ICTM-ISTS

Examining the STEM Landscape

Presented by

Iowa Council of Teachers of Mathematics

and the

Iowa Academy of Science

Iowa Science Teaching Section

Valley High School, West Des Moines, Iowa

October 9-10, 2016

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Welcome to the Iowa Council of Teachers of Mathematics and Iowa Academy of Science —Iowa Science Teaching Section 2016 Fall Conference

Table of Contents

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

Don't forget to follow ICTM and ISTS:

@iowamathteach @iowasciteachers www.iowamath.org www.scienceiniowa.org

More detailed descriptions are found at ictm-ists-conference.org

#IctmIsts16

Sunday Evening October 9, 2016
ICTM Pre-Conference Event
for Pre-service and New Teachers

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 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
5:45 p.m. to 9:15 p.m.

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

Join today!

Sunday October 9, 2016

A Workshop for New & Pre-service Teachers

LEARNING SCIENCE IN 3 DIMENSIONS

Noon to 5pm

Workshop is designed for pre-service, 1st and 2nd year science teachers-
FREE – attend this workshop at no cost

SCIENCE CENTER OF IOWA & BLANK IMAX® DOME THEATER

Sponsored by the Iowa Science Teaching Section of the Iowa Academy of Science & SCIowa. Join us for an afternoon of learning, building your practice and meeting other teachers new to the profession. Our workshop will include **raffle prizes**, **giveaways** and **opportunities to collaborate** with and **learn** from experienced science educators.

Held at the Science Center of Iowa in Des Moines

ISTS Pre-Conference Events

6:00 p.m. — 9:00 p.m.

Panel Discussion

"What Does NGSS/Standards Implementation Look Like for Me?"

Kris Kilibarda (Iowa DOE Science Consultant), Jeffrey Weld (Exec. Dir. of the Governor's STEM Council) and Melissa Greene (a physical and life science teacher at Belmond-Klemme High School). The 3 panelists will each bring a different perspective to the conversation; audience Q&A will be part of the discussion

Best Practices Workshop

Brought to you by the 2015 & 2016 PAEMST candidates

Chair's reception

Hors d'oeurvres and dessert with tea, water and a cash bar
Founders Hall

Science Center of Iowa

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

Monday Opportunities

October 10, 2016

7:30-8:15	Registration
8:15-9:00	Session 1
9:15-10:00	Session 2
10:15-11:00	Exhibitor Time for ISTS
10:15-10:30	ICTM Awards
10:30-11:30	**ICTM Keynote**
11:30-12:00	Q/A Session
11:15-12:00	Session 3
12:00-1:00	Exhibits and Lunch(12:30)
1:00-1:15	ISTS Awards / Exhibitor Time for ICTM
1:15-2:15	**ISTS Keynote**
1:15-2:00	Session 4
2:00-2:30	Exhibitor Time for ICTM
2:30-3:15	Session 5
3:30-4:15	Session 6

Exhibit Hall in the gymnasium

Monday 7:30 a.m.—4:30 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

Teacher Leadership and Personal Growth	Ldrp
Math and Science Connections	Cnct
Technology Integration in Math and Science	Tech
Standards in the Classroom	Std
Standards in the Classroom: Lesson Ideas	SL
Standards in the Classroom: Assessment	SA
Standards in the Classroom: Resources	SR
Standards in the Classroom: Implementation	SI

Lower Elementary	LE	Upper Elementary	UE
Middle School	MS	High School	HS
College	C	Pre-Service Teachers	PS
All (General)	All	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.

EXPLANATION OF AWARDS: Many of our presenters are award winners. Look for the following designations: More information is on pages

PAEMST : Presidential Award for Excellence in Mathematics and Science Teaching

ESTA : Iowa Academy of Science Excellence in Science Teaching Award

ISTS OSA: IAS Iowa Science Teaching Section Outstanding Service Award

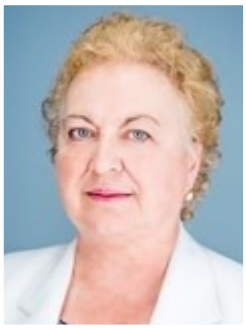
ICTM LA: Iowa Council of Teachers of Mathematics Lifetime Achievement Award

Times and rooms for individual breakout sessions in this program are subject to change.
For a detailed listing of all sessions, visit http://www.ictm-ists-conference.org/

ISTS Keynote

Dr. Juliana Texley

National Science Teachers Association President (2014-2015)



Connecting, Communicating, Creating

Science isn't an end in itself, but a way of knowing the world that empowers a person to find solutions to problems. It begins with curiosity and is fed by connections. When we look at the practices of science in NGSS, it's easy to see those connections. Perhaps most importantly, learning core skills within the context of scientific explorations is more effective and efficient!

[NGSS] PRACTICES MAKE PERFECT…paths to science AND to literacy

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Science? Mathematics? Literacy? All of the above, of course.

This new vision of science has encouraged educators to take a new look at how we choose and use science literature within a STEM curriculum.

The best trade books are active and encourage active reading
The best trade books are addictive: They lead to more exploration.
The best trade books lead from and to real world experiences.

And most importantly, the best trade books are fun! A positive view of the problems we need to solve—both near and far—leads to deeper scientific understanding.

The same is true of mathematics—no longer an abstract tool, but an intrinsic part of the way today's student of science sees the world:

Even the youngest child is encouraged to find patterns, to measure, to connect
The sciences that we often taught in a qualitative way are now described in quantitative terms, even at the earliest level.

Intimidating? Only if you imagine yourself incorporating these new paradigms alone. Fortunately, you have a lot of help from your friends—the teachers across the hall, with whom you have many opportunities to collaborate, and the teachers across the state and country.

Dr. Juliana Texley has written or co-authored a large number of NSTA journal articles and publications including *Pathways to the Science Standards* (1996) for which she received the EdPress Award for outstanding publication. Dr. Texley is currently an adjunct professor at Lesley University, Palm Beach Community College, and Central Michigan University. She lists herself as a designer of unique hybrid educational and travel experiences.

She is a 1984 recipient of the Presidential Award for Science Teaching, and is a fellow of the American Association for the Advancement of Science. In addition to her work with NSTA, Dr. Texley has served on the board of the Association of Presidential Awardees in Science Teaching, (15 years), and has served on the board of directors for the Biological Sciences Curriculum Study (BSCS) and the Metropolitan Detroit Science Teachers Association (MDSTA).

http://www.lesley.edu/faculty/juliana-texley/ accessed June 26, 2016

ICTM Keynote

Dr. Matthew R. Larson

President of the National Council of Teachers of Mathematics

Matt's talk will be primarily concerning the Iowa Core [Common Core] and how it is re-shaping our content and expectations.

Dr. Matthew R. Larson began his career in education as a high school mathematics teacher and served as a member of the leadership team for the National Science Foundation Math and Science Partnership project Math in the Middle at the University of Nebraska–Lincoln. Larson's long history of service within NCTM includes chairing the Research Committee, serving for three years on the Board of Directors, serving for two years on the Executive Committee, and chairing the Budget and Finance Committee. He has contributed extensively to NCTM journals and books. His two-year term as NCTM president began in April, 2016.

Dr. Larson is a frequent speaker before mathematics education audiences, and he has authored or co-authored several books, including a series on professional learning communities and Common Core Mathematics. He is co-author of *Balancing the Equation: A Guide to School Mathematics for Educators and Parents,* and he was on the writing team of *Principles to Actions: Ensuring Mathematical Success for All* (NCTM, 2014). Larson has taught mathematics at the elementary through college level and has held an appointment as an honorary visiting associate professor at Teachers College, Columbia University. In 1994 he was recognized for his teaching accomplishments with a U.S. West Outstanding Teacher Award.

http://www.nctm.org/About/President,-Board-and-Committees/Matthew-R_-Larson,-President/ accessed June 30,2016

Book Signing and Presentation

Katherine Hannigan

In the Exhibit Hall—Barnes and Noble @ ICTM booth

Katherine Hannigan, author/illustrator of the picture book ***Dirt + Water = Mud***, as well as the *New York Times* bestseller ***Ida B*** and 2016 Iowa Children's Choice Award nominee ***True (...Sort Of)***, will be presenting at the ICTM/ISTS Annual Conference October 10, 2016.

Dirt + Water = Mud presents, in words and pictures, the always creative and sometimes muddy adventures of a girl and her dog. The two rely on a minimum of props and lots of imagination for their escapades. And the entire story is narrated using word equations (there are also number and picture equations, and a map with a key that uses equivalents).

At the conference, Hannigan will describe the process of creating ***Dirt + Water = Mud***, her experiences teaching mathematics effectively, and multiple, specific ways to integrate equations across the elementary curriculum (including in science, language arts, history, and art) in order to enhance learning and increase fun.

Hannigan will also be presenting with Barbara Ehlers, Associate Professor of Education at Upper Iowa University. Ehlers will be discussing how she used ***Dirt + Water = Mud*** as a starting point for a lesson on equations and soil processes in the environmental science class she teaches at UIU, entitled "Environmental Issues Instruction: Agriculture and Climate Change: Issues and Actions."

Before becoming an author/illustrator, Hannigan earned a B.S. in Elementary Education/Secondary Mathematics. She worked as the education coordinator for a large Head Start program in New York, and as an assistant professor in the College of Design at Iowa State University. She holds a B.F.A in painting and an M.F.A in studio art, as well.

http://www.iowamath.org/conference/katherine.htm/accessed July 1, 2016

Session 1 8:15 A.M.-9:00 A.M.

Room 1315 Impractical Mathematics for Learning Std, Tech HS,C, PS Demo	Entice inspired teaching again with upper-level math activities that are intentionally silly, and emphasize cool mathematics while not feigning to be useful in any way.	Neil Seeley Waukee High School
Room 1316 Motion Virtual Manipulative and Elementary School Mathematics Tech All Demo	Motion virtual manipulatives (MVMs) are a new toolset that transforms an ordinary classroom wall into an interactive manipulative space.	Adam Feldhaus Sarah Diesburg University of Northern Iowa
Room 1320 Visible Learning Std MS, HS Lecture	The four essential PLC questions are applied to everyday lessons to differentiate instruction. Participants will have an opportunity to create a Progress Monitor. They should bring their own internet - enabled device.	Angela Farmer Jennifer Wikan Bettendorf High School
Room 1327 Helping Students Make Sense of Learning Intentions and Success Criteria Std UE, MS,HS, PS Lecture	In this session, hear one math coach's experience assisting teachers in helping their students make sense of the daily learning intention and success criteria.	JoEllen Pruis Waterloo CSD Lynn Selking Great Prairie AEA
Room 1329 Meeting Critical Math Needs with Focus on Engagement, Assessment, and Intervention Std LE, UE, MS, HS, S Lecture	Get students College and Career ready by addressing what students are ready to learn and also providing customized learning paths for critical math needs.	James Strayer Houghton Mifflin Harcourt
Room 1341 Modeling the Expansion of the Universe SL, Tech, Cnct HS Hands-On	Use a Hoberman Sphere toy as both a physical and mathematical model of the expanding Universe for NGSS Performance Expectation HS-ESS1-2.	Holly Hinkhouse Paula Carlson Riverside High School
Room 1343 Connecting Math with Science in STEM SR,SL,Cnct UE, MS, HS Lecture	This session provides examples of challenging and engaging lessons created by middle school teachers that integrate science and mathematics using technology and engineering practices.	Robert Keller Loras College
Room 1353 Iowa STEM Teacher Externships Cnct, Ldrp MS, HS, S, PS Lecture	Hear from past participants of the Teacher Externships program including the types of projects completed and classroom takeaways, plus how to get involved next summer!	Jason Lang, Jeff Weld, Meghan Reynolds, Iowa Governor's STEM Council- Teacher Externships
Room 2312 So You Did an Inquiry Activity...Now What? Cnct LE,UE,MS,PS Hands-On	Come see how you can transition from hands-on activities to meaningful Math and Science learning. Handouts provided.	Jesse Wilcox Grand View University
Room 2319 Self Paced Math and Science Teacher Learning Opportunities Cnct, Tech, Ldrp All Demo	Explore AEA PD Online's Teacher Training System's self paced courses for credit as well as other learning opportunities on many topics including math, science and STEM.	Deborah Cleveland AEA PD Online
Room 2321 Blast Off! Using Model Rocketry to Teach Physics SL Tech HS Lecture	Model rockets engage students in both science and engineering practices. By designing and testing a rocket, study energy, pressure, and forces. 9th-12th grade.	DeEtta Andersen Center Point Urbana ESTA
Room 2345 Everything MOVES! SL, Tech UE, MS, HS Demo	Building understanding in Physical Sciences takes time. Air tracks, dropping objects, viewing/measuring waves can all be investigated in much greater detail with simulations!	Thom O'Brien ExploreLearning
Room 2351 Iowa STEM Scale-Up Program SR, Cnct All Demo	STEM Scale-Up Program from the Iowa Governor's STEM Advisory Council: what, why, when, plus tips for successful application and sustainability.	Sarah Derry Iowa Governor's STEM Advisory Council/Drake University
Room 2353 Keep it Simple! Making Exploratory Science Activities Engaging Using Simple Materials SL All Hands-On	This session explores ways to structure hands-on experiences with natural phenomena that are highly engaging while using a minimalist approach to materials and equipment.	Jacob Pleasants Iowa State University
Room 3415 STEAM works for us! Std UE, MS Hands-On	Science and art can complement each other in the classrooms adding to the learning experience. We would like to share our classroom projects for 5 and 6th graders in science and art.	Ramona Satre Stefanie Rhoads Ogden Middle School

Session 1 8:15 A.M.-9:00 A.M.

Room 3419 PAEMST Award Ldrp All Lecture	Participants will learn about the benefits and application process of the Presidential Awards for Excellence in Mathematics and Science Teaching. Raffle for math and science items will be held throughout the session.	Kris Kilibarda April Pforts Iowa Department of Education
Room 3421 Designing Algebra Assessments Using Student Misunderstandings Std MS, HS Lecture	Want to learn how to design easy to score Algebra assessments that help you identify students' misconceptions in Algebra? Then this session is for you.	Jeannette Olson, Ashley Nashleanas, Anne Foegen Iowa State University
Room 3422 Robotics & Coding in the High School Classroom Cnct, Tech MS, HS Computer Lab	Explore robotics and coding activities, software, and projects for any skill/experience level and subject areas. Come for classroom ideas or for your own fun!	Rebecca Carton Bettendorf High School
Room 3429 Interactive Notebooking SL, Tech MS Lecture	Learn how to incorporate notebooks into your everyday science classroom. Presenters will share tips and examples from their own lessons and resources.	Kelly Stockton Karley Jordan Southeast Polk
Room 3431 Modeling in NGSS: Ecosystem Ecobottles SL, SI MS, HS Hands-On Lab	Developing models is an integral part of 3D learning in NGSS. This session will show how students can build models of ecosystems in 2 liter pop bottles to demonstrate understanding of key ecological processes. Supplies limited.	Kyla Burns Jennifer Rollings Johnston High School

Session 2 9:15 A.M.-10:00 A.M.

Room 1311 Cell Differentiation and Gene Expression SR,SI LE,UE,MS,HS Hands-On	Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Come experience these innovative activities and more from the SEPUP Science and Global Issues: Biology, one of the Governors STEM Advisory Council's 2016/2017 Scale-up Program providers.	Dawn Posekany Solon High School Lab Aids
Room 1312 Using Adaptive Technology in the Math Classroom (ALEKS) Tech UE, MS, HS Computer Lab	**A**ssessment and **LE**arning in **K**nowledge **S**paces is a Web-based, artificially intelligent assessment and learning system. ALEKS uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course.	Kyle Nelson McGraw-Hill Education
Room 1314 Do Students Need to Memorize Math? Std MS, HS Hands-On	This session will be an open discussion on the role of memorization in math classes in today's world. Participants will share thoughts and opinions.	Erin Marshall Central City CSD
Room 1319 Standards-Based Instruction, A Collaborative Journey Std HS, C Lecture	Learn why we decided to try standards-based instruction in an undergraduate, developmental algebra course and what we learned in the process.	Valorie Zonnefeld, Aaron Van Beek, Michael Hoogland, Kate Van Weelden Dordt College
Room 1320 The SPARK Testing Method: Using an Assessment Instrument to Enhance Learning SA MS, HS, C, PS Lecture	The SPARK testing method is a complete redesign of the conventional format. The weekly assessments are cognitively spiraled, providing a learning tool for students.	Kara Hageman University of Iowa
Room 1321 "You Can Do This!":Motivation + Engagement + High Expectations = Student Success Ldrp All Hands-On	Successfully engaging students in the mathematics classroom is multidimensional. Understanding who our students are and creating an environment that is conducive to their learning is both challenging but doable.	Comfort Akwaji-Anderson Waterloo CSD
Room 1333 Principles to Action--One School's Journey Std LE,UE,MS,S,PS Hands-On	The Principles to Action incorporates Mathematics Teaching Practices and Essential Elements related to the culture of a building. Where do you start, how do you make it happen?	Vickie Borich Heartland AEA
Room 1339 12 Math Rules that Expire in the Middle Grades Std LE, UE Demo	Turn away from over generalizations and consider alternative terminology and notation to support student understanding.	Molly Sweeney Julie Hukee Heartland AEA

More Session 2 on next page

Session 2 9:15 A.M.-10:00 A.M.

More Session 2 on previous page

Room 1345 Computational Thinking as the Core of STEM Learning Cnct, Tech LE, UE Hands On	How do you purposefully implement coding applications into your classroom? This session will explore how to select, examine and enhance STEM learning through computational thinking.	Anne Estapa Kristina Tank Iowa State University
Room 1351 Introducing Complex Numbers Geometrically Std HS, C Demo	An argument and task for introducing complex numbers geometrically will be presented.	Catherine M. Miller Olena Ostapyuk University of Northern Iowa
Room 2311 Iowa STEM Businesses Engaging Students and Teachers (BEST) Models for Successful Partnerships Cnct UE, MS, HS, S Lecture	The Iowa STEM Council has partnered with school districts to develop exemplary models of how schools and businesses can partner to foster students' interests and abilities in STEM.	Kristine Bullock Paul Gibbins Iowa Governor's STEM Advisory Council
Room 2312 Promoting Student Voice and Choice Through Problem Based Learning (PBL) SL, Cnct MS Lecture	Discover ways to encourage student voice and choice through authentic Problem Based Learning (PBL) activities. Come away from this session with many ideas and activities to incorporate tomorrow.	Kayla Brauer Ian Michel Johnston Middle School
Room 2349 Food Waste in Iowa Schools Std UE, MS, HS Lecture	The Iowa Waste Reduction Center at UNI is working on a grant funded project throughout Iowa reducing school food waste generation rates. Schools have the option to participate.	Jennifer Trent University of Northern Iowa
Room 2353 The Nature of Science, Engineering, and Technology - Untangling a Complex Relationship SR UE, MS, HS, PS Demo	Science, technology, and engineering are interrelated, yet distinct. This session explores how teachers can help students understand both the connections and differences between these fields.	Jacob Pleasants Iowa State University
Room 3414 Making STEM Connections Cnct LE, UE, MS, HS Hands-On	The Science Center of Iowa and teachers from Johnston Community School district will demonstrate activities highlighted in the Making STEM Connections program.	Jolie Pelds, Lisa Tegels Sara Richardson Science Center of Iowa
Room 3417 Back to College: Content Courses for Elementary Teachers Ldrp LE, UE, S Lecture	Presentation shares efforts to increase science content knowledge and skills in K-5 teachers through summer courses: Plants in Society; Biorenewables; Teaching in the Fast Lane.	Lynne Bleeker Parkview Middle School PAEMST
Room 3421 Making Chemistry and Graphs Accessible to Blind and Visually Impaired Students: Perspectives, Resources, and a Pilot Study SR, Tech MS, HS, PS, C Lecture	A blind doctoral student shares personal experiences, teacher resources, and pilot study results exploring pre-service teachers' descriptions of chemistry graphs for blind and visually-impaired students.	Ashley Nashleanas Iowa State University
Room 3422 Linear Regression and Residuals in Algebra 2 Std, Tech HS Computer Lab	Use Core Math Tools, an NCTM program, to create a student-centered approach to learning linear regression and residuals.	Melissa Carlson, Tony Smith, Jessica Heydon Ames High School
Room 3431 An Introduction to Tool 1: Using the NGSS to Plan a Unit of Instruction SI MS, HS Hands-On	The purpose of Tool 1 is to help teachers develop an understanding of the three dimensions of the NGSS.	Susan Lyons Kyla Burns Pella Middle School
Room 3433 Iowa's STEM Network: Opportunities for Math and Science Teachers Ldrp All Lecture	Iowa's nationally acclaimed five year-old STEM program offers over sixteen ways to get involved ranging from professional development opportunities, curricular resources, community events, teaching awards, new endorsements, and more.	Jeff Weld Iowa STEM Council ISTS OSA
Room 3435 Addressing the Math in Iowa's New Science Standards SL, Cnct HS Hands-On	Mathematical and Computational Thinking is one of the Science and Engineering Practices of the new Iowa Science Standards. Come explore how that might look in a high school science classroom.	Tami Plein Great Prairie AEA ESTA
Room 3437 Cloudy with a Chance of… Science! SL, Tech HS Hands-On	Come learn how to not just teach meteorology but immerse students into meteorology as they compete to be the best forecaster!	Mauree Haage Twin Cedars

Session 3 11:15 A.M.-12:00 P.M.

10:15-10:30	ICTM Awards	Auditorium Performing Arts Area
10:30-11:30	**ICTM Keynote Dr. Matthew R. Larson**	
11:30-12:00	Q/A Session	
Room 2315 Iowa Science Standards— Naturally SR All Lecture	Naturalist from across the state have been working to align their offerings with the new science standards. Come see how they can supplement your units of study.	Phyllis Anderson Gail Barels Grant Wood AEA
Room 2319 Amazing Molecules and Me! A STEM-rich Informal Chemistry Experience for Middle School Students Std UE, MS, HS, C Lecture	Teachers Can! We can collaboratively and creatively find the time, money, space, and activities for an incredibly engaging week of STEM-rich Chemistry for Middle School.	Ken Turner, Debra Stork, Ty Luett University of Dubuque
Room 2321 From Equations to Mudcracks Cnct LE, UE, PS Hands-On	An engaging, hands-on session starting with equations and ending with mud-cracks, using the recently published book, Dirt + Water = Mud, by Katherine Hannigan. Author Katherine Hannigan will be available to autograph her latest book, *Dirt + Water = Mud* after the session.	Barbara Ehlers, Katherine Hannigan, Jeff Monteith Upper Iowa University/ Environmental Issues Instruction ESTA
Room 2343 It's Not WHO You Know, It's HOW You Know SL All Demo	Finding truth in science is not easy. What do you know to be true? How do you know it?	Christopher Like Bettendorf CSD ESTA
Room 2345 Unlocking Student Learning with Robotics and Project-based Learning SR, Tech All Lecture	Learn how robotics and project based learning revived fifth-grade students' excitement and ownership of their learning, while developing the habits of mind needed for future success.	Skye Wakefield Abby Tierney Clive Learning Academy
Room 2351 Iowa Science Core Implementation Grades 9-12 SI HS Lecture	Discussion session on the implementation of the Iowa Science Standards to ensure all students in grades 9-12 receive all the standards. What would be the best way to implement these standards for all levels of students?	Wesley Hall West Des Moines CSD
Room 2353 Science Literacy Through Notebooking SL LE, UE, MS, HS, PS Lecture	Integrating Literacy in the Science Classroom Through Non-Fiction Texts and Notebooking	Jody Still Herbold Northwest AEA
Room 3414 (Sky)Dive in to Parachutes, Engineering, and the NGSS SL UE, MS Hands-On	This hands-on, inquiry-based activity is intended to get students thinking about manipulation of variables, air resistance, and gravity through an authentic engineering task.	Collin Seebach Jaclyn Easter Bergman Academy
Room 3415 If You Catch My Drift: Infuse Inquiry and the Nature of Science into the Theory of Continental Drift SL MS, HS Hands-On	Discover how to promote conceptual understanding of geologic processes through inquiry-based activities about the mechanism and history of continental drift.	Eric Anderson Carlisle High School
Room 3417 NGSS + Flora + Fauna =PE Success SR, SL LE, UE, MS, HS, PS Hands-On Lab	Classroom critters are a key to engagement for many students. Strategies and best practices for maintaining living things in the classroom to support the NGSS.	Birgitta Meade Luther College/North Winneshiek Community Jane Busch , Luther
Room 3419 The Powder Activity: Investigating Matter to Teach about Technology SL, Tech MS, HS Hands-On	Come experience an interactive activity to engage K-12 students in a lesson that builds upon students' understandings of science, technology, and engineering. Handouts provided!	Renald Daemicke Megan Wagner Jerrid Kruse Drake University
Room 3422 Journey to 2050 SL, Tech MS, HS Computer Lab	How will we sustainably feed over 9 billion people by the year 2050? Take students on a virtual simulation to explore food production.	Will Fett Iowa Agriculture Literacy Foundation

More Session 3 on next page

Session 3 11:15 A.M.-12:00 P.M.

More Session 3 on previous page		
Room 3431 How to Effectively Manage Inquiry Activities Std All Hands-On	Inquiry activities can be difficult to manage. Come discuss some effective ways to keep the activities while keeping the class under control. Handouts provided.	Jesse Wilcox, Grand View Jerrid Kruse, Drake Michael Clough, ISU ISTS OSA ESTA
Room 3433 Efforts to Develop a Robust Sense of Law and Theory SL MS, HS, C Lecture	This session will share student perceptions of scientific laws and theories, as well as address strategies consistent with effectively instructing this challenging nature of science idea. Dialogue and discussion are encouraged.	Shannon McLaughlin Norwalk High School ESTA
Room 3437 Rock Odyssey SR LE, UE, MS, HS Lecture	Inter-Active Classroom Activities: Limestone and the Environment	Sherman Lundy Iowa Limestone Producers Association
Room 3439 Making Learning Three Dimensional SL, SI UE Hands-On	We will solve as well as anticipate and analyze children's mathematical thinking around several problem-solving tasks that relate to cultural activities.	Eric Hillman Amy Johannsen Southeast Polk CSD

Exhibits, Lunch 12:00 P.M.—1:00 P.M.

Session 4 1:15 P.M.-2:00 P.M.

1:00-1:15	ISTS Awards / Exhibitor Time for ICTM	Auditorium Performing Arts Area
1:15-2:15	**ISTS Keynote - Juliana Texley, Ph.D.** ***Connecting, Communicating, Creating***	
Room 1311 Making Connections in Problem Solving Std UE Hands-On	We will solve as well as anticipate and analyze children's mathematical thinking around several problem-solving tasks that relate to cultural activities.	Tonia Land Tracey Donovan Drake University
Room 1314 Standards Referenced Grading in Mathematics Std MS, HS Lecture	Have you been intrigued by providing feedback to students based on standards and reporting that progress? I will share Des Moines Public Schools' journey with standards reference grading including examples in math courses for grades 6th through 11th.	Christi Donald Des Moines Public Schools
Room 1316 Creating Classroom Discussions That Matter Ldrp LE, UE, MS Demo	This session will model and provide resources to move a teacher-centered classroom into a student-centered classroom with a focus on student engagement.	Jeremiah McGraw Amy Keller Grant Wood AEA
Room 1319 REAL (REaching All Learners) Math: Mathematics Consultations that Advance Equity for Students with Special Education Needs Std LE, UE, MS, HS, S Demo	I will present a framework to help mathematics teachers and special education experts better meet the mathematical learning needs of students with special education needs.	Samuel Eskelson University of Northern Iowa
Room 1320 Do You DESMOS? Math Tech Tool That Does it ALL! Std, Tech MS,HS, C, PS Computer Lab	Explore the powerful and ever improving DESMOS graphing calculator and the activities made especially for teachers to use in their classrooms	Rebecca Carton Marty Beck Bettendorf High School

More Session 4 on next page

Visit the Bookstores in the Exhibition Hall

Session 4 1:15 P.M.-2:00 P.M.

More Session 4 on previous page		
Room 1327 "Grit" and Its Usefulness in Problem Solving Std LE, UE, MS, HS, PS Lecture	This presentation will give an overview of Angela Duckworth's research on the concept of grit and show the applications to mathematics, specifically in problem solving.	Melissa McAninch Central College
Room 1329 Principles to Action: Supporting Teachers to Examine the Standards and Essential Elements of Effective Mathematics Teaching and Learning Std All Hands-On	Dominant cultural beliefs about teaching and learning of mathematics continue to be obstacles to consistent implementation of effective teaching and learning in mathematics classrooms.	Comfort Akwaji-Anderson Waterloo Community School District/NCSM
Room 1333 Direct verses Inquiry-based Instruction in Middle School Mathematics: A study Std MS, C, S, PS Lecture	Two classes were taught the same mathematical content by the same instructor utilizing two different approaches: direct and inquiry -based instruction. This session highlights the findings.	Clayton Edwards Brian Townsend Grundy Center MS
Room 1335 How Can Prime Numbers Help Us Learn Fractions? Std UE, MS, PS Hands-On	The products on the times table chart are important. So are those numbers that fall between those products! Primes are helpful because they do NOT break into factors other than themselves and one! Come see how your 4th-8th grade students can increase their power!!	Teresa Finken Iowa Council of Teachers of Mathematics
Room 1339 NCTM ARCS Congruent Triangles Std, Tech MS, HS, PS Demo	NCTM is developing Activities with Rigor & Coherence. A lesson developed by a team at NCTM and classroom tested was presented in San Francisco. Learn More!	Deidra Baker Mid-Prairie schools
Room 1343 Can You Escape? Using Hands-on Activities to Promote Collaboration! SR,Cnct MS, HS, S, PS Hands-On	Participants will "play" and collaborate with others with a variety of hands-on math/science activities to receive clues that hopefully allow them to escape the session!	Kristin Grotewold Waukee CSD
Room 1353 Equitable Engagement - How the Iowa Governor's STEM Council Creates Access for All Cnct, Ldrp All Hands-On	STEM for ALL is a top priority for the Iowa STEM Council. Learn how the Council removes barriers & provides access to STEM for ALL Iowans.	Paul Gibbons Iowa Governor's STEM Advisory Council at Iowa Lakes Community College
Room 2313 Renaissance Math Std, Tech LE, UE, MS, HS,S Demo	Accelerated Math and STAR Math are the most widely used math programs in K-12 schools. Renaissance Learning math programs help teachers easily differentiate instruction, and save valuable time. Come and learn more about how you can effectively impact all your students with a single math solution.	Elizabeth Perrin Heather Roth Renaissance Learning

Session 5 2:30 P.M.-3:15 P.M.

Room 1315 Teaching Statistics in Middle and High School through Real-World Experiments Std, Tech MS, HS Hands-On	Middle and high school teachers will engage in two hands-on experimental activities. Participants will collect data, represent it graphically, draw comparisons, and generate inferences.	Maryann Huey Wendy Weber Drake University
Room 1316 Instructional Strategies that Influence Mathematics Std LE, UE, MS Demo	Participants will explore effective strategies that use rich mathematical tasks, learning environments that foster critical thinking, and classroom discourse applicable to students at all grades.	Amy Keller Jeremiah McGraw Grant Wood AEA
Room 1319 Standards-Based Grading (SBG) in Middle School Math Std MS Lecture	An overview of the system our middle school math team has used to incorporate standards-based grading practices into our classrooms.	Lindsy Brandt Pella Middle School
Room 1320 Math, 1:1, and Middle Level...I've Been Told These Don't Mix Std, Tech UE, MS Hands-On	Implementing math with 1:1 in the middle school is tricky, but this session will provide resources/tips to accentuate the benefits of 1:1. Bring a device!	Clayton Edwards Grundy Center/UNI
Room 1321 Connecting Math to the Real World Std, Cnct UE, MS, HS Lecture	Sharing of a year-long entrepreneur project connecting common core standards to the real-world, increasing engagement, creativity and authentic assessments.	Sam Kuehl Kristin Grotewold Waukee Community Schools
Room 1329 Implementing the Five Practices Using Missing Value Problems Std UE, MS, S, PS Hands-On	How do we orchestrate productive discussions when teaching proportional reasoning? We will challenge you to select, sequence and draw out the mathematics using student-generated strategies.	Suzanne Riehl Olof Steinthorsdottir University of Northern Iowa
Room 1333 New Iowa Core Website from the Iowa Department of Education Std All Lecture	Come hear about a new statewide effort to support mathematics educators and the Iowa Core at all levels from the State Mathematics Coordinator from the Department of Education.	April Pforts Iowa Department of Education
Room 1339 Supporting English Language Learners (ELL) to Make Sense of Word Problems Std All Lecture	This presentation will share various research-based strategies that help ELLs make sense of cognitively demanding mathematical word problems in a workshop format.	Ji Yeong (Joann) I Iowa State University
Room 1345 Cut, Paste & Glue: Making Math Manipulatives for Understanding Std LE, PS Hands-On	Participants will construct easy-to-make manipulatives that can used to teach understanding and drill/practice that include counting, operations, place value, fractions and time.	Carole Reesink Minnesota State Univ - Bemidji
Room 2311 STEM Innovator: Infusing Entrepreneurship and Innovation into K-12 Classrooms Cnct UE, MS, HS Hands-On	The nations interest in STEM innovation and entrepreneurship is exploding! Engage in problem-based learning activities and assessments. Your HS students may qualify for UI credit.	Leslie Flynn, Dawn Bowlus, Amanda Solomon, Nick Newcomer University of Iowa
Room 2312 Circling Around Std UE, MS, PS Hands-On	A menu of activities will be presented from Math Solutions materials to find area of circles in 6 different ways and explore circumference.	Vicki Hamdorf North Cedar Schools
Room 2313 Renaissance Math Std, Tech LE, UE, MS, HS Hands-On	Accelerated Math and STAR Math are the most widely used math programs in K-12 schools. Renaissance Learning math programs help teachers easily differentiate instruction, and save valuable time. Come and learn more about how you can effectively impact all your students with a single math solution.	Heather Roth Renaissance Learning
Room 2315 Building Technological Literacy with Paper Buildings SL,Tech LE, UE, MS, HS Hands-On	Participants will engage in an easy-to-implement NGSS aligned design task that encourages any age of student to broaden their scientific and technological literacy. Handouts provided!	Renald Daemicke, Mitchell Klocke, Jerrid Kruse Drake University
Room 2319 From Classroom and Beyond: 2016 I.O.W.A. STEM Teacher Award Ldrp LE, UE, MS, HS Lecture	In this interactive, moderated panel, you'll hear from 2015 and 2016 recipients of The Iowa Governor's STEM Advisory Council's I.O.W.A. STEM Teacher Award sponsored by Kemin Industries on curriculum and tactics they use in their classrooms.	Regan Boeset, Ryan Lensing, Jason Franzenburg, Kacia Cain,Lisa Chizek ESTA

More Session 5 on next page

Session 5 2:30 P.M.-3:15 P.M.

More Session 5 on previous page

Room 2321 Iowa Science Standards - Community of Learners SI, SR LE, UE, MS, HS Hands-On	Learning communities are dedicated to supporting Iowa Science Standards implementation. These communities will provide a space to ask questions, view sample classes, and discuss your grade level implementation strategies and resources.	April Tidwell, Mark McDermott, Rob Kleinow Sioux City CSD
Room 2343 Breaking Down the Silos: Integrating Math and Science Cnct UE, MS, HS Hands-On	We will take a look at how the math practices from CCSS and the science and engineering practices of NGSS are aligned.	Amy Johannsen Eric Hillman Southeast Polk CSD
Room 2345 Square Peg in a Round Hole - NGSS Engineering in Space SL MS Hands-On	This hands-on activity encourages participants to role-play as an engineer for NASA and design a protective spacecraft for astronauts to land on the moon.	Hallie Edgerly Jaclyn Easter Adel DeSoto Minburn MS
Room 2351 Research Experiences for High School Students Cnct HS, PS Lecture	Learn how to deeply engage passionate students through research. University summer research experiences and effective teacher academic-year support can prepare students for successful research competitions.	Lori Ihrig Brian Douglas Belin-Blank Center, University of Iowa ESTA
Room 2353 The Intersection of Agroecosystems & Natural Ecosystems SL MS, HS Hands-On	What does sustainable food production mean? Explore how we can strike a balance producing enough food to meet global demand and still protect the environment.	Will Fett Cindy Hall Iowa Agriculture Literacy Foundation
Room 3415 Mathematics Based Inquiry in the Physics Classroom Std, Cnct HS Demo	This session will explore three surprising yet simple results in mathematical physics: the famous "book stacking" and two methods for approximating pi.	Christopher Spinler Iowa State University
Room 3419 Making Assessment Meaningful: A Cumulative Project for Pre-Service Elementary Science Teachers With Utilitarian Value. SR, Cnct LE, UE, C, PS Lecture	We will focus on a project for pre-service teachers where they create an integrated Iowa Core LA, Math, and NGSS lesson plan.	Taylor Reed Mason Kuhn University of Northern Iowa PAEMST
Room 3422 Student Personalized Learning for Science and Math Curricula SR, Tech All Hands-On	Learn more about AEA PD Online's Student Personalized Learning System to differentiate and engage your learners in math and science content. Participants should bring their computer or other device.	Denise Krefting AEA PD Online
Room 3437 "Dirt + Water = Mud": Integrating Equations Across the Curriculum SL,Cnct LE, UE, MS Lecture	10+ practical and fun ideas for integrating equations across the elementary curriculum, beginning with the author/illustrator's book, "Dirt + Water = Mud". Katherine Hannigan will be available to autograph her book after the session.	Katherine Hannigan Author/Illustrator; Harper-Collins Children's Books

Session 6 3:30 P.M.-4:15 P.M.

Room 1311 Using Interview Number Sense Screeners to Inform MTSS Std, Tech LE, UE, S Lecture	Learn how Storm Lake is using the interview-based, BVSD Math Screeners to put number sense at the heart of MTSS. Free copies of Screeners available.	David Woodward Melissa Loving Forefront Math
Room 1314 Unexpectedly Mathematical Board Games Std UE, MS, HS, C, PS Hands-On	Commercially published games will be explored as avenues for learning and reinforcing mathematics.	Brian Townsend Bill Wood University of Northern Iowa
Room 1320 Statewide Virtual Coaching Network Initiative Ldrp LE, UE, MS, HS, S Computer	Come hear about a new statewide effort to support mathematics coaches at all levels (elementary, secondary and high school).	Comfort Akwaji-Anderson, April Pforts, Lisa Syfert, Becky Thorson, Sarah Stephan
Room 1327 The Power of Cooperative Learning with PowerTeaching Mathematics Std, Tech MS Hands-On	In a world where students need to work collaboratively to succeed, this session demonstrates how cooperative learning can help students think like a mathematician.	Bonnie Darby Erin Toomey Success for All

More Session 6 on next page

Session 6 3:30 P.M.-4:15 P.M.

More Session 6 on previous page		
Room 1329 Equal Sharing Problems: A Tool to Develop Student Understanding of Fractions Std UE, MS, S, PS Hands-On	We will explore Equal Sharing problems, student strategies for solving these problems, important fraction concepts and the impact of number choice. Problems will be shared.	Olof Steinthorsdottir Sandra Ubben University of Northern Iowa
Room 1335 Focusing on Conceptual Understanding To Build Students' Computational Fluency of Fractions & Decimals Std UE, MS, PS Hands-On	This session will explore Meaningful Distributed Instruction (MDI) and Thinking With Numbers as a strategy to develop computational fluency. Examples of tasks will be provided.	Tammy Boeckman Fort Dodge MS
Room 1341 Rational Number Project Std, Tech UE Hands-On	Our third and fourth grade teachers used lessons designed by the Rational Number Project to support the idea that children learn best by developing their concrete understanding of math concepts through the use of manipulatives.	Jodi Hanson, Erika Dvorak, Nicky Stevenson, Kate Steger, Mallory Paul, Carrie Reed
Room 1351 How to Contribute to ICTM Journal Ldrp All Demo	Would you like to share your experience, ideas, successes, research, but not sure how ? Come find out how to submit to the ICTM Journal!	Deidra Baker Teresa Finken Mid Prairie CSD
Room 1353 Developing a High School Math Club Std HS Hands-On	This session will be a round table discussion sharing ideas for starting up and developing a successful high school math club.	Rose Jennings Keokuk HS
Room 2321 Implementing the Iowa Science Standards with Argument-based Inquiry and Standards Based Grading SR,SI UE, MS, HS, S, PS Lecture	Learn about planning an argument-based inquiry unit combined with standards-based grading aligned with the New Iowa Science Standards	Mark McDermott Dawn Posekany University of Iowa
Room 2349 What STEM's from Siloing Math and Science? SL, Cnct UE, MS, HS Lecture	This session will identify some relevant mathematical difficulties students have in science classes and speculate about how they may be ameliorated through thoughtful professional dialogue.	Shannon McLaughlin Norwalk HS ESTA
Room 3414 Daily Integration of STEM in Lower Elementary Classrooms SI, SL, Cnct LE, S, PS Hands-On	Investigate the valuable and rich learning opportunities our students experience daily to learn how you can (and should) integrate STEM daily in your elementary classrooms.	Lisa Chizek, Vonna Watson, Anne Turner, Brenda Kaufmann, Connie Courbat ESTA
Room 3415 Engineering Activities in the Science Classroom: Pitfalls and Opportunities SL LE, UE Hands-On	We will dissect an engineering activity to explore the key decisions that teachers must make to ensure students get the most out of classroom experiences.	Christopher Spinler Jacob Pleasants Iowa State University
Room 3421 Blowing up Common Ideas about Demos: Making demos more effective SL All Hands-On	Come see exciting demos about using air pressure. We will help participants take all demos deeper with students to make learning more meaningful. Handouts provided.	Logan Gihring, Jesse Wilcox, Macy Carbajo Grand View University ESTA
Room 3422 Using Standards to Drive Exploration SL, Tech UE, MS, HS, PS Computer	This session will give you manageable technology resources and an idea of how to use learning targets, scales, and a daily question within your classroom.	Randi Lines Harding MS Des Moines CSD
Room 3429 Programming with Algebra in the Middle Grades Tech MS, HS Lecture	Use sums, products, and exponents to teach programming alongside Algebra in the middle grades.	Chad Brewbaker DataCulture LLC
Room 3431 Teacher Centered Development of NGSS Aligned Curriculum SL, SI, Ldrp MS, HS,PS Lecture	UNI Science Education provides PD to help science teachers develop coherent NGSS aligned science units. We will briefly discuss the program and highlight some of the developed units.	Dawn Del Carlo Lawrence Escalada Tami Plein University of Northern Iowa
Room 3435 Distinguishing Between Players and Spectators in Chemical Reactions SL MS, HS Hands-On	Come see an engaging chemistry/physical science inquiry activity, modified from a cookbook activity, where students investigate whether particular ions are players or spectators.	Michael Clough Iowa State University ISTS OSA

Exhibit Hall in the gymnasium

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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 2014 Winners

Ann Johnson

Sageville Elementary School
Dubuque , Iowa
2014 Award | K-6 Mathematics

Joshua Steenhoek

Jefferson Intermediate School
Pella , Iowa
2014 Award | K-6 Science

Iowa 2015 Winners

Richard Brooks

Johnston High School
Johnston , Iowa
2015 Award
7-12 Mathematics

Lynnetta Bleeker

Parkview Middle School
Ankeny , Iowa
2015 Award
7-12 Science

2016 Finalists for Iowa

Mathematics

Zachry Christensen
Perkins Elementary School
Des Moines Public Schools

Natalie Franke
Brookview Elementary School
Waukee Community School District

Science

Lisa Chizek
North Tama Elementary
North Tama County Community Schools

Ashley Flatebo
Jefferson Elementary
Mason City Community Schools

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ICTM AWARDS

State Friend of 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.

2016 ICTM Lifetime Achievement Award

Chuck Gustafon received his BA in Mathematics from Central College in Pella, Iowa, and his MA in Mathematics Education from the University of Iowa. In his long, distinguished 43-year career, he taught high school math at Mid-Prairie Community Schools for 18 years and then accepted the Math Curriculum Consultant position at Grant Wood AEA. He has served in that capacity for 25 years. Chuck is revered by his math colleagues in the state, and is honored to be among the ranks of past recipients of this award.

2016 Friend of Mathematics

Lynn Selking's math education career in Iowa began in 2001 when her family relocated to the small town of Seymour. Initially, she substituted in schools in Wayne County. Prior to moving to Iowa, She had come to believe she no longer belonged in classroom, but these rural Iowa kids made her think, "Maybe this is for me after all," and she returned to full-time. During her two years at Russell Community School and five years at Wayne Community High School, Lynn started building relationships with people from Southern Prairie AEA. Through *Every Student Counts* came a growing realization that there was more to mathematics than simply remembering steps to get right answers.

Those ideas in *Every Student Counts* lit a fire. In 2007 Lynn was named a state finalist for President's Award for Excellence in Mathematics and Science Teaching. The following year she completed my National Board Certification. In 2009, Lynn left the classroom to join a fantastic team at Great Prairie AEA. She told her students she was going to leave them to live in a castle in Ottumwa as a math princess. (Some days, it is really not very princess-y.) Although my Great Prairie team has changed, it is still a fantastic team. She dearly loves being a part of a larger team of math educators in our state with so many talented and committed individuals who are working together to open doors for success in school and life for our kids.

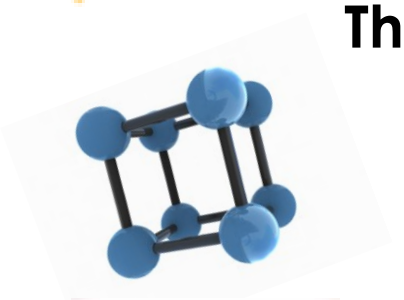
ICTM Curriculum Grant winner

Sara Pibel is an Instructional Coach at South Central Calhoun Middle School in Rockwell City, Iowa. She is receiving the $500 ICTM Curriculum Grant to implement "Number Talks" in her district. She plans to equip middle school math, science, and special education teachers with books and resources to help them implement best practices in building number sense and to encourage problem solving.

"Number Talks" is a quick and easy routine that can be established in the classroom with all students. The book, Making Number Talks Matter, along with face to face training, will be used to equip teachers with ideas and routines to implement the Number Talks process during the 2016-2017 school year in-services. Training teachers in the middle school level (4-8) on how to implement and utilize this routine will support the Iowa Core standards of number sense, encouraging problem solving in ways that make sense to students using whatever method they prefer, and communicating their methods to the class. Not only does this book focus on number sense, but it also aligns itself with the Standards for Mathematical Practices in multiple ways.

ICTM members are encouraged to apply for these grants. ICTM offers two $800 conference grants to attend the an NCTM regional or national conference. There are three $500 curriculum grants for classroom teachers, two $500 advanced tuition grants, as well as four $250 extra-curricular mathematics grants to encourage involvement in mathematics outside the classroom. Members can find applications and additional information at http://www.iowamath.org/grants/

The Iowa Academy of Science



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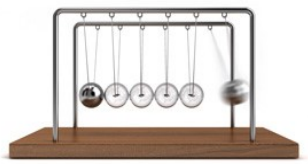

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Fellows of the Iowa Academy of Science

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.

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.

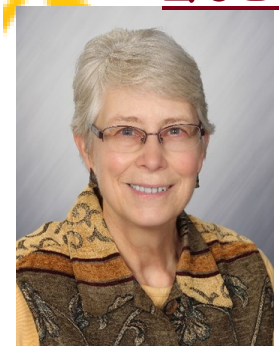
Excellence in Science Teaching Awards (ESTA) – The Iowa Academy of Science (IAS) awards to outstanding teachers of all grade levels and areas of science, teachers who are recognized for their work and innovations in science education. The core of the Award is $200 for the teacher and a Plaque. Nominations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

2016 Excellence in Science Teaching Award

From left:	-Glen Unwin	-East Buchanan CSD	-Physical Science
	-Arie Schiller	-Keokuk CSD	-Middle School Science
	-Robert Campbell	-Moravia CSD	-Life Science
	-Gail Kunch	-Holy Trinity	-Earth & Space Science
	--Marc Benedict	-Graettinger-Terril HS	-General Science
	--Yvette McCulley (not shown)	-Iowa Department of Education	-Supervisory Science

2016 ISTS Outstanding Service Award



Educating others has been the focus of **Pat Higby**'s life. In high school she was president of the Future Teachers of America club and enjoyed volunteering in elementary classrooms. As a student at UNI she worked in the Physics Department as a lab assistant, and later as an adjunct instructor for Activity Based Physical Science, Conceptual Physics, and General Physics Labs. Her teaching experience varied from the small, rural school district of Union Whitten (now UWBCL) to the large, urban setting at Waterloo's East High School. Teaching in the non-formal environment of the Waterloo Bluedorn Science Imaginarium and UNI Museums taught Energy Educator at UNI's Center for Energy & Environmental Education (CEEE) was a perfect job for Pat. She combined her background in physics with her experience in non-formal education to create outreach programs for the Iowa State Fair and other venues. One of these was the Science of Energy Program in the summer of 2014 that sent UNI students to libraries across the state, doing over 50 presentations about wind and solar energy. Educators can't teach, and students can't learn, with empty hands. Knowing this, and also understanding that many Iowa schools have no budgets for materials, Pat developed the Fabulous Resources for Energy Education loan program. The program name was chosen because the acronym, FREE, was one that teachers would remember! Purchasing kits for the loan program was more than the FREE budget allowed, so Pat and her staff designed and manufactured model solar car and wind turbine kits in-house. Kit sales help to support the FREE program and pay UNI student staff wages. The FREE program was chosen as one of the first Iowa Governor's STEM Scale-Up projects, enabling Pat to do professional development workshops across the state. Pat has given many presentations at Iowa Science Teachers Section Conferences, as well as the National Energy Educators Conference at Washington DC in 2015, NSTA Regional Conference at Kansas City in 2015, and the NSTA STEM Forum at Denver in 2016. The FREE program is transitioning from the CEEE to UNI's Department of Technology, so the loan program and online store will continue following Pat's retirement.

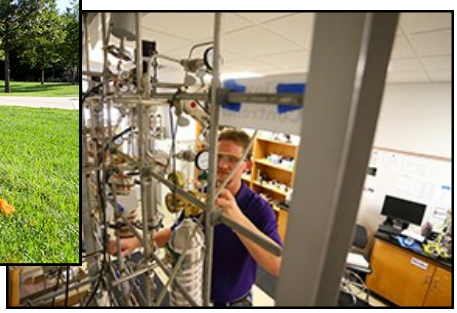
Encouraging girls to consider STEM careers has been important to Pat. With Marcy Seavey she led a science-centered Girl Scout troop at UNI. As a long-time member of the Cedar Falls branch of the American Association of University Women she has also promoted STEM careers for women. Recently this has included a partnership with the Society of Women Engineers to hold annual ***Expanding Your Horizons*** events at UNI for middle school girls. Other service to Iowa has included work on the Boards of the Iowa Power Fund, Iowa Renewable Energy Association, Iowa Conservation Education Coalition, Iowa Chapter of the US Green Building Council, Iowa Consumer Advocate, Iowa Wind Energy Association, and the Iowa Association for Energy Efficiency.

Save the date! April 21—22, 2017

129th Annual Meeting Iowa Academy of Science

and the 85th Meeting of the Iowa Junior Academy of Science

Join us next year at the University of Northern Iowa in Cedar Falls.



2016 Friend of Science Awards

The **Heartland AEA Science Team** of Peg Christensen, Craig Edmondson, and Rob Kleinow has supported the implementation of the new Iowa Science Standards by offering over 16 face to face training's in Module 1, as well as an online version of Module 1, and as a result has reached over 571 educators, coaches, and administrators. The team has also worked closely with Heartland Media Services to provide relevant resources for teachers. The Science Team also worked with AEAPD Online to provide additional science learning opportunities. Additional connections have been made by being strong members of the ICEC, SC STEM Advisory Board, State Science Leadership Team, as well as collaborating with several partners (Naturalists, Blank Park Zoo, Science Center, Concord Consortium, PAGE, and World Food Prize) to provide educational opportunities for teachers.

The Heartland AEA Science Team are a logical choice for the 2016 ISTS Friend of Science Education Award .

The **Science Center of Iowa (SCI)** The Science Center of Iowa (SCI) provides vast opportunities for more than 350,000 children, teens and adults to engage in science learning through interactive exhibits, live programming, IMAX films, special events, workshops and camps annually. It also serves as a STEM leader across the state, inspiring the next generation of science, technology, engineering and math professionals while engaging lifelong learners through programs for all ages. Guided by SCI's mission to engage and inspire Iowans along their journey of lifelong science learning, the center provides dynamic learning opportunities for all demographics from preschoolers to working professionals.

SCI also serves as a resource to educators, classrooms and libraries across Iowa through Science @ Your Site Outreach programs, School Visits and award-winning STEM Scale-Up programs. Developed by SCI's expert education team, programs like *Making STEM Connections* and *Pint Size Science* have empowered educators across Iowa to enhance their curriculum through interactive activities that encourage students to experiment and innovate. SCI's *Pint Size Science* program was selected by the Iowa Governor's STEM Advisory Council as a Scale-Up program in 2014 and 2015. *Making STEM Connections* was selected by the council in 2016.

SCI's commitment to lifelong science learning makes the organization a natural fit for the 2016 ISTS Friend of Science Award.

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Texas Instruments

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University of Missouri

121B Townsend Hall | Samuel Otten | Columbia, MO 65211 | http://missouri.edu/

University of Northern Iowa Science Education

153 McCollum Science Hall | Lori Wurtz | Cedar Falls IA 50614 | http://www.uni.edu/

University of Northern Iowa Mathematics Dept.

220 Wright Hall | Debra Blanchard | Cedar Falls, IA50614 | http://www.uni.edu/

Water Rocks!

1201 Sukup Hall ISU | Ann Staudt | Ames, IA 50011 | astaudt@iastate.edu | www.waterrocks.org

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The Iowa Council of Teachers of Mathematics is dedicated to encouraging an interest in mathematics and its teaching and working toward the improvement of mathematics education programs in Iowa.
ICTM, 2382 IA Hwy 24, New Hampton, IA 50659

The Iowa Academy of Science is established to further scientific research and its dissemination, education in the sciences, public understanding of science and recognition of excellence in these endeavors.
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