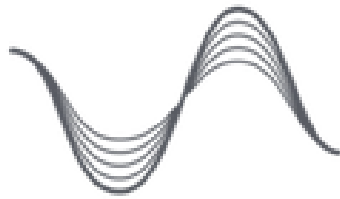


# A Deeper Understanding

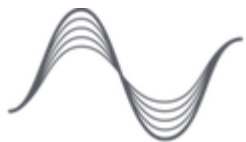


Making Connections in Math and Science

VALLEY HIGH  
SCHOOL,  
West Des Moines,  
Iowa

September  
20 - 21  
2015

Presented by the Iowa Council  
of Teachers of Mathematics and  
Iowa Academy of Science—  
Iowa Science Teaching Section



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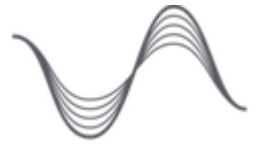
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**Welcome to the  
Iowa Council  
of Teachers of  
Mathematics  
and  
the Iowa Academy  
of Science  
—Iowa Science  
Teaching Section  
2015 Fall Conference**

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Don't forget to follow ICTM and ISTS:

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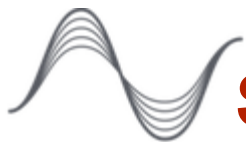
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More detailed descriptions are found at <http://www.ictm-ists-conference.info/>



#IctmIsts15



**Sunday Evening September 20, 2015**

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**ICTM Pre-Conference Event**

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**for Pre-service and New Teachers**

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ICTM again will host a pre-conference for new and pre-service teachers in the state. You are invited to a special welcome session created just for new and future teachers.

- A light dinner will be provided. Free teaching materials & ideas. Fun activities, fun people.
- Meet with our Keynote speaker, Cheryl Tobey, and master teachers from around the state.
- Learn about resources in math education and how they can help you
- Get an overview of the ICTM / ISTS conference – the ins and outs of making it more valuable.
- Network with other pre-service & beginning teachers.
- Find out about other future events for new teachers.
- No pre-registration required for this event.

**Valley High School, West Des Moines, Iowa 6:00pm to 9:00pm**

---

**Being a member of the Iowa Council of Teachers of Mathematics (ICTM) means you are a member of a professional organization that is working to promote and improve mathematics education in Iowa.**

Benefits include:

- Annual ICTM conference discount
- ICTM yearly journal
- Tri-annual newsletters
- Discount on NCTM publications
- Grant opportunities
- Networking with other mathematics educators across the state
- Professional development component for Iowa Teaching Standards

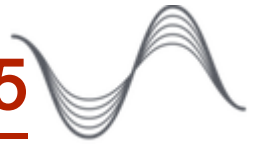


Visit our booth in the exhibit hall or visit us online: [www.iowamath.org](http://www.iowamath.org)

Join today!

**Sunday Evening September 20, 2015**

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**ISTS Pre-Conference Event**

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**Science Center of Iowa**

407 W. Martin Luther King Jr. Parkway,  
Des Moines, IA, 50309

**6:00—9:00 P.M.**

Founders Hall

Exhibits will include The Makers exhibit as well as others

Plenary Session – STEM Partnerships panel discussion

Hors d'oeuvres with tea , water and a cash bar

Teacher-Partner Framework workshop

Meet with Natacia Campbell, the NSTA District 12 director

Chair's dessert reception

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**Save the date! April 22—23, 2016**

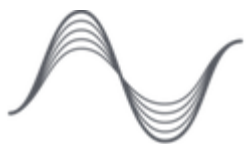
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128th Annual Meeting Iowa Academy of Science

and the 84th Meeting of the Iowa Junior Academy of Science



**Grand View University**  
1200 Grandview Avenue  
Des Moines, Iowa



# Monday Opportunities

## September 21, 2015

7:30—11:00 A.M.	Check in and Registration for all participants.
8:00—8:30 A.M.	Exhibits
8:30—9:15 A.M.	Session 1
9:25—10:10 A.M.	Session 2
10:30 A.M.—12:00	Keynote Cheryl Tobey and Page Keeley (Performance Arts Center at Valley High School)
12:00—1:20 P.M.	Exhibits and Lunch
12:30 P.M.	Awards
1:00—1:20 P.M.	Math Business Meeting—Room 2311
1:00—2:10 P.M.	Session 3
2:20—3:05 P.M.	Session 4
3:15 P.M. —4:00 P.M.	Session 5

### Exhibit Hall in the gymnasium

Monday 7:30 a.m.—4:00 p.m.

Rolls and coffee compliments of the exhibitors.

7:30 a.m.—10:00 a.m.

### Door Prizes

Be sure to check the Exhibition Hall in the gymnasium throughout the day for the door prize drawings.

# Conference Strands & Levels

Building a strong knowledge base in math and science			KB
Assessment in math and science			A
Connections in math and science			C
Technology integration in math and science			TI
Lower Elementary	LE	Upper Elementary	UE
Middle School	MS	High School	HS
College	C	Pre-Service Teachers	PS
Supervision/Administration			S

## TYPE OF PRESENTATION:

**HANDS-ON WORKSHOP:** a presentation that provides everyone with a hands-on experience. Tables/Chairs are provided for participants.

**DEMONSTRATION:** a series of activities or experiments allowing only a limited participation by the audience. Chairs are provided for the participants.

**LECTURE:** a sharing of ideas, techniques, or research results with audience participation limited to questions. Chairs are provided for the participants.

**COMPUTER LAB SESSION:** a presentation that provides participants with the opportunity to work with software or other technology in a computer lab setting.

Computer sessions may be limited.

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

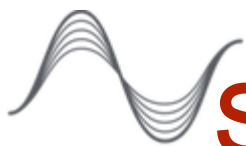
The success of this conference is due to the Fall Conference Committee and many other amazing volunteer supporters.  
Thanks to all those volunteers.

Do you have information that you want to get out to the mathematics and science teachers of Iowa?

Exhibit in the exhibit hall at the ICTM-ISTS Fall Conference.

Commercial and non-commercial booths available.

Please contact Barb Jacobsen at [bjacobse@bettendorf.k12.ia.us](mailto:bjacobse@bettendorf.k12.ia.us)



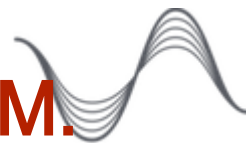
# Session 1 8:30 A.M.-9:15 A.M.

For a detailed listing of all sessions, visit [ictm-ists-conference.info](http://ictm-ists-conference.info)

Room 2343 <b>Sessions 1 and 2</b> Achieving Addition Fact Fluency Demo <b>KB LE</b>	What does it mean to be fluent with addition facts? Is there a difference between fluency, automaticity, and memorization? Strategies, games, and activities will be modeled to help all students become fluent. DOUBLE SESSION	Angie Shindelar Green Hills AEA
Room 1313 Science and Religion: Friends or Foes? Hands On <b>KB MS,HS,C PS</b>	Many students dismiss fundamental science ideas because of religious conviction. This activity helps students understand why they do not have to choose.	Neal Patel, Caleb Grulke, Jerrid Kruse Drake University
Room 1315 Improving Teaching Practices to Promote Student Learning of Science Practices Hands On <b>KB All</b>	This session will engage participants in examining pedagogical decisions crucial for effectively teaching science and science practices,	Jesse Wilcox Grand View University Michael Clough Iowa State University
Room 1320 Trouble at Grainly Farms Computer Lab <b>KB HS</b>	Evolution, integrated pest management, STEM careers, and more can be introduced with this case study set in Iowa - deliverable online, yet ideal for all classrooms.	Craig Walter West Des Moines Valley HS
Room 1327 Developing a "Cognitively Safe" Classroom Lecture <b>KB LE,UE, MS</b>	This session will discuss critical first steps that help prepare students for complex tasks like scientific negotiation and making claims based on evidence.	Mason Kuhn University of Northern Iowa
Room 1333 Making Sense of Probability Rules Hands On <b>KB HS</b>	Engage with two new high school probability lessons that develop concepts of sample space, dependence, and compound events, and the addition and multiplication rules.	Maryann Huey, Wendy Weber, Angela Pierce, Carrie Even, Janet Hansen Drake University
Room 1341 Exploring Mathematics and Science With an Angry Bird Demo <b>C HS, C</b>	This session uses flights from the game "Angry Birds" as context for explorations. The focus will be on modeling, including parametric relations, regression, and trigonometry	John Diehl Apple River, IL
Room 1351 Everyday Math 4—What is New? Demo <b>A</b>	What are the Changes and Differences with the Everyday Math 4 program. Who is using it? Why did they make the changes? What does the new online piece entail? How can I find out more?	William Kearney McGraw-Hill
Room 1353 Geology of Iowa <b>KB</b>	Geology of Iowa	Iowa Limestone Producers Association
Room 1506 3.14159265(From Pi-Day to Pi-Fest)358979323 Lecture <b>C UE,MS, HS</b>	Activities will be shared as you hear from a High School student (Halley) on how she organized multiple activities to celebrate Pi-Day.	Halley Buseman, Ricardo Martinez Colo-NESCO
Room 2311	Math Roundtable: Algebra II	
Room 2312 First and Second Year Teacher Support Group Hands On <b>C All</b>	Session will provide time for networking and sharing among first and second year mathematics and science teachers. AEA consultants will be available to provide support.	Brian Townsend, Jennifer Johnson University of Northern Iowa
Room 2313 Partners in Mathematics Hands On <b>KB All</b>	The session will outline the partnership formed between a class of elementary school students and pre-service elementary school teachers, and a partnership between a junior high mathematics class and a high school mathematics class.	Kate Degner St. Ambrose University



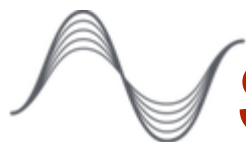
# Session 1 8:30 A.M.-9:15 A.M.



Room 2314 Generating Student and Teacher Excitement for Solving Real Problems Demo <b>A UE, MS</b>	Creative problems with multiple solution paths will impart upon your students strategies for solving and explaining their thinking on "stuff" encountered on those assessments.	Nicholas Restivo Mineola UFSD
Room 3414 Engineering in Chemistry Lecture <b>C HS</b>	Discover ways to incorporate engineering into your chemistry classroom. Come away from this session with many engineering activities to use.	Maureen Haage Oskaloosa HS
Room 2319 Activities From the History of Mathematics Hands On <b>KB MS, HS,C</b>	Favorite topics from the history of mathematics provide motivational activities for students at many different grade levels.	Joel Haack University of Northern Iowa
Room 2321 Can Progress Monitoring Support Assessment of Students' Deeper Understandings in Algebra? Lecture <b>A MS,HS</b>	We share our work to develop conceptual progress monitoring measures for algebra, including successes and challenges in high school classes across three states.	Vincent Genareo, Anne Foegen Iowa State University
Room 3421 Task-Based Learning in the Mathematics Classroom Lecture <b>KB UE,MS,HS,S,PS</b>	This session will discuss how to implement problem-solving tasks into your mathematics classroom and the extensive benefits these tasks will provide your students.	Clayton Edwards Grundy Center
Room 3417 Student Research Part 2 - Resources to Actually Use Tomorrow and Beyond Hands On <b>KB UE,MS,HS</b>	NGSS & Iowa Core both expect student inquiry and student determined research projects, but how do you facilitate student research? Session provides proven materials to use tomorrow.	De Anna Tibben Ames HS
Room 3429 Regional STEM PLC's - Connections and Learning Outside of Your District. Lecture <b>C MS,HS</b>	We outline the process of setting up a STEM PLC with others in your area. We will share and discuss the many benefits of this model.	James Pifer, Kris Killabarda, Chris Kurtt, Shane Scott Shane Scott Southeast Polk Schools
Room 3431 Making STEM Connections Hands On <b>C LE,MS,HS</b>	The Science Center of Iowa can help bring the Maker's Movement to your classroom. Making teaches students to think with their hands and become fabricators of understanding.	Jolie Pelds, Renee Shull Harmon Science Center of Iowa
Room 3435 NSTA Learning Center <b>All</b>	Using the NSTA Learning Center you can create a personalized professional development plan. An NSTA member or not, we have a unique platform that provides you with tools and resources you need. Just need information and/or resources...we have that too!	Natacia Campbell, Ed.D. NSTA District XII Director 2014-2017
Room 3437 Quake-Proof: Applying Newton's Laws of Motion to Building Design Hands On <b>C MS,HS</b>	Participants will apply Newton's laws of motion to building design by engineering simple structures and testing them using shake tables.	DeEtta Andersen Center Point Urbana HS
Room 3439 Float-osynthesis Hands On <b>KB MS,HS,C,PS</b>	This is an easy, cheap, and fun way to collect quantitative data on the rate of photosynthesis. Students can choose to test multiple environmental factors in this investigation.	Andrew Johnson, Ellen Badger Luther College

**Exhibit Hall in the gymnasium**

**Monday 7:30 a.m.—4:00 p.m.**



# Session 2 9:25 A.M.-10:10 A.M.

For a detailed listing of all sessions, visit [ictm-ists-conference.info](http://ictm-ists-conference.info)

Room 2343 <b>Sessions 1 and 2</b> Achieving Addition Fact Fluency	What does it mean to be fluent with addition facts? Is there a difference between fluency, automaticity, and memorization? Strategies, games, and activities will be modeled to help all students become fluent. <b>DOUBLE SESSION</b>	Angie Shindelar Green Hills AEA
Room 1311 eSTEM Waterloo: Building a NGSS Curriculum Hands On <b>KB UE</b>	Two signature science units have been developed for 3rd, 4th and 5th grade science addressing significant NGS standards, including a culminating engineering activity for each unit. Participants in this workshop will complete selected eSTEM activities and will receive access to all of the eSTEM units.	Jody Stone, Stephanie McComb, Angela Hewitt University of Northern Iowa
Room 1314 Paradigm Shift: Students DO STEM Hands On <b>KB All</b>	Session demonstrates the shift in teacher practices in STEM education. Topics cover redesigned learning spaces, using technology and applications to enhance student learning, incorporating NGSS, and 21st Century skills.	Laura Wood, Mandy Dunphy, Lincoln Davis Mount Pleasant CSD
Room 1318 Teaching Computer Programming Lecture <b>TI HS</b>	Presentation will outline curriculum used to teach a computer programming class. Languages include Python and Java. Materials will be given for use.	Erin Marshall Central City CSD
Room 1329 The Endo's and Exo's of Cytosis Hands On <b>KB MS,HS</b>	Students model endocytosis through an inquiry activity utilizing simple materials as part of a learning cycle.	Marinda Gacke, Amanda Ohge Muscatine Central MS
Room 1339 Approaching Functions Through Visual Patterns Hands On <b>KB MS,HS</b>	Participants investigate a growing pattern and develop multiple ways to "see" the growing as well as organize the information and generalize a pattern.	Lynn Selking Great Prairie AEA
Room 1343 Prepare for NGSS & Common Core Math Standards with Online Interactive Simulations Demo <b>KB</b>	Come explore the world of simulations with ExploreLearning Gizmos. Experience for yourself how students can collect, analyze and interpret data, use and evaluate models of scientific and mathematical concepts while engaging in scientific and mathematical practices.	Peter Romando ExploreLearning
Room 1351 Higher Level Thinking Tasks in the Math Classroom	Participants will engage in a math lesson on functions and then debrief the key parts to a higher level thinking task. Higher order thinking is the key to providing a strong knowledge of mathematics.	Brian Peters Carnegie Learning
Room 2312 Engaging Students in Deep Practice Lecture <b>KB</b>	How to design deep practice in creative problem solving where everything clicks using technology with the Iowa Online Math Competition for K-8. Free teams for participants.	Tony Morrow First in Math
Room 2315 Using Star Trek to Teach Math and Physics Demo <b>C MS,HS,C</b>	Math and physics concepts are presented in a new and engaging way using clips from the Star Trek movies and TV series.	Michael Blair Herbert Hoover HS Des Moines
Room 2333 Elementary Math Methods: Connecting Research to Field Experience Lecture <b>KB C,S,PS</b>	An elementary math methods project connecting a combination of topic and lesson study to field experience will be presented. The project guided preservice teachers in developing a deeper understanding of a specific concept in the CCSS.	Jennifer Pothast Wartburg College
Room 2345 What Should We Flip? Lecture <b>TI All not LE</b>	The flipped classroom has a wide variety of meanings and interpretations. We'll discuss problems with low-level implementation and strategies to meaningfully flip instruction.	Jerrid Kruse, Jesse Wilcox Drake University
Room 2349	Math Roundtable: Pre-Calculus/ Calculus/ Statistics	

# Session 2 9:25 A.M.-10:10 A.M.



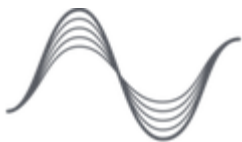
Room 2351 Opening Curriculum Spaces for Children's Mathematics Demo <b>KB LE,UE,MS</b>	In this session, we examine curriculum materials to identify curriculum spaces – spaces in curriculum materials that allow teachers to make connections to children's mathematical thinking.	Tonia J. Land Drake University
Room 2353 STEM Environmental Learning Activities Demo <b>C UE,MS,HS</b>	Attendees will understand how to develop a student's deeper understanding of the math/science standards while engaging students through kinesthetic and experiential learning with real-life activities.	Tim Harvey, Scott Wittler, Eric Hillman Southeast Polk CSD
Room 3415 Professional Development In Your Pajamas With MOOCs Hands On <b>TI UE,MS,HS</b>	The UNI Energy Education Massive Open Online Courses (MOOCs) let you "test drive" a course anytime, anywhere, and there is an option for graduate credit.	Patricia Higby University of Northern Iowa
Room 3417 From Tinkering to Learning: Using Engineering to Connect Math and Science Hands On <b>C LE,UE,PS</b>	Looking for a way to include STEM in your elementary classroom? This session will explore how to use engineering to connect math and science instruction.	Kristie Tank, Anne Estapa Iowa State University
Room 3419 Mentoring Students for Using Reading vs. Doing Reading in Science Hands On <b>KB HS</b>	Modeling of reading strategies for fostering comprehension of complex scientific texts and helping students use questioning for understanding texts.	Dawn Posekany, Melanie Miller, Jennifer Boldt Solon HS
<b>Room 3429</b> Promoting a Deeper Understanding of the Nature of Engineering and Science Hands On <b>KB MS,HS,PS</b>	This session presents an engineering design activity that highlights the nature of the engineering design process and its relation to the nature of science.	Jacob Pleasants Iowa State University
Room 3431 What Makes An Experiment An Experiment? Demo <b>KB HS.C.{S}</b>	Using a simple physics activity, we rigorously define the term "experiment" and provide a set of guidelines for turning canned laboratory exercises into full-blown experiments.	Christopher Spinler Iowa State University
Room 3433 Engineering Design: We Can Do That! Hands On <b>KB All</b>	Following a brief introduction of Engineering Design concepts and research, we will collaborate and creatively turn one of your labs into an Engineering Design lab.	Ken Turner University of Dubuque
Room 3435 Collaborative Activities Between CTE and Science Lecture <b>C HS</b>	Your school's Career and Technical Education Department (CTE) can be a great resource for expanding the learning opportunities for your science students.	Randy Farnum, Boyd Card Dubuque CSD
Room 3437 Environmental Issues Instruction: SOIL-The Earth Beneath My Feet Hands On <b>KB All</b>	The participants in this session will be actively engaged in math and science lesson ideas related to soil conservation education for students of all ages.	Barbara Ehlers, Julie Delaney, Jeff Monteith, Upper Iowa University

## Keynote 10:30 A.M.—12:00 in the Auditorium

Page Keeley and Cheryl Rose-Tobey

### What Do Students Really Think and Know About Scientific and Mathematical Ideas?

Students come to the science and mathematics classroom with preconceived ideas that come from their everyday experiences or their own interpretations of what is taught. These ideas make sense to them and are resistant to change unless teachers surface, understand, and use them to build a bridge between where students are in their thinking to where they need to be to achieve scientific and mathematical conceptual understanding. This session will explore the similarities between commonly held ideas in science and mathematics and the difference between science and mathematics teaching that emphasizes facts and procedures to teaching that supports conceptual change and understanding



# Keynote 10:30 A.M.—12:00

Thank-you to Rockwell Collins for helping bring us this presentation



**Page Keeley** is an internationally known leader in science education. She is the primary author of the *Uncovering Student Ideas Series* in Science and the *Formative Assessment- 75 Practical Strategies Linking Assessment, Instruction, and Learning* series (the "FACTs books"). With over 250 assessment probes and 138 FACTs, she continues to develop and publish assessment probes and strategies for science and mathematics educators.

Page "retired" from the Maine Mathematics and Science Alliance (MMSA) where she had been the Senior Science Program Director since 1996. Today she works as an independent consultant, speaker, and author providing professional development to school districts and organizations in the areas of science and mathematics formative assessment, understanding student thinking, teaching science for conceptual understanding, and designing effective instruction.

Prior to joining the Maine Mathematics and Science Alliance in 1996, Page taught middle and high school science for 15 years. At that time she was an active teacher leader at the state and national level, serving two terms as President of the Maine Science Teachers Association and NSTA District II Director and NSTA Executive Board member (prior to the Board and Council restructuring in 1997). She received the Presidential Award for Excellence in Secondary Science Teaching in 1992, the Milken National Distinguished Educator Award in 1993, and the AT&T Maine Governor's Fellow in 1994. Since leaving the classroom in 1996, her work in leadership and professional development has been nationally recognized. In 2008 she was elected the 63rd President of the National Science Teachers Association (NSTA), the world's largest organization of K-12, university, and informal science educators. In 2009 she received the National Staff Development Council's (now Learning Forward) Susan Loucks-Horsley Award for Leadership in Science and Mathematics Professional Development. In 2013 she received the Outstanding Leadership in Science Education award from the National Science Education Leadership Association (NSELA). She has served as an adjunct instructor at the University of Maine, was a Cohort 1 Fellow in the National Academy for Science and Mathematics Education Leadership, was a science literacy leader for the AAAS/ Project 2061 Professional Development Program, and serves on several national advisory boards.

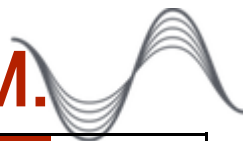
**Cheryl Rose Tobey** is the primary author of the *Uncovering Student Thinking in Mathematics* series and co-author of *Mathematics Formative Assessment- 75 Practical Strategies Linking Assessment, Instruction, and Learning*. She is a Senior Mathematics Associate at the Education Development Center (EDC) where she is the implementation director for the Pathways to Mathematics Achievement Study and is a mathematics specialist for the NSF-funded Formative Assessment in the Mathematics Classroom: Engaging Teachers and Students (FACETS) and Differentiated Professional Development: Building Mathematics Knowledge for Teaching Struggling Students (DPD) projects. She also serves as a project director for an Institute for Educational Science (IES) project, Eliciting Mathematics Misconceptions (EM2). Her work is primarily in the areas of formative assessment and professional development.

Prior to joining EDC, Tobey was the senior program director for mathematics at the Maine Mathematics and Science Alliance (MMSA), where she served as the co-principal investigator of the mathematics section of the NSF-funded Curriculum Topic Study, and principal investigator and project director of two Title IIa State Mathematics and Science Partnership projects. Prior to working on these projects, Tobey was the co-principal investigator and project director for MMSA's NSF-funded Local Systemic Change Initiative, Broadening Educational Access to Mathematics in Maine (BEAMM).

Rose Tobey was a fellow in Cohort 4 of the National Academy for Science and Mathematics Education Leadership. She is a frequent presenter at national conferences and consults with school districts in New England and nationally. Before joining MMSA in 2001 to begin working with teachers, Tobey was a high school and middle school mathematics educator for 10 years. She received her BS in secondary mathematics education from the University of Maine at Farmington and her MEd from City University in Seattle.

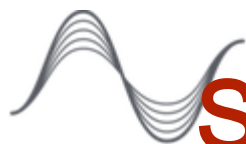


# Session 3 1:25 P.M.-2:10 P.M.



Room 1333 <b>Sessions 3,4 and 5</b> Workshop: Introduction to Statistical Investigations	The workshop will provide direct experience with hands-on activities designed to introduce students to fundamental concepts of inference using randomization-based methods. ALL AFTERNOON SESSION	Nathan Tintle Dordt College
Room 1506 <b>A</b>	Breakout Session— formative assessments	Cheryl Rose-Tobey
Room 3429 <b>A</b>	Breakout Session— formative assessments	Page Keeley
Room 1313 Using Engineering to Think About Technology Hands On <b>KB LE,UE,MS,HS,PS</b>	Engineering tasks cause students to think creatively and solve problems. Come see how to use such tasks to engage students in critical technological thinking.	Caleb Grulke, Neal Patel, Jerrid Kruse Drake University
Room 1314 Making Bloody Genetics Concepts Visible Demo <b>A HS</b>	Physical models are used extensively in science teaching. Richer learning happens when students are challenged to evaluate the models. Models for blood genetics will be shared.	Kim Kult North Polk HS
Room 1315 SBG: The Why, The How and Me? Demo <b>A MS,HS,C,S,PS</b>	What does standards-based grading look like in math and science classrooms? Perspectives from a former HS math teacher and a current PLTW/physics teacher.	Matt Townsley Solon Community Schools
Room 1318 Results From Flipping an Introductory Calculus Course Lecture <b>TI HS,C</b>	We report results from a study of the influence of a flipped Calculus I course on students' achievement and views of mathematics.	Milan Sherman Jerrid Kruse Drake University
Room 1320 Do You DESMOS? Math Tech Tool That Does It All! Computer Lab <b>TI MS,HS</b>	Get ready to ooh and aah at the wonder that is DESMOS, a free, online graphing calculator. Explore and discover patterns, practice and even create!	Rebecca Carton, Marty Beck Bettendorf HS
Room 1327 Argument-Based Strategies for STEM Infused Science Teaching - The ASSIST Approach Lecture <b>C All</b>	The ASSIST teaching approach combines argument-based strategies with purposeful infusion of math, technology, and engineering to improve science conceptual understanding.	Mark McDermott, Katie Graf, Mason Kuhn University of Iowa
Room 1341 Iowa Precalculus Advisory Council (IPAC): Who, What, and Why? Lecture <b>HS,C,S</b>	Information about the Iowa Precalculus Advisory Council (IPAC) and their current recommendations regarding precalculus will be shared.	Kathy Rogotzke North Iowa Area Community College
Room 1343 Independent Research Proven Blended Learning Approach	Are you looking for a solution to help increase student achievement? Learn about this blended learning approach in mathematics and see the amazing results!	Brian Peters Carnegie Learning
Room 1351 Educational Resources from Iowa Public Television Hands-On <b>KB</b>	Ms. Hiatt has experience as a teacher and understands the importance of free resources that engage students. Join her as she showcases thousands of resources that IPTV and PBS bring to the table. Bring your laptop and sign up for a resource that houses over 100,000 learning objects!	Angela Hiatt Educational Outreach Specialist Iowa Public Television
Room 2312 Elementary Math Fair Games Are -Elementary Hands On <b>KB LE,UE</b>	Participants in this workshop will experience and receive hands-on activities that emphasize meaningful learning in various elementary mathematical topics.	Brian Townsend University of Northern Iowa
Room 2311	Math Roundtable: Pre-K—2	
Room 2313	Math Roundtable: Pre-Algebra—Algebra I	
Room 2314 Everyone is Talking About Learning Management Systems Demo <b>TI UE,MS,HS,S</b>	See the State Wide Learning Management System which is free to all schools in Iowa and hear from a district using it.	Denise Krefting AEA PD Online

**More Session 3 on next page**

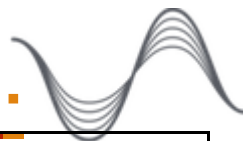


# Session 3 1:25 P.M.-2:10 P.M.

For a detailed listing of all sessions, visit [ictm-ists-conference.info](http://ictm-ists-conference.info)

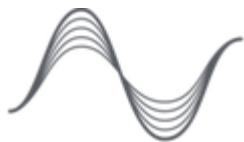
More Session 3 on previous page		
Room 2319 Assessment to Inform Instruction Demo <b>A UE,MS,PS</b>	Learn useful information about students' levels of mastery with regard to Iowa Core Standards, and how to use this information in planning differentiated instruction.	Melissa McAninch Central College
Room 2321 The Hierarchy of Missing Value Proportion Problems Hands On <b>KB UE,MS,S,PS</b>	The numbers in a missing-value proportion problem matter! By varying the complexity of the numbers, teachers can advance students' understanding of proportion.	Olof Steinhorsdottir, Suzanne Reihl, Rebecca Holzrichte University of Northern Iowa
Room 3421 Iowa Learning Online Demo <b>TI MS,HS</b>	Iowa Learning Online offers schools an opportunity to provide online high school course offerings to students without tuition charges.	Cale Roe Iowa Learning Online - Department of Education
Room 2333 Using the 5 Practices in the Early Childhood Classroom Lecture <b>KB LE</b>	5 Practices for Orchestrating Productive Mathematics Discussions in a kindergarten classroom. A video case study from an urban high-needs school drives this discussion-based, interactive session.	Elizabeth Hughes, Megan Balong, Michelle VanWinkie University of Northern Iowa
Room 3414 Teaching Science Through Inquiry In Everyday Instruction Demo <b>KB MS,HS,C</b>	Two activities that promote understanding of important physical science ideas will be presented, illustrating how teaching science through inquiry can be part of everyday instruction.	Michael Clough Iowa State University
Room 3415 Creating a Real-World Experience for All Students in STEM Hands On <b>C LE,UE,MS,HS</b>	What makes a real-world STEM experience? Participants will experience a hands-on STEM challenge and will receive resources supported by research and data.	Jordan Menning NW AEA
Room 3417 Deep Time Demo <b>KB UE,MS,PS</b>	Understanding the age of the earth and how we know is fundamental to understanding the changes in life on earth. Experiences and readings for 4th-8th grades.	Birgitta Meade North Winneshiek Luther College
Room 1345 FUNdamentals of Energy Educa- tion Hands-On <b>C UE,MS,HS</b>	Discover how the UNI Fabulous Resources for Energy Education program can help you feel more comfortable teaching about electrical circuits, energy, work, and power using simple kits you can buy, borrow, or build yourself. Participants will receive their choice of a model solar car or wind turbine kit used in the workshop.	Patricia Higby University of Northern Iowa Center for Energy and Environmental Education
Room 3431 STEM Innovator Hands On <b>C UE,MS,HS,PS</b>	STEM Innovator introduces K-12 teachers to a framework to integrate innovation and entrepreneurship into the STEM classroom. Participants will engage in a project-based activity and be provided resources to implement in their classroom.	Leslie Flynn, Dawn Bowlus University of Iowa
Room 3433 Exploring Decomposition Through Engineering Hands On <b>C UE</b>	Let's get ready to rot! Explore engineering extensions to units related to organisms and their environments, ecosystems, and decomposition.	Joanne Olson Iowa State University
Room 3435 Energy from Agriculture: Biofuels and More! Hands On <b>C MS,HS</b>	Iowa corn, soybeans and biomass produce 3.8 billion gallons of biofuels! Learn the science, technology & engineering behind converting these raw products to fuel!	Will Fett, Cindy Hall Iowa Agriculture Literacy Foundation
Room 3437 Not Just Another Stoichiometry Activity Hands On <b>KB HS,PS</b>	Helping students to understand the complexities of stoichiometric reasoning is often difficult. Facilitating a deeper understanding of molar ratios is a great start.	Andrea Lowe Iowa State University
Room 3439 A Closer Look at Muscles Hands On <b>TI MS,HS</b>	The human muscles of the arm are similar to chicken wings i.e. they work in pairs to provide movement. Dissection of the wing clearly shows this.	Robert Hall Adel-Desoto-Minburn

# Session 4 2:20 P.M.-3:05 P.M.



Room 1333 <b>Sessions 3,4 and 5</b> Workshop: Introduction to Statistical Investigations	The workshop will provide direct experience with hands-on activities designed to introduce students to fundamental concepts of inference using randomization-based methods. ALL AFTERNOON SESSION	Nathan Tintle Dordt College
Room 1311 Designing 21st Century Biorenewables Hands On <b>C MS,HS</b>	This session will explore cutting-edge research in biorenewable fuels and chemicals and will share activities and lab ideas for use in middle and high school science classrooms.	Eric Hall Iowa EPSCoR & the Center for Biorenewable Chemicals
Room 1315 Blast Off With Model Rockets: Motion and Energy Hands On <b>C MS,HS</b>	Teachers will learn affordable ways to use rocketry to teach Newton's Laws of Motion as well as Potential and Kinetic Energies.	DeEtta Andersen Center Point Urbana HS
Room 1318 Add Contest Problems to Your Repertoire for Teaching Area Gr 6-8 Hands On <b>KB MS</b>	Contest problems offer variety to lead your students through area concepts. Work a dozen area contest gems. Leave with 68 problems and sources for more.	Dennis Mulhearn Valley Stream South HS, Valley Stream NY
Room 1320 iNeuron: Teaching Neuroscience with Games Computer Lab <b>TI</b>	iNeuron® is a serious neuroscience game that promotes inquiry-based, active learning and group collaboration. We will play iNeuron and explore effective classroom strategies for making neuroscience fun and accessible. Mobile devices provided, or BYOD (Apple only).	Adam Gordon Andamio Games
Room 1329 What in the World is Plum Pudding? Hands On <b>KB MS,HS</b>	Various atomic models from history are explored using inquiry to provide students with concrete representations of each while incorporating the nature of science.	Amanda Ohge, Marinda Gacke Norwalk HS
Room 1339 The Magical Number 5 and Pythagorean Triples Lecture <b>KB MS,HS,C,PS</b>	Finding Pythagorean Triples and why the number 5 is in the triples.	Marvin Gamble University of South Dakota
Room 1343 Integrating Technology Into the Mathematics Classroom Demo <b>TI</b>	Do you desire to have a blended classroom? Carnegie resources support a combination of whole class, small group, and individual learning utilizing both Carnegie Learning textbooks and web-based software.	Brian Peters Carnegie Learning
Room 1353 Using the Area Model as a Strategy for Multiplying, Factoring, Completing the Square and Dividing Hands-On <b>KB</b>	The AREA model can be the foundation model for any multiplication. Participants will be actively engaged in using algebra tiles and the area model to multiply and factor polynomials, complete the square and polynomial division. The important part is transitioning from the concrete (manipulative) to the abstract (paper and pencil).	Bob Petersen CPM Educational Program
Room 2315 A Delicious Approach to Math Instruction Hands On <b>KB MS,HS</b>	Teachers are always on the lookout for new ideas and activities for their classrooms. Professional journals are one way to find these ideas and activities. re: Oreo Double Stuffed	Tracy Wingert, Le Mars CSD Mike Baker Akron-Westfield CSD
Room 2339 Digital Citizenship, Math, and Instructional Design Lecture <b>C UE,MS</b>	ISTE Essential Elements of Digital Citizenship Standards and CCSS for 6th grade math come together in a Design to create an engaging lesson.	Ricardo Martinez Iowa State University
Room 2343	Math Roundtable: Grades 3—5	
Room 2345 Algebra is for Little Fingers Too! Demo <b>KB LE</b>	What could algebra feel like in elementary students' hands? Can they identify patterns? Create and use symbols? How might we teachers "algebrafy" activities?	Teresa Finken Mathematics Educator
Room 2349 Transforming the Task With Number Choice Lecture <b>KB LE,UE</b>	Learn about number choice and how purposeful number choice can help your students become confident and successful mathematicians.	Molly Sweeney, Tonia Land Downtown School/ Des Moines
Room 2353 Transforming Geometry Instruction Hands On <b>KB UE,MS,HS</b>	To effectively implement IC Geometry Standards, teachers need to become familiar with the content shifts in MS and experience those shifts through activity based learning.	Susan Parker Grant Wood AEA

**More Session 4 on next page**



# Session 4 2:20 P.M.-3:05 P.M.

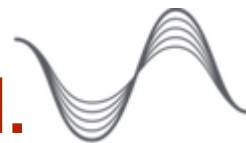
More Session 4 on previous page		
Room 3414 The Science and Technology of Hog Confinement Buildings Lecture <b>C MS,HS,C,S</b>	The science and technology of hog confinement buildings and their unintended human health and environmental damage will be discussed.	Robert Watson Decorah , IA
Room 3415 Planning STEM Activity Events Hands On <b>C All</b>	Are you considering a STEM event at your school? Participants will receive activity ideas and planning tips and tools to help plan a successful event!	Jennifer Benson, Debra Stork University of Dubuque
Room 3419 Can Students Save a Species? Hands On <b>C LE,UE,MS,HS,C</b>	With the decline of Monarch Butterflies by 90%, all students can take an active role in the recovery, sustainability and monitoring of this potential endangered species.	Ron DeArmond Pella Wildlife Company
Room 3431 Partner With UNI To Do Solar Energy Research Hands On <b>C UE,MS,HS</b>	Use the UNI PV array to research solar energy! Students write the research proposal, we adjust the panels, and the production/weather data are viewed online.	Patricia Higby, Lisa Chizek University of Northern Iowa
Room 3433 Integrating Inquiry Into a Laboratory Activity Hands On <b>KB MS,HS</b>	The focus of our presentation is to provide strategies for teachers to incorporate inquiry into their current laboratory activities.	Haley Davis, Michelle Williams, Olivia Palmer, Sam Edster Des Moines Public Schools
Room 3435 Supporting Iowa's Science Teachers to Address Cross Cutting Concepts in the NGSS Lecture <b>C HS</b>	UNI Science Education is providing PD to help science teachers integrate crosscutting concepts within the NGSS with the development of coherent science units. Come learn about the program and units.	Dawn Del Carlo, Larry Escalada, Sarah Boesdrofer University of Northern Iowa
Room 3437 Friction Is a Drag - Restructuring Science Activities to Model Inquiry-Based Learning Hand On <b>KB MS,HS,PS</b>	This hands-on physics workshop will model how effective questioning and minds-on learning can transform activities to better align with inquiry-based NGSS standards.	Eric Anderson, Nicholas Lachen Carlisle HS

# Session 5 3:15 P.M.-4:00 P.M.

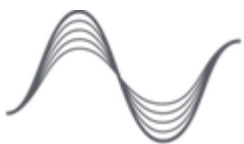
Room 1333 <b>Sessions 3,4 and 5</b> Workshop: Introduction to Statistical Investigations	The workshop will provide direct experience with hands-on activities designed to introduce students to fundamental concepts of inference using randomization-based methods. ALL AFTERNOON SESSION	Nathan Tintle Dordt College
Room 1313 Real World Externships Lecture <b>C MS,HS</b>	Ever wonder how what you teach in the classroom is applied in business/ industry worlds? Learn about how you can find out through paid summer experiences!	Jason Lang I owa Governor's STEM Advisory Council
Room 1314 Modeling Mendel Hands On <b>KB MS,HS,PS</b>	Mendel was trying to solve a puzzle, so we created a puzzle for students to solve. Come learn to help students learn genetics through puzzle-solving.	Kayla Brauer, Jerrid Kruse Johnston Community
Room 1320 QR Code Hunt Hands On <b>TI LE,UE,MS,HS,PS</b>	See how QR codes can engage students, incorporate problem solving and increase understanding of curriculum.	Debra Stork, Jennifer Benson University of Dubuque
Room 1327 Creating a Habit of Productive Classroom Discussion Hands On <b>KB UE,MS,HS</b>	Learn some techniques to instill productive discussion in your classroom from questioning to student accountability.	Kathryn Borton Nevada Community Schools
Room 1343 Explore Learning Reflex Demo <b>TI</b>	A Technology Solution for Math Fact Fluency	Peter Romando ExploreLearning



# Session 5 3:15 P.M.-4:00 P.M.



Room 1351 Dig Into Feeding the World with Soil Hands-On <b>KB</b>	In this workshop for grades 3-5, attendees will try out several hands-on soil activities, plus come away with an armload of free lessons, posters and more from the Nutrients for Life Foundation.	Debra Kearney Nutrients for Life Foundation
Room 1506 Student Personalized Learning with Math and Science Content Demo <b>TI LE,UE,MS,HS,S</b>	The AEA K-12 Online Student Personalized Learning System offers a way to deliver math and science instruction inside or outside of the face-to-face classroom.	Denise Krefting AEA PD Online
Room 2312 Modeling Dynamic Concepts in Science and Mathematics Hands On <b>TI LE,UE,MS,HS,PS</b>	A pedagogical approach for developing models for dynamic concepts in science and mathematics using computational thinking. Teachers will design models relevant to their own curriculum.	Les Miller Iowa State University
Room 2313 Building a Math Framework Hands On <b>LE,UE,MS</b>	Based on the Principles to Actions: Ensuring Mathematical Success for All, we have been working with an elementary school to develop a Math Framework.	Vickie Borich John Butz Heartland AEA
Room 2315 Year 2 of Turning Our Classes Upside Down Lecture <b>TI MS,HS,S,PS</b>	Mike and Tracy will tell the tale of their journeys into flipping their classrooms.	Mike Baker, Akron-Westfield CSD Tracy Wingert LeMars CSD
Room 2319 Math/Science Integration for Earth's Sake Hands On <b>C MS</b>	Combine your math and science lessons with these engaging, hands-on activities that build computational and measurement skills while teaching about ecosystems and our ecological footprints.	Drew Grover Population Connection, Washington, D.C.
Room 2321 Writing Proficiency Scales Hands On <b>A MS,HS,PS</b>	Participants will learn how to write proficiency scales for standards and will spend time writing their own proficiency scales.	Erin Marshall Central City CSD
Room 2311	Math Roundtable: Geometry	
Room 3421	Math Roundtable: Grades 6—8	Rob Keller
Room 2333 Iowa Association of Mathematics Teacher Educators Lecture <b>C,S</b>	Come meet other mathematics teacher educators in the state and find out more about Iowa AMTE	Elizabeth Hughes University of Northern Iowa
Room 3414 Using STEM Career Conferences to Expand STEM Career Choices for Students Lecture <b>C HS</b>	UNI Science Education in collaboration with community colleges is providing STEM Career Conferences for teams of Iowa high school STEM teachers and counselors. Come learn about the conferences.	Beth Thompson University of Northern Iowa Science Education
Room 3417 Creature in the Classroom Lecture <b>C LE,S</b>	Overview of a nature study that took place in a preschool classroom, using the Young Investigators: Project Approach for Young Learners.	Megan Moser Gilmore City- Bradgate Elementary
Room 3429 STEM In The Primary Grades: Addressing Force and Motion and Spatial Thinking Hands On <b>C LE,S,PS</b>	STEM starts early. Bring your administrator and learn how young children can engage in the practice of science and engineering and construct concepts in science and spatial thinking in mathematics.	Beth Van Meeteren, EdD University of Northern Iowa
Room 3431 Interactive Notebooks in Science Lecture <b>KB UE,MS,HS</b>	This isn't your ordinary science journal! Come see how you can use interactive notebooks to help your students become more organized, make connections, and reflect on their learning.	Valerie Jaehrling Charles City High School
Room 3439 Teaching for Transfer: Fostering Math & Science Collaboration Hands On <b>C MS,HS,C,PS</b>	Coordinating lessons between science and math can help students learn to apply math skills and knowledge to answer scientific questions. Participants will collect and analyze density data in this hands-on session to discuss strategies for teaching for transfer.	Tami Plein Great Prairie AEA

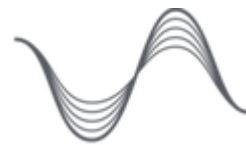


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## The Iowa Academy of Science

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

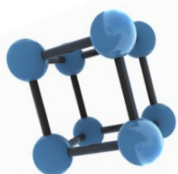
Your IAS Membership includes membership to the Iowa Science Teaching Section and up to three additional sections of the Academy.

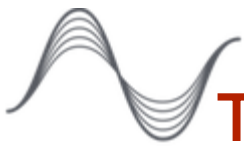
Join us in our mission to further scientific research, science education, public understanding of science and to recognize excellence in these endeavors.

Join the Academy today!

Visit our booth in the exhibit hall or visit us online:

[www.iacad.org](http://www.iacad.org)





# 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.



## Iowa 2013 Winners

### Allysen Lovstuen

*Decorah High School*

Decorah , Iowa

7-12 Mathematics

### Brian Reece

*Central Academy*

Des Moines , Iowa

7-12 Mathematics

## 2015 Finalists for Iowa

### Mathematics

#### Curtis Martinek

Gilbert High School,

Gilbert

#### Richard Brooks

Johnston High School,

Johnston

### Science

#### Alicia Schiller

Central Lee High School,

Donnellson

#### Lynnetta Bleeker

Parkview Middle School,

Ankeny

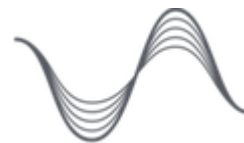
#### Shannon McLaughlin

Norwalk High School,

Norwalk

# ICTM AWARDS

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of

## State Friend

**Mathematics Award** The State Friend of Mathematics Award honors an individual who has made significant contributions to mathematics education in the state of Iowa. Regional Directors are responsible for submitting the names of potential nominees. These names are presented at the June Executive Board meeting. The Executive Board is responsible for nominating and awarding the State Friend of Mathematics through a vote. The State Friend of Mathematics Award is presented at the ICTM Annual Conference. Awardees are given a wooden plaque with a metal plate inscribed with the ICTM logo and the name of the recipient.

**Lifetime Achievement Award** The Lifetime Achievement Award honors an individual who has made significant contributions to mathematics education during her or his lifetime. ICTM Executive Board members nominate individuals for this award. The recipient is determined by vote during the Executive Board meeting. The Lifetime Achievement Award is presented to the recipient at the ICTM Annual Conference. The recipient of the award receives a wooden plaque with a metal plate inscribed with the ICTM logo and the name of the recipient.

**Conference Grant** ICTM offers two grants each year of up to \$800 each to encourage and support a certified mathematics teacher in attending an NCTM regional or national conference.

**Curriculum Grant** ICTM offers three grants of up to \$500 each year to encourage and support the efforts of individual or teams of certified mathematics teaching staff in the development and implementation of innovative teaching strategies or projects in the field of mathematics.

**Advanced Tuition Grant** ICTM offers two grants of up to \$500 each to support an ICTM member who is pursuing education related to mathematics education and/or mathematics teaching.

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## 2015 ICTM AWARDS

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### Lifetime Achievement Award

Sue Runyon

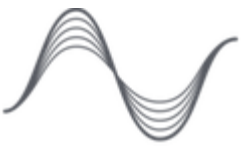
### ICTM Grant winners

Curriculum Grant: Krys Pate

Extracurricular grants : Judy Miller and Rose Jennings

Conference grant: Marcey Norland.





# 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.

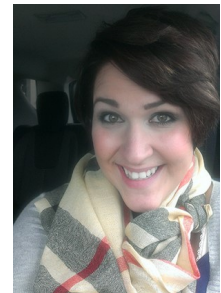
**The Friend of Science (FOS) Award – Corporate** – ISTS recognizes with a plaque a corporation, company, coalition, foundation or government entity who has made significant contributions to ISTS and/or to science education at the local, regional or statewide level.

**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)
- Science Supervisory - (District, private, AEA, museum, naturalist, etc.)

## 2015 Excellence in Science Teaching Award



Kathryn Borton  
Nevada Middle School  
Middle/Junior High Science

Left to right : DeEtta Anderson ,General/Multiple Science, Center Point H.S.; Thad Sheldon, Life Science, City High, Iowa City; Collin Reichert, Physical Science, Ames H.S.;Maureen Griffin, Science Supervisory, Des Moines

## Fellows of the Iowa Academy of Science

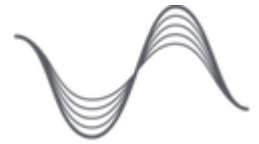


A Fellow is elected by the Board of Directors from those members who have provided meritorious service to the Academy and effective promotion of science in Iowa. Fellows remain as long as they maintain membership. This is an honor with the same privileges and responsibilities as a Professional Member. 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](mailto:iascience@uni.edu).

# 2015 Friend of Science Awards



**Doreen Hayek** has a long history of working with various aspects of integrating STEM education into the PreK-12 and higher education classroom. Currently she directs the NCLB Title II grant-funded IMPACT program - in which K-12 STEM teachers work with UNI science faculty and math consultants. A ten year program, IMPACT teaches how to change teaching strategies to get students more involved with their learning. Doreen directs another program, the Spotlight on STEM Day - a day when K-12 teachers take their students to UNI to showcase their STEM work from the classroom. The participating teachers are encouraged to let their students prepare for and actually present at the STEM Gallery, and the Spotlight Presentations - 2 aspects of the Spotlight Day.

Many students report the Spotlight Day is the highlight of their school year! They are able to present their STEM classwork to UNI teacher education faculty and students along with nearby PreK-12 administrators. The Spotlight Day has been going on at UNI since 2000.

Doreen serves as a Manager and Director of the Iowa Educational Technology and Training Institute (IETTI), founded by an appropriation by the Iowa legislator in 1996 to ensure that each educator in the state of Iowa had the opportunity to become competent in the use of educational technology and be able to integrate it into his or her teaching, administrative duties, and into the learning of their students.

IETTI serves as the umbrella for many STEM projects. Projects such as: the 21st Century Learning Infrastructure Initiative designed to support life-long learning with a combination of a digital library and virtual open campus for all learners and institutions; the Technology Leadership Visions program developed to help Iowa's PreK-12 administrators create a new vision of technology in the learning environment; the federal PT3 InTime (Integrating New Technologies Into the Methods of Education) project. Doreen also directed UNILinks, a pilot project to design an Internet organizing service for middle school science teachers in Iowa. Doreen directed the Teacher Technology Network, a state-wide technology initiative with the U S WEST Foundation that gave laptops to 400 PreK-12 teachers and technology training to 4,400 PreK-12 Iowa teachers. The second phase of the project included the instruction of teams of educators to create WWW-based curriculum for their classrooms.

Doreen also collaborated with colleagues at sister universities in Russia in planning and delivering seminars and workshops related to strategic and information technology planning and the effective use of technology to support teaching and learning. Doreen was involved as a Project Mentor and Grant Reviewer for the national Hewlett-Packard's (HP) Technology for Teaching technology integration project, a collaboration with HP, ISTE (International Society for Technology in Education) and PreK-12 teachers.

Doreen Hayek is clearly a logical choice for the ISTS 2015 Individual Friend of Science Award.



## THE WORLD FOOD PRIZE YOUTH PROGRAMS

**The World Food Prize Foundation's Youth Programs**, first initiated by John Ruan and Dr. Norman Borlaug in 1994, have become the "crown jewel" of the Iowa educational experience and are widely recognized as the only youth programs of their kind in the United States and globally.

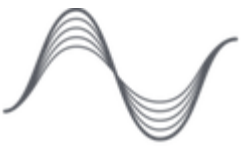
The **Iowa Youth Institute** is widely recognized as a national model for STEM education, reaching and inspiring students across Iowa to research critical global issues and explore academic and career paths in STEM fields. Since its inauguration in 2012, over 800 Borlaug Scholars have participated in this daylong event.

Since its inception, over 1,140 Iowa students and 200 teachers from 150 high schools across the state have participated in the three-day **Global Youth Institute**. In addition to hearing speakers address the issues associated with the future role of agriculture in global development, the Global Youth Institute participants also tour Iowa's cutting-edge industrial and research facilities; take part in a Hunger Banquet designed to highlight the disparities around the globe in access to food; and participate in a day-long program held at Dupont Pioneer's Carver Center in Johnston, during which they present their own research papers to a "faculty" made up of World Food Prize Laureates and other international experts.

To date, 250 students from across the U.S. have completed the **Borlaug-Ruan Internship** at 32 research sites in 20 countries in Africa, Asia, Latin America and the Middle East, during which they worked alongside renowned scientists at leading international research centers.

With the generous support of Mr. Clay Mathile and a commitment of up to \$2 million from the Mathile Institute, the World Food Prize Foundation has initiated a national expansion of the youth programs. To date, 12 states have established State Youth Institutes while the reach and impact of these exceptional programs continues to grow rapidly. By the year 2017, 26 states are expected to have established State Youth Institutes.

The World Food Prize Foundation's Youth Programs are administered by Lisa Fleming, Director of Global Programs, Keegan Kautzky and Libby Crimmings, the Directors of National Education Programs, and Jacob Hunter, Director of Iowa and Midwest Education Programs. The World Food Prize Foundation's Youth Programs are an obvious selection for the 2015 ISTS Friend of Science Award.



## 2015 Friend of Science Award—Corporate



For 42 years, **Indian Creek Nature Center (ICNC)** has served as a center of environmental education, land preservation and restoration, and sustainability leadership. As Iowa's first nonprofit nature center, the organization continually challenges itself to "raise the bar" and serve as a leader in education and sustainability for the community it serves. The Nature Center's outdoor environments make it the ideal learning laboratory, for children and adults alike. The importance of spending time in nature is becoming clearer as new research

emerges. Learning in an outdoor environment engages critical thinking skills, promotes physical activity, improves concept understanding and retention, and even improves mental health. Indian Creek Nature Center uses the "world's best classroom" to full advantage.

ICNC has consistently provided education for broad audiences, from summer camps and field trips for preschool and elementary children, to dynamic public programs for people of all ages to discover the wonders of nature. Through the years, Nature Center educational staff has developed a strong relationship with area school districts, creating programming to fit into curriculums, and reinforcing the science and math concepts that children are learning in their school classroom. To continue to meet the needs of all educators, ICNC is now embracing the New Generation Science.

Over the years, Indian Creek Nature Center has received many awards recognizing excellence in science education, conservation, restoration, and sustainability, including: the Iowa Governor's Environmental Excellence Award, the Society for Ecological Restoration's Project Facilitation Award, the Mutual of Omaha Wildlife Heritage Trust Award of Excellence for preschool programming, the Iowa Department of Natural Resources' Energy Leadership award, and more.

Both formal and informal research at the Nature Center, have yielded exciting findings. ICNC has been a site for research on nitrogen air quality, water percolation in healthy woodlands, carbon uptake in prairie grasses, the chemical content of milkweed and how it affects monarchs, and a legume-nitrogen study. The Nature Center is the first location where a new fly species was discovered on native sunflowers, is the only location in Iowa, where a particular species of wasp is found, and just this year is the place where a rare butterfly species was identified in our onsite woodlands.

Education has always been, and will remain, at the core of the Nature Center's mission. The organization broke ground in July of 2015 on a new building and campus called *Amazing Space* that will greatly enhance the Center's ability to provide exceptional educational programs that are accessible to the entire community. Dedicated classroom spaces, better access to outdoor environments, and an environmentally sustainable building will bring the Nature Center into the future.

While Indian Creek Nature Center prides itself on its formal educational programs for people of all ages, it also recognizes that learning happens every time someone sets foot on the trails, in the prairie, and in the woods. Simply providing an accessible natural environment and network of trails for nature recreation stimulates curiosity and learning. Ultimately, the Nature Center's goal is to connect people to nature and create the next generation of nature "champions". This will ensure that our future is in good hands.

## 2015 Outstanding Service Award



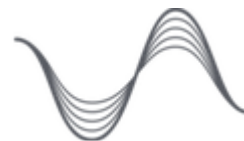
**Yvette McCulley** began her educational career as a classroom teacher and continued in that role for thirty years. During her tenure as an Iowa educator, she presented at many state and national science (and STEM) conferences and workshops. She worked as a building level administrator for the next seven years followed by eight years as the Science Consultant at the Iowa Department of Education. She headed the Iowa PAEMST program. She retired from education in April 2015 and has recently moved to Medford, Oregon.

In 2005, Dr. McCulley spent two months in Antarctica and delivered "real-time" video-conferencing with King Science and Technology Magnet Center students in Omaha, Nebraska, while working with arctic scientists in the field. She led an Iowa-based team in refining the development of the Next Generation Science Standards. She co-edited the *STEM Roadmap for Iowa*. During this time, Yvette created a team of science professionals to build capacity for improved science education for Iowa students.

Yvette, herself, is a recipient of the Presidential Award for Excellence in Math and Science Teaching. This past May, she was also awarded the Lifetime Achievement Award from the *Science Center of Iowa*. As you can see, Yvette McCulley is an obvious choice as a recipient of the ISTS Award for Outstanding Service.



## 2015 Friend of Science Award—Corporate



### The Iowa Limestone Producers Association

and its members have recognized the importance of giving back to the community, since its beginning in 1945. Much of this is accomplished through their Public Relations and Education Committee.



## IOWA LIMESTONE PRODUCERS ASSOCIATION

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This committee developed the *Geology of Iowa for Teachers* course. Working with Dr. Jim Walters and others through the University of Northern Iowa's Earth Science Department, the first class was held in the summer of 2002. The program continued in the same basic format through June of 2011. During those years, ILPA members invested in excess of \$130,000 to cover the cost of tuition, rock hammers, magnifiers, safety equipment, room and board, and transportation and course instructor salaries.

In 2002, the National Stone Sand and Gravel Association recognized the *Geology of Iowa Teachers* course with a Community Relations award. Beginning in 2011, the class was restructured to become the *"Explore Iowa Geology Workshop"* a condensed version of the *Geology of Iowa for Teachers* course which incorporates both field work and on-line instruction. Now under the direction of Dr. Chad Heinzl, this course is on-going.

Through these two programs over 250 Iowa teachers have had the opportunity to experience, firsthand, Iowa's rich geological history.

In addition to the University of Iowa programs, ILPA joined with other construction related associations to sponsor a landscape architecture course at Iowa State University. This program, titled *"Developing a Rock Solid Future"* was developed to help Iowa's teachers understand the construction industry as it relates to current environmental, land use, and land ethic issues. This course began in 2001 and continued through 2012.

Since 2010, ILPA has helped sponsor the very popular RAGBRAI Trip logs. The Trip Logs are series of seven brochures created and distributed by the Iowa Geological Survey, The United States Geological Survey, The IIHR and the DNR. They provide RAGBRAI riders a map of the topography and significant geological points of interest they will pass each day along the ride.

For these reasons, you can see, the Iowa Limestone Producers Association is an excellent choice as a recipient of the 2015 ISTS Friend of Science Award.

## 2015 Outstanding Service Award

**De Anna Tibben** is in her 22<sup>nd</sup> year of teaching and currently teaches Earth & Space Science at Ames High School. She earned her BA in Earth Science Teaching and her MA in Science Education from the University of Northern Iowa. De Anna is the proud mother of Jakob, 16, and Abigail, 13. She has been married to her husband, Brad, for 24 years from whom she draws great support.

De Anna has been an IAS-ISTS member since 2005. After attending the Fall Conference in 2004, she decided to become a member and to serve as the Interest Area Chair - Earth Science. She was in this position until 2007 when she was asked to run as ISTS Chair-elect. De Anna served as ISTS Chair not only in 2009, but again in 2012. She was the first person "crazy enough" to serve multiple terms! One of her most memorable years would be when she served as the 2010 Fall Conference Chair. Who would ever have imagined that "a little rain" in August could cause such havoc into October, when Ames (and the Conference venue) were flooded out, forcing a relocation elsewhere in Ames! In 2012 De Anna reached out to Sue Runyon, Iowa Coalition of Teachers of Mathematics (ICTM) Chair and proposed a joint conference. ISTS & ICTM held their first joint conference in October 2013. De Anna continues to help current leadership with Fall Conference planning as the Facilities Coordinator.

Mrs. Tibben is currently serving on the IAS Board of Directors. She has served on the Membership Committee and is currently the Board liaison for the Student Programs Committee. She has been a Fall Conference Presenter multiple years.

De Anna has been the Ames High IJAS School Membership Sponsor since 2010. She has brought students to the IAS Annual meeting as both competitors and observers. She feels very strongly about encouraging the youth of Iowa in STEM events, activities, lessons, and opportunities. De Anna would argue that STEAM, adding the arts to the mix, enhances these experiences for her students. De Anna served as the AJAS Chaperone in 2012, 2013, & 2014. In her words, "it is truly amazing the opportunities that IAS and IJAS can provide to Iowa high school students!"

De Anna serves on the UNI Earth Science Department Advisory Board. In 2010, she received the National Association of Geoscience Teachers Outstanding Earth Science Teacher Award for Iowa, and for the *Central Section* of the NAGT. Additionally, she has been recognized as the Ames Morning Rotary Club Teacher of the Year for 2014. De Anna states that her greatest "awards" are the letters she receives from former students, who let her know how they are doing, where they are, and offer words of thanks for the encouragement she gave them while they were in her class.

Clearly, Mrs. De Anna Tibben, is a worthy recipient of the ISTS 2015 Outstanding Service Award.



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<p>Megan Balong</p>	<p><a href="http://www.iowamath.org">http://www.iowamath.org</a></p>	
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<p>Jeffrey Weld</p>	<p><a href="mailto:info@iowaSTEM.gov">info@iowaSTEM.gov</a></p>	
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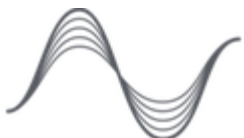


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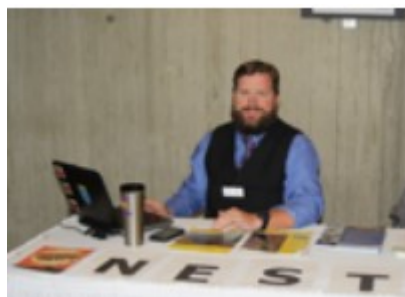
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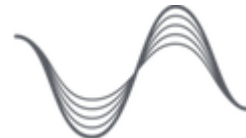
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