISTS Fall Conference. Over the past three years, it has been my pleasure to serve ISTS in a leadership role. The Iowa Academy of Science is full of brilliant people and great opportunities. I hope you use this conference as an opportunity to connect with your fellow teachers, refresh your love for teaching, and find your place in our educational community. Please consider the benefit of joining the Iowa Academy of Science, presenting at our fall conference, and publishing in the Iowa Science Teachers Journal. Once again I welcome you to our fall conference and I thank you for your attendance.

Adam Puderbaugh



De Anna Tibben
ISTS Chair

"Hello!" from your ISTS Chair
I want to personally welcome you to the 2012 Fall Conference! ISTS Conference Chair, Adam Puderbaugh, has planned a wonderful experience for you. Every year the IAS-ISTS Fall Conference brings Iowa science teachers together to share ideas, make connections, and learn from each other. Why have only this time to benefit from being connected to fellow teachers? By joining IAS, you'll be connected to teachers and scientists from across the state 365 days a year! I encourage you to go to www.iacad.org/ You'll find out more about the Iowa Academy of Science and may begin (renew) your membership!
Thank you for attending the 2012 Conference! Have a wonderful 2012-13 school year!

De Anna Tibben



Eric Hall
ISTS Vice Chair

Fellow ISTS Members,
It is with a great deal of excitement - and a little anxiety - that I write this to say "thank you" for affording me the opportunity to serve as your newly-elected Vice Chair and to introduce myself to ISTS membership. I'm humbled at the support my fellow colleagues and science educators across the state have shared over the last couple months, and I'm ready to begin this journey with you. In my 17 years as a classroom science teacher in Des Moines and nearly 10 years of working with science teachers from across the state at ISU, I've had the opportunity to work with some of the best professionals in our business. I look forward to drawing from those experiences over the coming years as we work together to broaden the impact our organization has across the state. Our talented membership is poised to begin having important conversations about what science instruction currently looks like and what we can do to support each other as we work toward improving our students' understanding of STEM concepts.

Eric Hall



Announcements

Our Students, Our Future: the social responsibility to effectively teach science

Our keynote speaker is
Dr. William McComas

BEAKS, THE BEAGLE, AND OTHER HISTORICAL MISCONCEPTIONS ABOUT EVOLUTION AND ITS NATURE

Monday, October 15 Reiman Gardens

- 4:00-4:30 Registration
- 4:30-5:30 Guided tour of Reiman Gardens
- 5:30-6:30 Awards dinner
- 6:30-7:00 Social time
- 7:00-7:45 *STEM Initiative Update* by Dr. Jeffrey Weld
- 8:00-8:30 Experience and develop your own star party
- 8:30-9:00 Dessert and ISTS Chair Reception

Tuesday, October 16 Scheman Center

- Interest Area Breakfasts
- Concurrent Sessions
- Exhibit Hall
- Keynote and Luncheon

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The success of this conference is due to the Fall Conference Committee and many other amazing volunteer supporters. I sincerely thank all those listed on pages 37-38 and any volunteers not listed that helped make this conference possible.
— Adam Puderbaugh,
ISTS 2011 Chair and 2012 Fall Conference Chair

EXHIBIT HALL

Tuesday 8:00 a.m.—4:00 p.m.
Don't miss the
Exhibitor Door
Prize Drawing at 4:00!

**CONFERENCE REGISTRATION
& CHECK IN FOR ALL PARTICIPANTS:
TUESDAY, OCTOBER 16, 7:30—11:00 a.m.**



Monday Opportunities October 15, 2012



NSF Presidential Award for Excellence in Mathematics and Science Teaching Banquet Reiman Gardens

Join the Iowa Science Teaching Section
for a dinner in celebration of Iowa's 2011
Presidential Award for Excellence
in Mathematics and Science Teaching winner.



Dr. Jody Stone,
Price Lab School
University of Northern Iowa
Cedar Falls

Before the banquet participants may
tour Reiman Gardens on their own.
Staff guided tours are also available.



STEM Initiative Update

Our speaker is **Dr. Jeffrey Weld**, Executive Director of the Governor's STEM Advisory Council and Director of the inter-university collaborative, Iowa Mathematics & Science Education Partnership (IMSEP). The Governor's STEM Advisory Council is a cross-sectional body of professionals charged with invigorating the STEM education pipeline for Iowa, initiated in September 2011. It's challenge is to "work to dramatically increase students' interest and achievement in STEM subjects so they will have a greater opportunity to pursue STEM careers."



**ISTS Chair Reception
Dessert and Presentation
Reiman Gardens**

Tuesday Opportunities

October 16, 2012
Scheman Center ISU



Schedule for Tuesday October 16

7:45 am Breakfast session
9:00 am—9:45 am Breakout session 1
10:00 am—10:45 am Breakout session 2
11:00 am—11:45 am Breakout session 3
12:00 pm—1:45 pm luncheon
Rooms 220-240,
Awards Presentations and
Keynote Speaker
Dr. William McComas
**Beaks, the Beagle, and Other Historical
Misconceptions
About Evolution and Its Nature**
2:00 pm—2:45 pm Breakout Session 4
3:00pm—3:45 pm Breakout Session 5
4:00 pm Closing and Door Prizes

Tuesday breakout session times are 45 minutes. Some presentations may be 30 minutes of that time. This allows more flexibility in scheduling and more time for you to visit the exhibitors. **Be sure to visit the exhibits between sessions.**

Times and rooms for individual breakout sessions in this program are subject to change.

Exhibitor Door Prize Check-off

Conference exhibitors have donated more than 50 prizes to be given away at the end of the conference. An Exhibitor Check-off Card is included in your registration packet. As you visit with an exhibitor, have the representative stamp a blank box on the card. Fill at least 50% of the boxes by the end of the sessions on Friday to be eligible to win a door prize. Submit your card at the Exhibit Hall before 4:00.

You must be present to win.

EXHIBIT Hall

8:00 a.m.—11:00 a.m.
Rolls and coffee compliments of exhibitors!



BREAKFAST MEETINGS

You must be pre-registered
for the breakfast session to attend.
Breakfast served 7:45—8:30
session presentation 8:00-8:45



MIDDLE SCHOOL



*"Guardians of the Night -
How the Loss of Bats in Iowa Will Affect Us"*

Ron DeArmond, CEO of the Pella Wildlife Company with a wildlife ambassador. Ron DeArmond is the current Vice President of the Association of Professional Wildlife Educators and a member of the International Union for Conservation of Nature (IUCN) Commission on Education and Communication. Ron has presented wildlife education programs featuring live wildlife ambassadors for school age students Pre-K - 12, Uni-

versity students, civic organizations and government agencies at all levels for over 25 years. His focus is on getting students involved with real wildlife management and conservation issues throughout their academic career.

EARTH & Space Science ELEMENTARY

*"Science Writing
Heuristic (SWH)"*

Dr. Mark McDermott is a former assistant professor of science education at Wartburg College. His research lies in the areas of Writing to Learn in Science, Science Learning Approaches and Neuroscience and Student Learning.



*"NASA and the Engineering Design
Process"*

Talk with **John Weis**, NASA education specialist about NASA's products which incorporate engineering design into your existing curriculum.





BREAKFAST MEETINGS

CHEMISTRY

"Writing, Rubrics, and Re-Thinking Chemistry"
With **Aileen Sullivan**, Ames High School Chemistry teacher.



LIFE SCIENCE



"Governor's STEM Advisory Council"

Jeffrey Weld, Ph.D., is the Executive Director of the Governor's STEM Advisory Council and Director of the inter-university collaborative, Iowa Mathematics & Science Education Partnership (IMSEP) and Associate Professor of Biology at the University of Northern Iowa (UNI) in Cedar Falls, Iowa. Jeff has directed the Iowa Governor's STEM Advisory Council since fall 2011, and the Iowa Mathematics & Science Education Partnership, the Council's operations arm, since 2008. He has authored more than fifty research articles, essays, book chapters, and the textbook *The Game of Science Education*, focusing on research into the barriers to innovative science teaching at the secondary and collegiate levels and how to overcome them. He is a past chair of the Iowa Science Teaching section of the Academy.

Come join the Biology section breakfast and learn about the Governor's new STEM Advisory Council from the director Dr. Jeffrey Weld. This will be a wonderful chance to learn about the STEM opportunities for Iowa's science teachers, as well as to share ideas, and ask questions of the program's director.

SESSION STRANDS



Earth & Space Science



Science Ethics



Technology and the Application of Science



Professional Development / Continuing Education



Life Science, Ecology & Environmental Science



Physical Science (Physics/Chemistry/General)



Science & Engineering Practices



Are you taking advantage of the Iowa Science Teachers Journal?
 ISTS supports a premier online teaching magazine at
<http://ists.pls.uni.edu/istj/issues/index.html>
 Submit your articles and ideas to the journal. Read it!
 An excellent resource that is online and free.

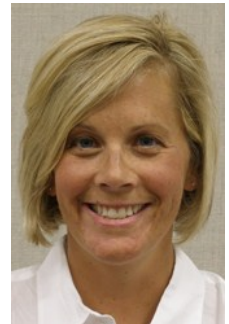


Featured Workshop

This workshop is an elementary level hands-on look at Iowa Core connections / connections to conceptual framework & Next Generation Science Standards (NGSS). These sessions will use life science and genetics as the context but present strategies transferable to all Core Idea areas. All are welcome. The three sessions will build on each other, but if you wish to attend one session it will still work for you. Attend one, two, or all three! **Sessions 1—3 in Room 252**



Lynne Campbell from AEA267 has a wide variety of experiences in science education. As a former Einstein Fellow, Lynne has worked at the federal, state and regional level to improve science education. In the classroom, she taught physical science, biology, and middle school science for many years. Lynne offers expertise in life science, inquiry-based instruction, Science Writing Heuristic (SWH), learning cycle, middle school science, and elementary science.



Melissa Hesner is currently a science consultant for AEA 267 in Cedar Falls. During her 15 years as a classroom teacher, she taught middle school science and courses in chemistry, physics and earth science. Melissa was a 2010 recipient of ISTS's *Excellence in Science Teaching Award* and the University of Northern Iowa's *Yager Exemplary Science Teaching Award*.

Session 1 Formative Assessment: How Do You Know What Kids Know about Genetics?

Session 2: Differentiation: Most Difficult First

Session 3: Application of Genetics Concepts: Let's Make a Baby!

CONCURRENT Session 1



A WATERSHED APPROACH TO REDUCING FLOODS

Rather than building flood-control structures, we should manage watersheds to reduce runoff. Perennial agriculture could re-create the vegetation "sponge" that historically absorbed and held precipitation.

General Audience

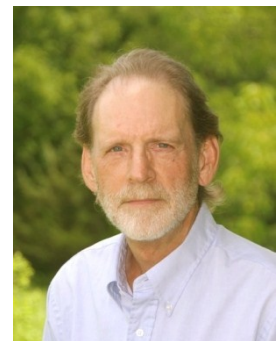
Room 275 - FEATURED SPEAKERS:






LARRY STONE traces his passion for Iowa's outdoors to the creeks and woods on the southern Iowa farm where he grew up. He also has explored the state for 40 years, both as outdoor writer/photographer for the *Des Moines Register*, and as a freelance nature writer and photographer. He has written five books, and his work has appeared in a number of conservation magazines. He is a member of the Clayton County Conservation Board.

Larry's wife, Margaret, shares his love of the land. The Stones manage woodlands and prairies on their farm along the Turkey River near Elkader. They have a grown son and daughter, Andy and Emily, and four grandchildren who love to play in the dirt.

Bob Watson, from Decorah, is an environmental activist who makes his living in the wastewater industry. Mr. Watson deals with Iowa and surrounding states on wastewater issues as owner of Watson Brothers. He is a member of the Iowa Water Environment Association (IWEA), an organization of professionals committed to the education and advancement of water quality and water pollution control techniques.











<p>Elementary pre K-2 Hands-On <i>Using the Learning Cycle to Study Variation Among Individuals of the Same Kind in the Early Elementary Classroom</i> Room 150</p>	<p>Implement this learning cycle to engage students in making observations and measurements about plants and animals to understand variation among individuals of one kind.</p>	<p>Lori Ihrig Jennifer Prindle Iowa State University </p>
<p>General K-16 Lecture <i>Scared of Engineering? An Introduction to Engineering Design for the K-12 Classroom</i> Room 154</p>	<p>This presentation looks at what defines a project as engineering in the K-12 classroom and provides strategies for successfully incorporating engineering in the K-12 classroom.</p>	<p>Scott Greenhalgh University of Northern Iowa </p>
<p>General (K-16) Lecture <i>Students and Wildlife Management</i> Room 160</p>	<p>Students in Wildlife Management takes students K - 12 outdoors with scientists and teaches them they can use what they learn to make a difference.</p>	<p>Ron DeArmond Kristie Burns Pella Wildlife Company </p> <p style="text-align: right;">11</p>





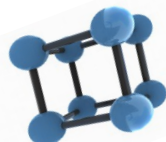
9:00 A.M.—9:45 A.M.

 <p>Middle (6-9) Hands-On FREE Wind Energy Education Room 167</p>	<p>Experience the math and science concepts and skills your students use to design, build, and test model wind turbine kits borrowed from UNI.</p>	<p>Patricia Higby University of Northern Iowa</p>
 <p>High School Hands-On Teaching About the Nature of Science in High School Science Classes Room 171</p>	<p>Come see how inquiry activities and historical short stories can be used to effectively teach both Nature of Science concepts and fundamental science concepts.</p>	<p>Jennifer Smith Jesse Wilcox Iowa State University</p> 
 <p>General K-16 Hands-On Exploring the "T" in STEM: More than technology use Room 175</p>	<p>Technology and science go hand-in-hand. However, simply using technology does not equal technology literacy. Come experience ways to help students go beyond technology use.</p>	<p>Jerrid Kruse Drake University</p>
 <p>General K-16 Hands-On "Rockin" Iowa Room 179</p>	<p>Sherman Lundy from the ILPA will present a mini workshop and ideas for your classroom using hands on activities to incorporate geoscience concepts with product use from Iowa's Quarries and Aggregate Producers: Sedimentary Rocks? What Sediments? Sedimentary Rocks to Roads?</p>	<p>Sherman Lundy, Iowa Limestone Producers Association (ILPA)</p>
 <p>High School Hands-On Phylogenetics: Barking up a better tree? Room 250</p>	<p>Participants will experience classroom-tested, issue-oriented activities that help students understand the concepts of macroevolution and apply evolutionary relationships from SEPUP's new Science and Global Issues: Biology program from LAB-AIDS.</p>	<p>Darin Christianson LAB-AIDS</p>
<p>Elementary Hands-On Session 1: Formative Assessment Room 252</p>	<p>Iowa Core connections / connections to conceptual framework & NGSS. In this session you will experience a life science formative assessment probe from the perspective of a student. This is Part I of a three part workshop. Participants may attend all or part of the workshop.</p>	<p>Lynne Campbell AEA 267 Melissa Hesner AEA 267</p>
 <p>Secondary (7-12) Hands-On Teaching out of the box Room 254</p>	<p>Taking a look at content out of context is important to student learning. At this workshop you'll receive ready to use activities and great discussion.</p>	<p>Kathryn Borton Nevada Middle School Collin Reichert Ames Middle School</p>
 <p>High School Lecture Projectile Motion: The Physics-Based Board Game Room 260</p>	<p>Learn about a fun and innovative way to apply the concepts of projectile motion, math skills and team cooperation in the classroom.</p>	<p>Tracy Nuss North Fayette High School</p>

CONCURRENT Session 1



Secondary (7-12) Hands-On <i>Cardiovascular Walk Through</i> Room 262	Using roadmaps to walk through and diagrams to work out, the cardiovascular system can be understood. The objective is to understand the path and processes of what goes on in the cardiovascular system.	Randi Lines Harding Middle School Des Moines
General K-16 Lecture <i>NASA Professional Development Opportunities</i> Room 299	Come learn how you can connect with NASA for professional development.	John Weis NASA Marshall Space Flight Center



The Iowa Academy of Science

Iowa's only statewide organization for scientists, science educators, science students and science enthusiasts representing all scientific disciplines.



Join us in our mission to further scientific research, science education, public understanding of science and to recognize excellence in these endeavors.



Your IAS Membership includes membership to the Iowa Science Teaching Section and up to three additional sections of the Academy.



Join the Academy today!

Visit our booth in the exhibit hall or visit us online: www.iacad.org



CONCURRENT Session 2

MINDFUL Messages: How you teach science AFFECTS how students understand science – What do you want to convey?



Participants will engage in a conversation about how to become more effective and engaging science teachers and how this translates to their students. How to address important big ideas in science such as: evolution, global warming, genetic manipulation, and environmental issues to foster ethical student understanding will be discussed. Activities to elicit students' ideas about science will be shared.

**Secondary
Room 275**

FEATURED SPEAKER:



Dr. Lyn Le Countryman is an Associate Professor of Teaching and Science Education at the University of Northern Iowa with experience teaching from preschool to high school biology as well. A Fellow of the Iowa Academy of Science, she has served the organization in many capacities including President, ISTS Chair, and IAS Board member. The Distinguished Service Award, (Now Outstanding Service Award) was presented to Lyn by the Iowa Science Teaching Section of the Academy in 2002. She previously earned the Excellence in Science Teaching Award (ESTA). Lyn has twice been certified by the National Board for Professional Teaching Standards. She was awarded the prestigious Presidential Award for Excellence in Mathematics and Science Teaching in 1999.



General (K-16)
Lecture
Transforming Science Laboratory Courses at Iowa State University
Room 150

Come to learn how Iowa State University faculty are transforming laboratory courses to accurately convey the nature of science and engage students in scientific inquiry.

Lori Ihrig
James Colbert
Iowa State University



Middle (6-9)
Hands-On
What's Inside? – Connecting the Earth's Interior to the Nature of Science
Room 154

Tying the nature of science to science content can be difficult. This activity helps students connect a black-box activity to how geologists study Earth's interior.

Jaclyn Easter
Drake University



General (K-16)
Hands-On
Wildlife of Roadside Prairies
Room 160

Attendees will learn the importance of wildlife in the roadsides in an inquiry based, hands-on activity and how the eii model teaches environmental issues. With Barb Ehlers, Carl Bollwinkel, Barb Bonnett, Julie Delaney, and Rosalie Cochran

Jeff Monteith
New Hampton MS
Tracy Nuss
North Fayette HS















Secondary (7-12)
Lecture
UNI's Power Tower Program; a free loan program for K-12 STEM teachers in Iowa
Room 167

An overview of UNI's Power Tower Free Loan Program for use by Iowa K-12 schools. This will include a description of the Power Tower System, how teachers can request it to be installed at their school, and how it has been previously used by teachers.

James Smith
Scott Greenhalgh
Pat Higby
University of Northern Iowa

10:00 A.M.—10:45 A.M.



<p>General (K-16) Hands-On <i>Encouraging ALL students to participate in science</i> Room 171</p>	<p>This session will provide numerous strategies to get all students to actively participate in discussions and activities in the science classroom. Handouts provided.</p>	<p>Jesse Wilcox Iowa State University</p> <p>Jerrid Kruse Drake University</p> 	
<p>Elementary (3-6) Hands-On <i>Get Your Hands in the Dirt</i> Room 175</p>	<p>This workshop includes hands-on activities about soil science that teachers can replicate in their classroom and receive free education materials.</p>	<p>Debra Kearney Nutrients for Life Knoxville IA</p>	
<p>Elementary (K-6) Hands-On <i>Active Science K-5</i> Room 179</p>	<p>Active Science is an inquiry based, hands-on program that provides investigations with every lesson. Based on the 5-E Lesson Design, and aligned with both state and national standards, it promotes students development of problem solving skills through action oriented lessons.</p>	<p>VeAnn Tilson Active Science Lynn Weber Active Science</p>	
<p>High School Hands-On <i>The Chemistry of Color: Getting Students on the Right Frequency</i> Room 250</p>	<p>Would you use a spectrophotometer in your high school chemistry classes if it were inexpensive, reliable, and easy for students to use? - of course you would! Join us for hands-on activities using RGB spectrophotometers to explore simple serial dilutions and core applications of the technology.</p>	<p>Darin Christianson LAB-AIDS</p>	
<p>Elementary Hands-On <i>Session 2: Learning Experience - Differentiation w/ genetics</i> Room 252</p>	<p>Iowa Core connections / connections to conceptual framework & NGSS. Using Gummy Bear Genetics to explore the application of dominant and recessive, we will use Most Difficult First strategy as an assessment tool. This is Part II of a three part workshop. Participants may attend all or part of the workshop.</p>	<p>Lynne Campbell Melissa Hesner AEA 267</p> 	
<p>Secondary (7-12) Hands-On <i>How does cell size affect diffusion?</i> Room 254</p>	<p>We will be investigating diffusion through a hands-on, minds-on experience.</p>	<p>Kara Jones Norwalk HS Tiffany Schallau Wood Intermediate, Davenport</p>	
<p>Secondary (7-12) Lecture <i>Classroom Management and Technology</i> Room 260</p>	<p>Strategies, Programs and Techniques used in a 1:1 computer and lab based science classroom. Come and see some implementation that has worked well, some areas that are still in development, and also some strategies that have not worked.</p>	<p>Alicia Schiller</p>  <p>Jamey Sue Smith Central Lee High School</p>	
<p>General (K-16) Hands-On <i>Simply Snakes</i></p>	<p>Hear, see, eat, and look like a snake with easy-to-replicate hands-on activities based on little known facts and relatively recent research. (No live animals.)</p>	<p>Cindy Blobaum Dallas County Conservation Perry Iowa</p>	
<p>Secondary Hands-On <i>NASA Solar System Resources</i> Room 299</p>	<p>Come learn some simple activities to help your students understand the solar system and space observation.</p>	<p>John Weis NASA Marshall Space Flight Center</p>	



CONCURRENT Session 3

Using TECHNOLOGY as a TOOL FOR Student Engagement

Active engagement comes when students utilize technology to develop, expand, and communicate their understanding in innovative ways. Participants will discuss and experience how to do this.



**Secondary
Room 275**

FEATURED SPEAKERS:

Dr. Jody Stone has taught high school chemistry at Malcolm Price Laboratory School on the campus of the University of Northern Iowa for the past 34 years. She has also taught middle school and fifth grade science, in addition to teaching graduate courses in science education. Jody's unique position at her school has allowed her to work extensively on curriculum development. This has benefited teachers across the Nation. Her work includes programs such as CRISTAL and BIOMES, frequent presentations at National Science Teachers Association (NSTA) conferences, as well as publications in NSTA journals. She is National Board of Professional Teaching Standards Certified. Dr. Stone is this year's Iowa recipient of the Presidential Award for Excellence in Mathematics and Science Teaching.



Dr. Lyn Le Countryman is an Associate Professor of Teaching and Science Education at the University of Northern Iowa with experience teaching from preschool to high school biology as well. A Fellow of the Iowa Academy of Science Activities she has served the organization in many capacities including President, ISTS Chair, and IAS Board member. The Distinguished Service Award, (Now Outstanding Service Award) was presented to Lyn by the Iowa Science Teaching Section of the Iowa Academy of Science in 2002. She previously earned the Excellence in Science Teaching Award (ESTA). Lyn has twice been certified by the National Board for Professional Teaching Standards. She was awarded the prestigious Presidential Award for Excellence in Mathematics and Science Teaching in 1999.



Secondary (7-12)
Hands-On
Investigating the Five-Second Rule
Room 150

Investigating the Five-Second Rule through scientific inquiry builds students' understanding of life's diversity and the role of collaboration in the construction of scientific knowledge.

Lori Ihrig
Lindsay Richey
Jennifer Smith
Iowa State University



Secondary (7-12)
Hands-On
Starburstin' Through the Rock Cycle
Room 154







Learn how to implement this rock cycle activity into your secondary classroom so that it requires a high level of mental engagement from your students.

Melanie Marzen
Davenport Community School District
Kaylee Richter
Urbandale High School



11:00 A.M.—11:45 A.M.



<p>General (K-16) Lecture <i>Water Sourcebook</i> Room 160</p>	<p>The Water Sourcebook is a hands-on K-12 curriculum that 'supplements' any science or environmental science curriculum. It emphasizes water, wastewater, surface water, groundwater, and wetlands. The IAWEA supplies this curriculum free to schools (in CD format) and will maintain a revolving fund for teacher out-of-pocket expenses incurred in teaching this curriculum.</p>	<p>Bob Watson Watson Brothers Decorah, Iowa</p>
<p>Middle (6-9) Demonstration <i>Energy Literacy--What should we teach about energy?</i> Room 167</p>	<p>Share the energy concepts you teach and discover how they fit the Next Generation of Science Standards and Energy Literacy's 7 Essential Principles and Fundamental Concepts.</p>	<p>Patricia Higby University of Northern Iowa</p>
<p>Secondary (7-12) Demonstration <i>Rethinking Grading and Assessment</i> Room 171</p>	<p>Come learn how to modify assessments and grading to better teach students the science content as well as helping students learn how to learn. We will include effective examples of open-ended projects, verbal exams, example quiz and test questions, inquiry labs, etc.</p>	<p>Jesse Wilcox Iowa State Univer Hallie Edgerly Adel Desoto Minburn Jerrid Kruse Drake University</p> 
<p>General (K-16) Lecture <i>Write for Iowa Science Teachers Journal (ISTJ)</i> Room 175</p>	<p>ISTJ is our organization's journal for receiving and sharing ideas about effective science teaching. Come see how we will help you publish your conference presentation or other ideas.</p>	<p>Joe Taylor Washington High School Cedar Rapids Michael P. Clough Iowa State University Jerrid Kruse Drake University</p>  
<p>Middle(6-9) Hands-On <i>IQWST Middle School by Active Science</i> Room 179</p>	<p>Investigating and Questioning our World through Science and Technology (IQWST), references real world experiences using technology and the belief that students learn best by delving deeply into fewer, carefully selected topics.</p>	<p>VeAnn Tilson Lynn Weber Active Science</p> 
<p>High School (9-12) Hands-On <i>Ecology: Using Flexible Models to Teach Population Dynamics</i> Room 250</p>	<p>Increase student interest and understanding using flexible models to demonstrate multiple aspects of population and ecosystem dynamics. Take home an activity from the "Ecology: Living on Earth" unit of SEPUP's Science and Global issues program for high school biology.</p>	<p>Darin Christianson LAB-AIDS</p> 
<p>Elementary Hands-On <i>Session 3 Making a Baby.....</i> Room 252</p>	<p>Iowa Core connections / connections to conceptual framework & NGSS. Participants will use a genetics activity as an authentic assessment strategy. This is Part III of a three part workshop. Participants may attend all or part of the workshop.</p>	<p>Lynne Campbell Melissa Hesner AEA 267</p> 

Session 3 is continued on next page.



11:00 A.M.—11:45 A.M.



Secondary (7-12)
Hands-On
**Science Fair Judging
Discussion**
Room 254

Come discuss issues of judging with Science Fair Mentors and Judges. Learn about resources available to prepare students for fair or prepare yourself to serve as a judge.

Marcy Seavey
Iowa Academy of Science



Elementary (pre-K-2)
Hands-On
**Teaching 2 Things At Once:
Content & Nature of Science**
Room 260

Come experience how you can integrate Nature of Science ideas into lessons. Results from a recent activity with elementary students will be shared.

Anna Broer
Drake University



Elementary (K-6)
Lecture
**Infusing Science into an
Established Literacy
Curriculum**
Room 262

To promote cross-curricular understanding, this session will highlight a student-led investigation that purposefully infused science into an established first-grade literacy curriculum.

Melissa Simmermaker
Drake University



Secondary
Hands-On
**Amusement Park
Physics with a NASA
twist**
Room 299

Come learn how NASA uses amusement park rides and simulated activities to engage students while teaching physics.

John Weis
NASA Marshall Space Flight
Center

NOTES



ISTS AWARDS

The mission of the Iowa Academy of Science is to further scientific research, science education, public understanding of science and recognize excellence in these endeavors. One of the ways to recognize this excellence is by awards. We encourage you to nominate a deserving individual or corporation for an appropriate award.

The Friend of Science (FOS) Award - Individual – ISTS recognizes with a plaque an individual or group, within the state, who has made significant contributions to ISTS and/or to science education at the local, regional or statewide level.

The Friend of Science (FOS) Award – Corporate – ISTS recognizes with a plaque a corporation, company, coalition, foundation or government entity who has made significant contributions to ISTS and/or to science education at the local, regional or statewide level.

The Outstanding Service Award (OSA) – ISTS recognizes with a plaque an ISTS member who has made sustained, extraordinary contributions to ISTS and/or to science education at the state and/or national level.

Excellence in Science Teaching Awards (ESTA) – The Iowa Academy of Science (IAS) awards to outstanding teachers of all grade levels and areas of science, teachers who are recognized for their work and innovations in science education. The core of the Award is \$200 for the teacher and a Plaque. Nominations are accepted in the following categories:

- Physical Science (physics, chemistry and physical science)
- Life Science (biology, anatomy/physiology, life science)
- Earth/Space Science/Environmental Science
- General/Multiple Science (integrated science, interdisciplinary courses, multiple preps)
- Middle School/Junior High Science
- Elementary Science (two awards may be given/year)

The Presidential Awards for Excellence in Mathematics and Science Teaching



(PAEMST) are the Nation's highest honors for teachers of mathematics and science. The awards recognize highly qualified K-12 teachers for their contributions in the classroom and to their profession. The core of the award is a \$10,000 National Science Foundation grant to the recipient's school, to be spent at the teacher's discretion.

FELLOWS OF THE Iowa Academy of Science

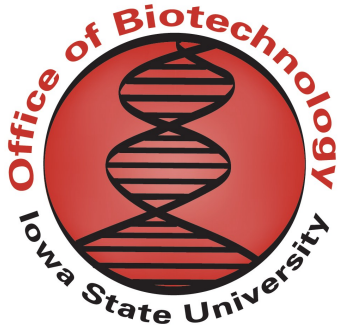


A Fellow is elected by the Board of Directors from those members who have provided meritorious service to the Academy and effective promotion of science in Iowa. Fellows remain as long as they maintain membership. This is an honor with the same privileges and responsibilities as a Professional Member. The Board of Directors solicits nominations for Fellows from the membership in the fall of each year.

Please consider nominating a worthy candidate today!
For more information, contact IAS at iascience@uni.edu.



FRIEND OF SCIENCE AWARDS



The Biotechnology Outreach Education Program began in 1985 as an initiative of Iowa State University's Office of Biotechnology to help K-12 teachers, extension professionals, and the general public learn about the science behind new biotechnology developments and the issues surrounding them. In the early years of the program, workshops for agricultural producers, science and agriculture educators, college students, health professionals, industry employees, and other groups were held throughout Iowa.

Helping science, agriculture, and consumer science educators was a priority then, as it is now. With support from the university, many of Iowa's commodity groups and biotechnology companies, and individuals, the Biotechnology Outreach Education Program has expanded its programs and services through the years. A free equipment and supplies program began in 1993 when the Biotechnology Outreach Education Program was awarded a

grant from the Roy J. Carver Charitable Trust. The 2012-2013 school year marks the 19th consecutive year that the program is offering Iowa teachers and ISU Extension and Outreach educators free equipment, supplies, and instructional materials for biotechnology lab activities. Questions answered by a full-time biotechnology outreach education coordinator at Iowa State or a network of master teachers throughout Iowa gives educators the support they need to be successful. A free newsletter and website are packed with many more useful resources.

The Biotechnology Outreach Education Center, established in 2000 on the Iowa State campus, has two state-of-the-art laboratories with a total of 40 lab stations and a prep room. The center hosts workshops and courses throughout the year where educators practice the lab preparation and experiments they will be teaching. During the school year, teachers are invited to bring their students to the center on field trips to experience hands-on activities. The program has expanded in recent years to offer pre-service training for students who are preparing to be teachers of science, agricultural education, or family and consumer sciences.

The statistics of success perhaps show best the contributions of the Biotechnology Outreach Education Program. Almost 2,500 educators have been trained at biotechnology education training courses. More than 250,000 Iowa students have benefited from free materials and supplies to Iowa's K-12 and extension educators. The Biotechnology Outreach Education Program continues to help educators prepare their students for science in the 21st century. For more information about the program, visit <http://www.biotech.iastate.edu>. Now in its third decade of outreach in Iowa, the ISU Biotechnology Outreach Education Program is a solid choice for the 2012, ISTS Friend of Science Education Award.

Mike Zeller is the current Biotechnology Outreach Education Coordinator at Iowa State University, arriving in Ames after a 24-year career as an Iowa high school science teacher. Since 2000, Zeller has led in the development of the university's biotechnology outreach education program, which has become a national model.

Zeller manages the Biotechnology Outreach Education Center (BOEC), a 2,300 square-foot state-of-the-art teaching/education laboratory located in the Molecular Biology Building on campus. The center hosts graduate classes and workshops for research, pre-service and professional educators, industry, and foreign educators and dignitaries. K-12 school groups regularly schedule visits to the BOEC to experience hands-on activities.

Since joining the Office of Biotechnology part-time in 1997 and full-time in 2000, Zeller has trained almost 2,500 Iowa educators, helping to provide them with equipment, supplies, curriculum packages, and expertise to take back to their schools. These teachers have, in turn, provided high-quality biotechnology instruction to more than 250,000 students in Iowa schools.

Zeller has more than 20 professional publications dealing with science, biotechnology, and biorenewable education and has made more than two dozen state and national conference presentations. He has served as president, conference chair, and exhibits coordinator for the Iowa Science Teaching Section of the Iowa Academy of Science and has received its Excellence in Science Teaching award. Zeller has been a state finalist for the national Presidential Awards for Excellence in Mathematics and Science Teaching.





FRIEND OF SCIENCE AWARDS

Blank Park Zoo, Iowa's only accredited zoo, is a leader in conservation and science education. Its mission is to inspire an appreciation of the natural world through conservation, education, and recreation. All of the zoo's programming, for all ages and audiences, promotes strong science and conservation messages. Blank Park Zoo strives to be Iowa's zoo by taking programs on the road to every county in Iowa.

Blank Park Zoo is at the forefront in professional development teachers. Ten teacher workshops are held each year, five at the zoo and five at various sites around the state. All of the zoo's education staff has advanced degrees in science or science education fields. Education programs at Blank Park Zoo impact approximately 48,000 people a year. Another 400,000 people learn about animals, habitats, and conservation during visits to the zoo through onsite programs, interactions with keepers, and interactive exhibit design.



The zoo is taking the lead in assisting non-formal educators across the state in their understanding of the Framework for K-12 Science Education and the Next Generation Science Standards. Seminars at the zoo help these educators align their programming to these documents. Special programs are held at the zoo for children 6 months to 5 years of age. They provide guided interaction that focuses on play as a learning tool. Zoo educators visit day cares and pre-schools with programs specifically designed for children to learn about and interact with animals. Blank Park Zoo's education staff travels across the state each summer visiting libraries with programs

that match the National Summer Reading Theme each year. Zoo passes are given as prizes to students that reach their summer reading goals.

Living Classroom programs are designed to bring a bit of the zoo into the classroom. Programs include interactive learning tools, dynamic activities aligned to curricula, and live animals. In cooperation with IPTV, Living Classroom programs are offered throughout the school year as part of the Classroom Connections resource as well as bringing the programs designed to meet specific needs of each group to classrooms around the state. Blank Park Zoo is committed to life-long learning, providing an outreach program for senior centers, nursing homes, and other adult groups. Week long summer day camps are held each year for children preschool through seventh grade.

Changing attitudes and promoting actions that positively impact our environment are integrated throughout the zoo's programming. The following are a few examples of the zoo's many conservation projects: 25 cents of every admission and \$1.00 of every membership is donated to conservation efforts on local, national, and international levels. The zoo endorses local and global conservation projects protecting animals such as prairie chickens, turtles, giraffes, elephants, apes, wolves, frogs, penguins, snow leopards, and polar bears; The zoo participates in the Species Survival Plan. The mission of an Association of Zoos and Aquariums Species Survival Plan® (SSP) Program is to cooperatively manage specific, and typically threatened or endangered, species populations within AZA-accredited Zoos and Aquariums, Certified Related Facilities, and Approved Non-Member Participants. There are currently more than 300 SSP Programs. Many of these programs represent species that urgently need to be conserved and protected in the wild, such as the giant panda, California condor, and lowland gorilla. The zoo has teamed with Health in Harmony, an organization protecting the biodiversity of rainforests by educating Bornean children about the importance of the rainforests and how their choices impact them. The zoo has established a "Green Team" dedicated to improving the world by reducing the ecological impact of the zoo's daily operations and inspiring guests to make similar choices. Blank Park Zoo supports the Chimpanzee Sanctuary and Wildlife Conservation Trust in Uganda by providing uniforms, boots, and equipment for 25 Chimpanzee Ambassadors who carry out field activities to monitor and protect Chimps in local forests.

With the programs and outreach that have been described, it is easy to see that the Blank Park Zoo was an obvious choice for the 2012 ISTS Friend of Science Education Award.





OUTSTANDING SERVICE AWARD

Marcy Seavey, a native of Waterloo Iowa, joined the Academy as the state coordinator for the GLOBE Program and Project WET in 1999. As Program Director, she coordinates educator professional development opportunities for the Academy through Project WET and GLOBE, assists the Student Programs Committee with programming for the Iowa Junior Academy of Science and serves as the staff liaison to the ISTS Leadership team. Under her leadership, the Academy has provided Project WET and GLOBE workshops for over 5,000 Iowa pre- and in-service educators. Marcy is active in science education at the state and international level. She has contributed on the writing team of *Discover a Watershed: The Missouri*, *Healthy Water: Healthy People* and several other publications and served as a script consultant for IPTV's *Explore More: Water Quality* program. Seavey has presented at International GLOBE Conferences and numerous Iowa Science Teaching Section Fall Conferences. She was an invited workshop presenter at the United Nations 5th World Water Forum in Istanbul, Turkey. She is currently serving on the State of Iowa Department of Education Science Leadership Team and the GLOBE Program's Partner Regional Ambassador Committee (PRAC). In her spare time, Marcy is a National NASA Trainer for Girl Scouts of the USA. In this role, she has brought NASA programming to Eastern Iowa Girl Scouts through day-camps and troop activities, chaperoned girls from across the country on NASA's Deep Impact mission trip and consulted with Johnson Space Flight Center on rewrites of the *21st Century Explorer* activities in order to make them more accessible to youth group leaders and other non-formal educators. Marcy has a B.A. in Natural History Interpretation and a M.A. in Science from the University of Northern Iowa. She was recognized with the Region 7 EPA Educators Environmental Excellence Award in 2005 and Project WET USA's first "Petey" Award for over a decade of outstanding service in 2009. It's clear that Marcy is an obvious choice for the ISTS Outstanding Service Award.



EXCELLENCE IN SCIENCE TEACHING AWARD

2012 ESTA winners at the IAS Annual Meeting

Left to Right , they are:

Kris Groff - General/Multiple Preparations, Sheldon High School

Joan Moorhead - Middle/Junior High, Williams Intermediate School, Davenport

Donna Johnson - Elementary School Science, Neil Armstrong Elementary, Bettendorf

Teri Wiese - Earth/Space/Environmental Science, North High School, Davenport

Mike Goudy - Life Science, Oskaloosa High School

Kevin McGinity - Physical Science (Chem. & Physics), Ottumwa High School

Not pictured - Christine Sutherland - Elementary School Science, Kreft Primary School, Council Bluffs





The Presidential Awards FOR EXCELLENCE IN MATHEMATICS AND SCIENCE TEACHING



2011 Award Winner



Dr. Jody Stone

Malcolm Price
Lab School

University of
Northern Iowa
Cedar Falls

What motivates you as an educator? "I have been encouraged to think outside the box and in turn am motivated to seek to inspire my students to do the same; to think more deeply, be more creative, and want to try harder." - Jody Stone

2012 Nominees FOR Iowa



Shelly Bromwich

Kindergarten
Malcolm Price Laboratory School
University of Northern Iowa, Cedar Falls

"Sharing my passion to instill confidence, wonder, and love for science in my students, their parents, my college students and everyone else I encounter in my classroom."
- Shelly Bromwich



Mason A. Kuhn

4th Grade
Shell Rock Elementary
Waverly-Shell Rock

"Watching my students evolve to a point where they can independently make claims that are backed with data and evidence."
- Mason Kuhn



Luncheon / General Session

12:00 P.M.—1:45 P.M.

Lunch provided as part of your registration fee.

Welcome — Adam Puderbaugh, Conference Chair
— De Anna Tibben, ISTS Chair

Special Welcome and Introduction of IAS Board — Craig Johnson,
Executive Director of Iowa Academy of Science

LUNCHEON

Recognition and Thanks— Adam Puderbaugh, Conference Chair

Introductions of ISTS 2012-2013 Vice Chair Eric Hall, Secretary Katie Borton,
and Treasurer Alicia Schiller— De Anna Tibben, ISTS Chair

Recognition of the 2012 Conference Chair — Tom Ervin, Awards Chair

Recognition of Excellence in Science Teaching Awards — De Anna Tibben, ISTS Chair

Recognition of Presidential Award for Excellence
in Mathematics and Science Teaching Nominees
— Yvette McCulley, DOE Science Consultant

ISTS Corporate Friends of Science Awards — De Anna Tibben

ISTS Friend of Science Award — De Anna Tibben

ISTS Outstanding Service Award — De Anna Tibben

Iowa Governor's STEM Advisory Council — Jeff Weld

Introduction of Keynote Speaker— Adam Puderbaugh, Conference Chair

Dr. William McComas

**BEAKS, THE BEAGLE,
AND OTHER HISTORICAL MISCONCEPTIONS
ABOUT EVOLUTION AND ITS NATURE**



Keynote

Beaks, the Beagle, and other Historical Misconceptions about Evolution and its Nature

Evolution is the most important concept in modern biology but is also one of the most misunderstood both from a scientific and historical perspective. This illustrated talk will focus on the key aspects of evolution by natural selection, widely held misconceptions regarding the nature of evolution itself, the role of the Galapagos Islands in the discovery of organic evolution, the impact of the finches on Darwin's thinking, and the fascinating parallel discovery of natural selection by Alfred Russel Wallace. The photographs illustrating this talk are the result of visits to the Galapagos Islands and Down House, Darwin's home outside of London. The article on which this talk is based, *The Discovery and Nature of Evolution by Natural Selection: Misconceptions and Lessons from the History of Science* (*American Biology Teacher*) won the Distinguished Achievement Award from the Association of Educational Publishers.

William F. McComas,

Ph.D. is the inaugural holder of the *Parks Family Endowed Professorship in Science Education* at the University of Arkansas following a career as a biology teacher in suburban Philadelphia and professorship at University of Southern California. He has earned BS degrees in Biology and Secondary Education, MA degrees in Biology and Physical Science and the PhD in Science Education from the University of Iowa. McComas



is widely involved in many areas of science education. He has served on the boards of directors of the *National Science Teachers Association* (NSTA), the *International History, Philosophy and Science Teaching Group* (IHPST), the *National Association of Biology Teachers* (NABT) and the *Association for Science Teacher Education* (ASTE). He is a recipient of the *Outstanding Evolution Educator* and *Research in Biology Teaching* awards from NABT, the Ohaus award for *Innovations in College Science Teaching* and the ASTE *Outstanding Science Teacher Educator* award. He is interested in the improvement of laboratory instruction, evolution education, the intersection of the philosophy of science and science teaching, science for gifted students, and science instruction in museums and field sites. McComas was recently a Fulbright Fellow in residence at the Centre for the Advancement of Science and Mathematics Teaching and Learning (CASTeL) of Dublin City University in Ireland.



CONCURRENT Session 4

The Social Responsibility to Accurately and Effectively Teach the Nature of Science

Science literacy for citizenship demands an accurate understanding of the nature of science (NOS). Accurate NOS understanding is associated with a more positive attitude toward science and scientists, a deeper understanding of science ideas, and a more accurate understanding of socio-scientific issues. For these reasons, science teachers have a social responsibility to accurately and effectively teach the nature of science. This presentation, based on extensive NOS research and Dr. Clough's own secondary school teaching experiences, will present evidence for the above links and how to effectively teach and assess students' understanding of the NOS throughout the school year. Easily accessible teacher resources for learning about and effectively teaching the NOS will be provided.



General Audience

Room 275

FEATURED SPEAKER:

Featured speaker **Michael Clough** is an associate professor of science education at Iowa State University. He served as ISTS section chair from 2005-2006, served as the *Iowa Science Teachers Journal* Editor from 2005-2008, and received the 2011 ISTS Exceptional Service Award. Michael taught high school biology and chemistry for seven years before becoming a university science teacher educator. He has received several awards for outstanding teaching, both at the secondary and post-secondary school level. Several of his former preservice teachers have received ISTS's *Excellence in Science Teaching Award*, NSTA's Maitland P. Simmons Memorial Award for New Teachers, and other recognitions for their teaching practices and professional service.



Elementary (preK-2)
Hands-On
Teaching Elementary Students about Biodiversity through Outdoor Activities
Room 150



Come learn about activities to teach biodiversity concepts to K-5 students. Outdoor lessons can be done on school grounds or through field trips.

Jennifer Smith
Iowa State University

Middle (6-9)
Lecture
Space (Camp) Academy for Educators
Room 154



Overview of Space Academy for Educators activities, experiences, classroom resources and how teachers can apply for a full scholarship to attend the academy.

Jeff Monteith
New Hampton Middle School



2:00 P.M.—2:45 P.M.

<p>High School Demonstration <i>Human Life Science</i> <i>Activities Supported by</i> <i>the Iowa Physiological</i> <i>Society</i> Room 160</p>	<p>Attendees will participate in life-science activities designed to foster the development and understanding of science as supported by the Iowa Physiological Society.</p>	<p>Michael Lyons Grand View University</p>		
<p>High School Lecture <i>Professional Development for Iowa High School Physics Teachers</i> Room 167</p>	<p>UNI professional development programs for high school physics teachers and the effectiveness of the latest program will be discussed. Future opportunities will be shared.</p>	<p>Lawrence Escalada Jeffrey Morgan Jeremy Hulshize Meghan Reynolds University of Northern Iowa</p>		
<p>Elementary (K-6) Hands-On <i>Confronting Elementary Students' Misconceptions of Magnetism Using Concrete Activities.</i> Room 171</p>	<p>Come see how to engage elementary children (grades 2-4) with multiple activities that will help students deeply understand magnetism. Handouts provided.</p>	<p>Lindsey Richey Jesse Wilcox Iowa State University</p>		
<p>High School Hands-On <i>Using Legos to Model the Nature of Science</i> Room 175</p>	<p>Participants will be engaged in design-based activities using legos and discuss how the activity accurately models the nature of science and engineering.</p>	<p>Dana Hansen Jerrid Kruse Drake University</p>		
<p>High School Hands-On <i>Fun Physics For All with the Marble Launcher</i> Room 179</p>	<p>Perform engaging projectile motion investigations with a fun and unique marble launcher! During this session, teachers will learn the physics of projectile motion and analyze the motion with graphs (using a safe, lightweight, plastic marble). Free raffle for a marble launcher!</p>	<p>Jesse Herman Specialty Science CPO Science</p>		
<p>High School Hands-On <i>O2 Understand Photosynthesis and Cellular Respiration!</i> Room 250</p>	<p>Participants will use a computer simulation, a hands-on activity, and learn to use notebooking and discussion strategies to expose student thinking all from SEPUP's new Science and Global Issues: Biology program from LAB-AIDS.</p>	<p>Darin Christianson LAB-AIDS</p>		
<p>Middle (6-9) Hands-On <i>Finding the Citizen Scientist in Every Child</i> Room 252</p>	<p>IOWATER, GLOBEatNight, Operation RubyThroat, Frog & Toad Call Survey, EyeWire... whatever your students interests are there is a citizen science opportunity. Come explore the options!</p>	<p>Marcy Seavey Iowa Academy of Science</p>		

Session 4 is continued on next page.



CONCURRENT Session 4



High School
Hands-On
*Teaching Gas Laws
Using the Problem
Based Learning*
Room 254

Using Problem Based Learning (PBL) to teach the gas laws in chemistry. Activities and student centered learning through the application of this approach, encouraging the social communication aspect of group work in solving problems.

Mike Goudy

Mauree Haage
Oskaloosa High School



General (K-16)
Hands-On
*Creativity Through
Measurement Systems*
Room 260

Presenters will model a mentally and physically stimulating lesson about the evolution and history of measurement systems.

Meagan Woestman
Missouri Valley
High School
Robert Hingstrum



High School
Demonstration
*Biology in a 1 to 1
Classroom*
Room 262

Come hear about the pros and cons of each and every student having their own computer and the way it can supplement and possibly change the way you teach

Nick Reed
Oskaloosa High School



General (K-16)
Hands-On
Human Body in Space
Room 299

Participants will engage in activities designed to simulate the effects of space and the microgravity environment on the human body.

John Weis
NASA Marshall Space
Flight Center

Iowa Junior Academy of Science

Visit the IAS Booth for more information and to join.

The Iowa Junior Academy of Science provides resources and programs for 6th-12th grade science students and their teachers/parents. IJAS promotes individual and small group student research, awards, scholarships, and extra-curricular activities to broaden a student's science experiences.





CONCURRENT Session 5

Engineering in the Science Standards: Opportunities and a Cautionary Note

Engineering in the science classroom is a major part of NGSS. How can we optimize the opportunities while avoiding the pitfalls?

General Audience

Demonstration

Room 275

FEATURED SPEAKER:



Dr. Joanne Olson is an associate professor of science education at Iowa State University. A former secondary and elementary science teacher, she currently co-directs the MAT program at ISU and teaches courses in advanced pedagogy and curriculum theory. Her research is focused on teachers' decision-making and issues related to the nature of science in science education. She currently serves on the Building Capacity in State Science Education team that is responsible for implementation plans for the new Framework.

<p>General (K-16) Lecture <i>Environmental Literacy & STEM Education</i> Room 150</p>	<p>Science educators will gain an awareness of how environmental literacy goals align with the Iowa Core, meeting the expectations of the state's STEM initiative.</p>	<p>Craig Edmondson Heartland AEA Linda Zaletel Iowa Conservation Education Coalition</p>
<p>Secondary (7-12) Demonstration <i>Educational Resources from Iowa Public Television</i> Room 154</p>	<p>Join this session to learn about the thousands of educational resources that are available from Iowa Public Television. Learn how to incorporate high-quality multimedia resources that include videos, lesson plans, and interactives.</p>	<p>Cameron McCoy Educational Services and Outreach Iowa Public Television</p>
<p>General (K-16) Hands-On <i>Mousetrap Powered Cars - a way to incorporate the next generation science standards into the classroom.</i> Room 167</p>	<p>Learn how to create a moving vehicle powered by the energy supplied by a mousetrap and discuss how this activity can be used in the classroom.</p>	<p>Alison Beharka Lawrence Escalada University of Northern Iowa</p>





3:00 P.M. — 3:45 P.M.



Secondary (7–12)
Hands-On
From the Crime Scene to the Classroom
Room 171

The workshop by Crosscutting Concepts will feature the Mystery of Lyle & Louise kit "An Inky Lead," introducing students to questioned documents analysis.

Cassie Vickers
Crosscutting Concepts



Elementary (K-6)
Hands-On
Spiders
Room 175

Through exploration of models of spiders and discussion, the students create connections between physical structures of organisms and their purposes. Students will also investigate a change in the environment due to the actions of an organism. The completion of the lesson will be demonstrated through a summative assessment.

Courtney King
Drake University



Middle (6-9)
Hands-On
Crazy Traits and Adaptions: Genetics Games for All
Room 179

Investigate a unique crazy creature to explore the role chance plays in heredity and learn engaging techniques for teaching genetics! In this session, teachers will apply concepts of genetics (traits, alleles, dominance and probability) to gain a more in-depth understanding of the principles as well as learn inquiry based methods of teaching genetics and inheritance. Free drawing for Crazy Traits Kit!

Jesse Herman
Specialty Science
CPO Science



Middle (6-9)
Hands-On
Got REAL Issues? Chemistry of Materials and Engineering for Middle Grades.
Room 250

Come explore how using personal and societal issues creates lots of opportunities to incorporate engineering practices and core ideas of science. Join us for a scenario that challenges you to evaluate materials in determining the best material for a soft drink container.

Darin Christianson
LAB-AIDS



Middle (6-9)
Hands-On
Teaching About Our Human-made World
Room 252

Take part in hands-on activities that explore how our species' population has expanded to dominate the Earth and remake the natural world in unprecedented ways.

Angi Reid
Silos & Smokestacks
National. Heritage Area



Middle (6-9)
Hands-On
Water Rocks! – Integrating STEM education and the arts
Room 254

Water Rocks! is a new statewide youth water education campaign. Learn about ways to supplement your environmental science teaching through free classroom visits from the Water Rocks! team, interactive enhanced learning activities, music videos, songs, games, and more.

Ann Staudt,
Iowa State University



CONCURRENT Session 5

<p>General (K-16) Lecture <i>Modeling Science Concepts with Computational Modeling</i> Room 260</p>	<p>The key aspect of the presentation will be to demonstrate how computational modeling can be used to meet the modeling requirements of the Iowa Core.</p>	<p>Les Miller Iowa State University</p>	
<p>Secondary (7-12) Lecture <i>Real World Externships for Teachers</i> Room 262</p>	<p>Join us to hear how you can transfer the "Real World" into your classroom and learn how you can get involved next summer.</p>	<p>Jason Lang Meghan Reynolds University of Northern Iowa</p>	
<p>General (K-16) Hands-On <i>NASA Geology Resources</i> Room 299</p>	<p>Come learn simple, hands on and hypo-allergenic geology activities from NASA.</p>	<p>John Weis NASA Marshall Space Flight Center</p>	

EXHIBITOR DOOR PRIZE DRAWING!

4:00—4:15 P.M.

Exhibitor Check-off Drawing!


Win prizes donated by our exhibitors in this jackpot extravaganza!

Drawing of 50% complete Exhibitor Check-off Cards will begin at 4:10 p.m. at the Exhibit Hall.

You must be present to win!




2012 EXHIBITION HALL


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THINK. DO. LEARN.

Active Science


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 **Drake University School of Education**

Kris Kilibarda 515-271-4810 www.drake.edu/soe
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EXHIBITION Hall



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HOUGHTON MIFFLIN

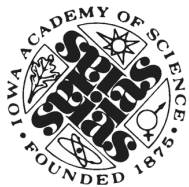
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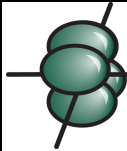
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Continued on next page.



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DOE Science Consultant	Yvette McCulley	Science and STEM Education Grimes State Office Building, Des Moines, IA 50319	(515) 281-3966 yvette.mcculley@iowa.gov

ISTS REGIONAL DIRECTORS 2012-2013

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Upcoming Events

National Conferences

San Antonio, Texas:
April 11–14, 2013
Boston, Massachusetts:
April 3–6, 2014



SIMPSON COLLEGE

125th Annual Meeting
of the
Iowa Academy
of Science

April 19 & 20, 2013
Simpson College
Indianola, Iowa

Mark your calendars for the
**2013 IAS-ISTS
Fall Conference!**



**Come.
Learn.
Share.
Implement.**



NOTES



2012 ISTS Fall Conference Survey

SECTION I: About You:

1. I am a: (select a, b or c)

(a) Licensed Teacher and have been teaching for _____ years. In what community do you teach? _____

What classes do you teach? _____

What grade levels do you teach? (Circle all that apply): PK, K, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

(b) Student earning a teaching license. What college do you attend? _____

When do you anticipate graduating? (Circle): 2012 F, 2013 Sp, 2013 F, 2014 Sp, 2014 F, 2015 Sp, or later

Name the subjects you will be licensed to teach: _____

What grade levels will you be licensed to teach? (Circle): PK, K, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

(c) Other – If you are **not a or b above**, please check one:

- AEA (circle one): science consultant, mathematics consultant, other
- Post secondary Educator of (circle): science education, biology, chemistry, earth science, physics, other
- Non-formal Educator at a (circle): museum, CCB, private nature center, other
- Other, please tell us what you do: _____

2. Previously, how many ISTS Fall Conferences have you attended? _____

3. Are you a presenter at this conference? Yes No

4. Are you a current member of the Iowa Science Teaching Section of IAS? Yes No I don't know

5. What attracted you to the ISTS Fall Conference? _____

6. If you received support to attend today's conference, please indicate the source of funding:

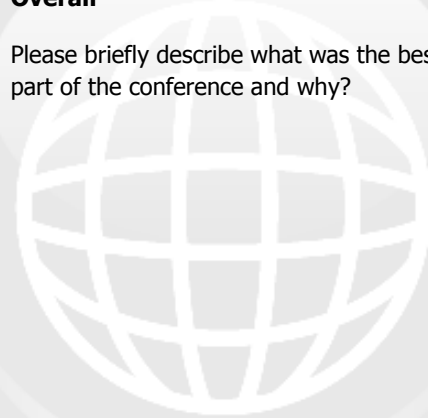
Part II. Circle the response that best describes your opinion regarding each statement:	Strongly Disagree				Strongly Agree		Not Applicable
7. Overall, the presentations were interesting. Please list your favorite presentation: _____	1	2	3	4	5	6	N/A
8. Overall, the conference provided me with ideas/resources I will take back to my classroom/programs.	1	2	3	4	5	6	N/A
9. The conference activities reflected theme: <i>Our Students, Our Future: The Social Responsibility to Effectively Teach Science.</i>	1	2	3	4	5	6	N/A
10. As a result of the conference, I feel more informed about the Next Generation Science Standards.	1	2	3	4	5	6	N/A
11. The conference provided me with an opportunity to network with other science educators.	1	2	3	4	5	6	N/A
12. I will utilize ideas from the conference sessions in my classroom/programs.	1	2	3	4	5	6	N/A
13. I will utilize ideas/resources from the exhibit hall in my classrooms/programs.	1	2	3	4	5	6	N/A
14. ISTS should continue to extend the conference with evening events, tours and mini-workshops.	1	2	3	4	5	6	N/A
15. The confirmation materials were adequate.	1	2	3	4	5	6	N/A



2012 ISTS Fall Conference Survey

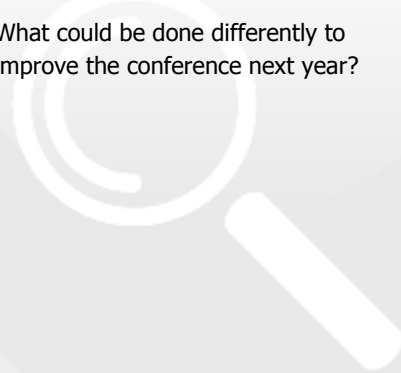
Overall

Please briefly describe what was the best part of the conference and why?



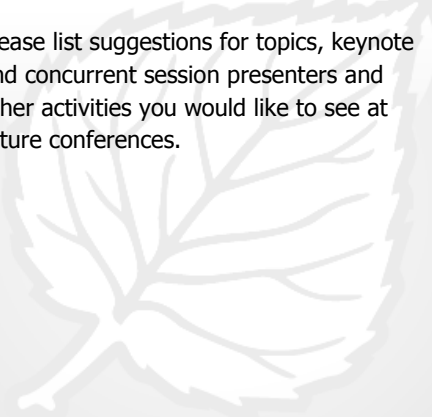
Improvement

What could be done differently to improve the conference next year?



Suggestions: Presenters and Topics

Please list suggestions for topics, keynote and concurrent session presenters and other activities you would like to see at future conferences.



Monday Evening Programs

If you attended, please tell us what you liked best. If you did not attend, please tell us why you did not attend:



**Thank you for your time
completing this survey!**

**Please drop the completed survey in the
provided box.**

Your suggestions will help
improve the 2013 ISTS Conference!



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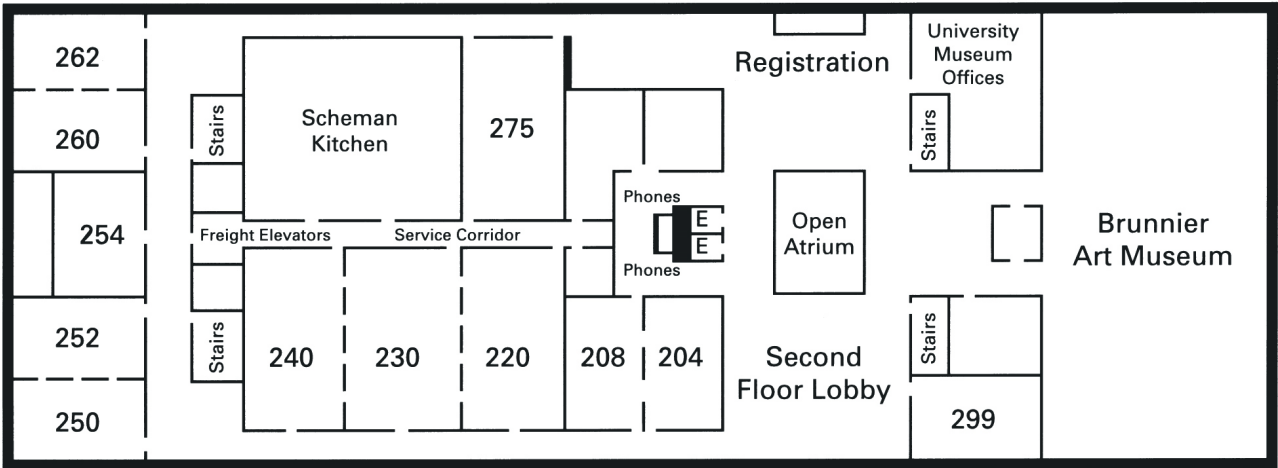
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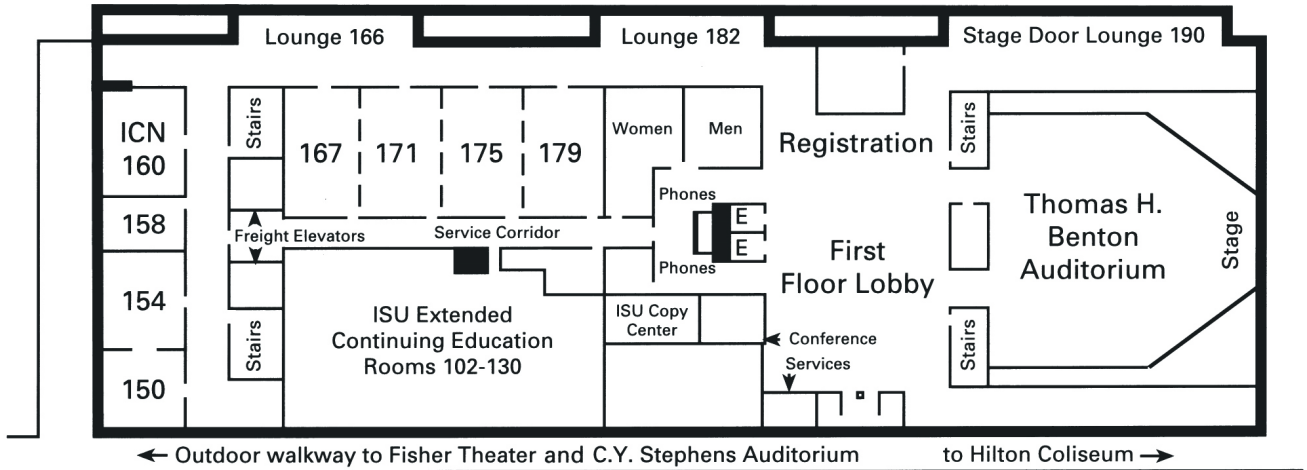
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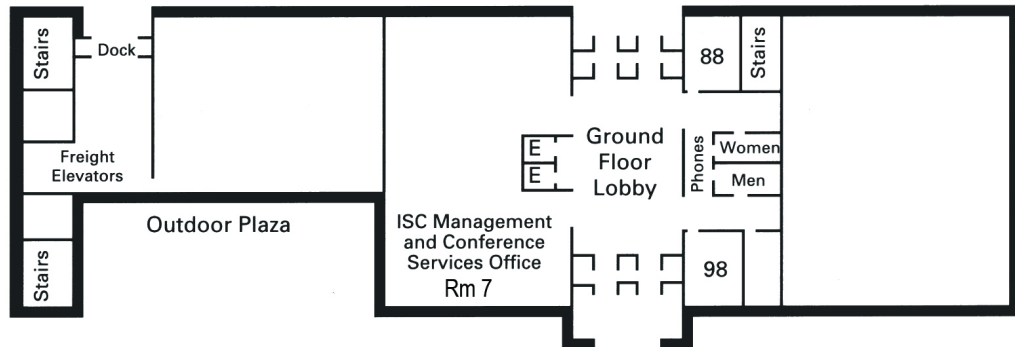




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First Floor



Ground Floor