

Iowa Academy of Science – Iowa Science Teaching Section

# CULTIVATING SCIENCE LITERACY IN 3D



October 7 – 8, 2018 - DMACC Ankeny

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### 3D Learning

The National Research Council's (NRC) Framework describes a vision of what it means to be proficient in science; it rests on a view of science as both a body of knowledge and an evidence-based, model and theory building enterprise that continually extends, refines, and revises knowledge. It presents three dimensions that will be combined to form each standard:

#### **Dimension 1: Practices**

*The practices describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems.*

#### **Dimension 2: Crosscutting Concepts**

*Crosscutting concepts have application across all domains of science. As such, they are a way of linking the different domains of science.*

#### **Dimension 3: Disciplinary Core Ideas**

*Disciplinary core ideas have the power to focus K-12 science curriculum, instruction and assessments on the most important aspects of science.*

Retrieved From <https://www.nextgenscience.org/three-dimensions>

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**Thanks to the ISTS Planning Committee and Leadership Team for their help in putting together this conference:**

Craig Johnson and Cory Johnson from the Iowa Academy of Science Office; Lisa Chizek, Ken Turner, DeEtta Andersen, Alicia Schiller, Nadine Weirather, Barbara Jacobson, Tom Ervin and Traci Maxted

# Monday Schedule

8:00 - 8:15 Opening	Room 106 - 107					
	Rm 108	Rm 109	Rm 112	Rm 113	Rm 114	Rm 115
Breakout #1 8:15 - 9:00	<b>K Carmen</b> The Energy Zip Line: An Inquiry Approach to Teaching Potential and Kinetic Energy	<b>N Patel / M Rockefeller</b> Don't Force It: Gradually including inquiry to teach the NGSS			<b>McDermott / Quarderer / Weiss / Hanson</b> Resources for Utilizing the ASSIST Approach	<b>D Voss</b> Understanding Digital and Analog Technologies through Cameras
9:00 - 9:30	AM Exhibit Hall					
9:30 - 10:30	<b>EXPO!</b> Room 106 - 107 See page 12-13 for more information <b>EXPO!</b>					
Breakout #2 10:30 - 11:00	<b>K Roberts / J Kruse</b> Nature in the NGSS: How to teach students to be stewards of nature	<b>Kent-Schneider / Kruse</b> Teaching the Nature of Science to Align Lessons with the NGSS AI	<b>Alicia Vasto</b> Charting a Course for the Future of Conservation Education in Iowa	<b>Sanderman / Christensen</b> Measuring Your NGSS Implementation with IC Maps	<b>B Watson</b> Iowa Careers and Education in the Water and Wastewater Industry	<b>Ernie Schiller</b> Rebuild Nepal Education
11:00 - 11:30	AM Exhibit Hall					
Breakout #3 11:30 - 12:15	<b>M Spocter / K Cain</b> Neuroanatomy in an afternoon	<b>T Askeland-Nagle</b> Creating Standards-based Rubrics Grounded in Cognitive Rigor	<b>Iowa Limestone Producers</b> Mining: Mining in the Classroom from A-Z! Everyone's A Miner!	<b>D Christianson</b> Lab-Aids Evolution Embry-OH!	<b>D Atwood Blaine / M Kuhn</b> Considering the Crosscutting Concepts	<b>D Posekany</b> A Case of Unintentional Overdose
12:15 - 1:30 Lunch, Awards & Keynote	Room 106 - 107 Luncheon Keynote Dr. David R. Andersen Dr. Andersen will be sharing his research in the area of semiconductors as well as his ideas on how teachers of every level (K-12) can prepare students for success at the college level.					
Breakout #4 1:30 - 2:15	<b>K Cain / H Showalter</b> I.O.W.A. STEM Teacher Award Panel: Hearing From the Recipients	<b>C. Like / Askeland-Nagle</b> Are We Doing a Good Job? Evaluating NGSS Implementation	<b>L Williams</b> 3D Learning through Authentic Projects and Citizen Science	<b>T Plein</b> Fostering a Science Identity	<b>Parikh /Hunter-Thomson</b> Connecting Data, Technology, & ISS to Make 3D High School Sciences Come Alive	<b>W Fett / C Hall</b> The Science of a GMO
2:15 - 2:45	PM Exhibit Hall					
Breakout # 5 2:45 - 3:30	<b>J Pelds / R Harmon</b> Makerspace in Your Classroom: You Can Do It!	<b>A Nannenga / K Koenig</b> Real Data Through Watersheds: TES-MMW	<b>N Vick</b> How can NSTA help you love science teaching even more?	<b>Room 106-107</b> <b>Lynne Campbell / Keith Bidne / A Vasto/ M Wilkins</b> REAP Monarch Eggs Project and 4-H Monarchs on the Move	<b>Parikh /Hunter-Thomson</b> Where Data, Technology, & 3D Learning Meet: Making Middle School ISS Sciences Pop	<b>J Maroo/ S Noreuil</b> Epistími Olympiáda: Are you readying for Science Olympiad at your school?
Breakout #6 3:35 - 4:20		<b>A Sobotka / R Schumacher</b> What Floats Your Boat?	<b>N Vick</b> Introduction to Productive Talk			<b>M Sanderman</b> 3D Assessment - Moving beyond traditional tests
4:20 - 4:30 Closing	Room 106 - 107					

# Monday Schedule

Room 106 - 107						
Rm 116	Rm 208	Rm 209	Rm 212	Rm 213	Rm 214	Rm 215
<b>M Haage</b> Computer Science for Your K-12 Classroom	<b>J Pleasants</b> What is the Nature of Engineering?	<b>K Anderson</b> STEM-ulating Activities on Human Ecology	<b>D Posekany</b> How Much and How Often (OTC Medicine Safety)	<b>J Krynski</b> Demystifying 3D NGSS and STEM: Using Phenomenon Makes Learning Come Alive!	<b>D Krefting / M Wicklund</b> Resources to Differentiate & Personalize for Your Students	<b>P Howell / B Vazquez</b> Evolution for Middle School Educators
<b>AM Exhibit Hall</b>						
<b>EXPO! Room 106 - 107 See page 12-13 for more information EXPO!</b>						
	<b>J Pleasants</b> Using Scientific Explanations to Assess Student Thinking	<b>P Joslyn / C Yoose</b> Cell Phone Case	<b>J Lang / M Lang</b> Iowa STEM Teacher Externships		<b>K Bergman / M Trent</b> STEM Resources: Hands-on Activities to Inspire and Engage	
<b>AM Exhibit Hall</b>						
<b>M Seavey</b> TinkerCAD for Beginners	<b>K McCarville / J Stoffel</b> Science Literacy in Undergraduate Introductory Earth Science Courses	<b>C Carney / W Pollema</b> Crime in the Classroom	<b>J Wilcox / E Henry / J Easter</b> Principles for Effectively Teaching the NGSS	<b>J Krynski</b> NGSS Assessments: How will we know they are learning?	<b>J Holub / L Menke / J Kruse</b> Integrating Engineering into Elementary Physical Science Lessons	<b>Evans /Neary</b> Project 2nd Chance: New NGSS, opportunities, and a forward learning experience
<b>Room 106 – 107</b>						
<b>Luncheon Keynote Dr. David R. Andersen</b>						
<b>Dr. Andersen will be sharing his research in the area of semiconductors as well as his ideas on how teachers of every level (K-12) can prepare students for success at the college level.</b>						
<b>J McCollam</b> <i>Project Lead the Way</i> Programming a Microbit for Rock, Paper, Scissors	<b>Ehlers / Carney / McCarville / Monteith</b> Water Connect Us All: 3-D Learning and Environmental Education	<b>A Schiller Haynes/ JameySue Smith</b> Literacy in the 6-12 Science Classroom	<b>Wilcox / Huntley /Holub</b> Teaching Engineering in the Elementary and Middle School	<b>J Krynski</b> Creating a 3D Learning Environment through STEM Instructional Practices	<b>B. Kaufann / V Watson</b> Discussion Session for Elementary Science Teachers	<b>T Neal / N Quarderer</b> Iowa 8th Grade Science Bundles: Applying Science to Iowa
<b>PM Exhibit Hall</b>						
<b>J McCollam</b> <i>Project Lead the Way</i> Programming a Microbit for Rock, Paper, Scissors	<b>L Flynn / D Bowlus</b> STEM Innovator: Creating Future Ready Innovators and Entrepreneurs	<b>K Turner</b> Pursuit of Excellence in Science Teaching: Discussion on the ISTS Survey	<b>Wilcox /Holub / Carman</b> What about the Cross-cutting Concepts? How to make the CCCs explicit in your science lessons.	<b>S Nash / J Bratvold</b> Take a Journey with us in Future Ready	<b>B VanMeeteren / V Watson</b> Addressing 3 Dimensional STEM Learning Every Day in K-3 Classrooms	<b>S Meggers / D Kearney</b> Can you model a sustainable ecosystem...in a bottle? Sure!
		<b>Morgan /Bauer</b> Iowa-based Phenomena with IPTV's Iowa Land and Sky	<b>J Wilcox / T Schou / J Easter</b> Teaching Social Emotional learning alongside the NGSS			<b>B Harwood</b> Using the Activity Model for Scientific Inquiry to Support 3D Learning
<b>Room 106 - 107</b>						

# Pre-Conference Events

## Sunday October 7

### Science Center of Iowa

401 West Martin Luther King Parkway, Des Moines, Iowa

Join us in a welcoming event that will include a scavenger hunt through Science Center of Iowa

Short sessions by award winning teachers

Informal networking time with appetizers and cash bar.



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DOME THEATER

5:30–6:00 P.M. - Registration in the lobby of the Science Center of Iowa (SCI)

6:00–6:10 P.M. - Welcome in the John Deere Adventure Theater

6:15–7:00 P.M. - Workshops in Physio Lab and Commons

7:10–7:45 P.M. - Meet in Founders for rules and begin the scavenger hunt through the Science Center

7:45–8:05 P.M. - Meet in Star Theater for scavenger hunt awards and to learn about SCI offerings

8:05–9:00 P.M. - Social hour in Founders Hall



**Hello and welcome to the Fall 2018 ISTS Conference!** My name is **Lisa Chizek** and I am the Conference Chair. This year I am teaching 4<sup>th</sup> and 5<sup>th</sup> grade science at North Tama. The Fall 2018 conference title, “Cultivating Science Literacy in 3D,” signifies how essential we believe it is to help our students develop true science literacy. People who are scientifically literate understand the concepts and processes of science which allows them to continue to further their own knowledge as well as make informed decisions for themselves, their families, and the world. Good science and STEM education is important for more than preparing a future workforce. Quality science and STEM education helps develop students who think more deeply and differently about things, ask good questions, work to answer their questions, evaluate

information, construct and support their thinking with evidence, and design effective solutions to problems. Supporting high-quality science and STEM education in the early grades is just as important as encouraging high-quality science in general. If we think science is not important for young people and we wait to begin including effective science and STEM education until later grades, we have lost important opportunities for cultivating a foundation for scientifically literate students. Young students are innately curious about their world and it is essential we support high-quality science and STEM experiences in their daily education. Our Fall 2018 ISTS Conference “Cultivating Science Literacy in 3D” will offer inspiration, support and ideas for implementing high quality learning in 3D.

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



# Welcome

**WELCOME TO THE FALL CONFERENCE: “CULTIVATING SCIENCE LITERACY IN 3-D”.** I welcome you to the conference on behalf of the many awesome and dedicated science teachers who helped to bring this conference to fruition. Please find some time to thank Lisa Chizek, Conference Chair. And please make an extra effort to thank the many sponsors and exhibitors - we cannot do this without them.



There are many, many benefits to conference participation. You can explore innovative topics that you might not have considered. You may find a fellow science teacher with a brand new method of teaching content. You can find some clarity with the NGSS and Iowa Standards. You will find some help with developing your 3 D assessments. Really, you can find the support and innovation everywhere. I personally love the conference - what an opportunity to learn in a collaborative creative environment.

This conference may be the most visible aspect of the ISTS, but it is not the only “job” of the ISTS. Our mission is to “advocate for excellence in science education by promoting professionalism, influencing policy, and enhancing learning”. Please join ISTS, renew your ISTS, get fellow teachers to join ISTS, and get involved! Become a part of enhancing science education across the state of Iowa!

And WELCOME TO THE FALL CONFERENCE!

*Dr. Ken L. Turner, Jr.*

Assistant Professor of Science Education

University of Dubuque

563-589-3799

Chair, Iowa Science Teaching Section

Iowa Academy of Science



**Welcome to the ISTS Fall Conference.** We are pleased to have you here. ISTS is one of 12 sections in the Iowa Academy of Science. Science education bridges the gap between pure science research and the practical applications that have greatly benefited society. Science educators play an important role by introducing students to the wonders of the world around them and by teaching our next generation of researchers, inventors, entrepreneurs, and the workforce that brings STEM into our everyday lives.

The Iowa Academy of Science is Iowa's only multidisciplinary professional science organization. It is devoted to bringing all sciences together and has been doing it since 1875. Working together across disciplines is critical to the advancement of STEM for the benefit of society. We hope by attending this conference you will be invigorated professionally and personally. Thank you for your commitment to science education and enjoy the day.

**Craig Johnson, Executive Director**

**Iowa Academy of Science**

*Promoting science research, science education, the public understanding of science and recognizing excellence in these endeavors.*

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**Don't forget to follow ISTS on social media:**  
@iowasciteachers      www.scienceiniowa.org

 **# ISTS2018**



# Iowa Academy of Science

Promoting science research, science education, the public understanding of science, and recognizing excellence in these endeavors.



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# Monday October 8

- 8:00 - 8:15 Opening
- 8:15- 9:00 Breakout Session 1
- 9:00 - 9:30 Exhibit Hall
- 9:30 -10:30 EXPO!
- 10:30 - 11:00 Breakout Session 2
- 11:00 - 11:30 Exhibit Hall
- 11:30 - 12:15 Breakout Session 3
- 12:15 - 1:30 Lunch, Awards & Keynote
- 1:30 - 2:15 Breakout Session 4
- 2:15 - 2:45 Exhibit Hall
- 2:45 - 3:30 Breakout Session 5
- 3:35 - 4:20 Breakout Session 6
- 4:20 - 4:30 Closing



## Symbols for Conference Themes:

**3D?** Learning in 3D - What is 3D Learning?

**E** 3D Learning Environments - Environments that support collaborative, inquiry-based learning in 3D.

**A** Assessing 3D Learning - What are students learning, how are they thinking, and what understandings and skills are they gaining from 3D lessons?

**IA** Learn about 3D informal learning resources in Iowa.





## Power 3D Learning and Cultivate Science Minds

Visit our booth in the exhibit hall and join our sessions!



### Create a 3D Learning Environment through the STEM Teacher Actions

Creating a learning environment based on high impact STEM strategies will transform your student outcomes! Learn how to refine and utilize the 15 STEM Teacher Actions for NGSS 3D instruction.



### NGSS Assessments: How Will We Know Students Are Learning?

What will the assessments look like? How are they constructed? I heard they will be performance-based! These and other questions will be part of this engaging and interactive session on NGSS assessments.



### Demystifying NGSS: Use STEMscopes 3D to Make Phenomena-based Learning Come Alive!

Join us as we use models, engineering design, and argumentation from evidence to discover and explain the phenomena of wave patterns and demystify the 3Ds of the NGSS.



STEMscopes NGSS 3D is a STEM solution from Accelerate Learning, Inc. and [Rice University](https://www.rice.edu) that serves over 4 million students nationwide. Making STEM learning and professional development affordable, accessible, and equitable, we lead PreK-12 STEM education nationally. Learn more at [STEMscopes.com/ngss](https://www.stemscopes.com/ngss).



# Session 1 8:15–9:00

<b>Room 108</b> The Energy Zip Line: An Inquiry Approach to Teaching Potential and Kinetic Energy E	Using a classroom-sized zip line and student-created products, participants in this session will first-hand experience an activity to use in classroom instruction for potential and kinetic energy.	<b>Katherine Carman</b> Drake University/Urbandale HS
<b>Room 109</b> Don't Force It: Gradually including inquiry to teach the NGSS 3D?,E / MS	Inquiry labs can seem overwhelming. Come see how we have gradually and effectively incorporated guided inquiry into our NGSS lessons.	<b>Neal Patel</b> <b>Molly Rockefeller</b> Brody MS and Bondurant MS
<b>Room 114</b> Resources for Utilizing the ASSIST Approach 3D?,E,A / Gen	The ASSIST approach based on the SWH has been developed over the course of a three year professional development project. Resources and tools for implementing this approach will be shared.	<b>Mark McDermott,</b> <b>Nathan Quarderer, Katie Weiss,</b> <b>Will Hanson</b> University of Iowa
<b>Room 115</b> Understanding Digital and Analog Technologies through Cameras 3D?,E / HS	Learn about and participate in a HS physical science unit in which students take apart disposable cameras and examine other tech to build understanding of digital and analog information technologies.	<b>Dan Voss</b> Dallas-Center Grimes HS
<b>Room 116</b> Computer Science for Your K-12 Classroom E / Gen	This presentation will introduce some of the free computer science resources for teachers in Iowa. Explore the free Code.org curriculum and learn about free professional development opportunities.	<b>Mauree Haage</b> Twin Cedars Jr/Sr High
<b>Room 208</b> What is the Nature of Engineering? 3D? / Gen	What is engineering? How is engineering related to science? Given engineering's place in the NGSS, these questions are crucial to explore with students; this session provides practical ways to do so.	<b>Jacob Pleasants</b> Iowa State University
<b>Room 209</b> STEM-ulating Activities on Human Ecology E / MS,HS	Discover innovative ways to teach about human-environmental interactions, while also building STEM skills through problem solving, mathematical modeling, interactive technology and more!	<b>Kate Anderson</b> Population Connection
<b>Room 212</b> How Much and How Often (OTC Medicine Safety) 3D? / MS, HS	Work through a lesson where students test different dosing devices to determine which is most accurate for measuring liquid medicine. They use a model to illustrate the effects of taking medicine more frequently than recommended.	<b>Dawn Posekany</b> Solon HS
<b>Room 213</b> Demystifying 3D NGSS and STEM: Using Phenomenon Makes Learning Come Alive! 3D? / EL	Join us as we use models, engineering design, and argumentation from evidence we will demystify the 3Ds of the NGSS, to discover and explain patterns in the phenomena of waves.	<b>Jill Krysinski</b> STEMscopes
<b>Room 214</b> Resources to Differentiate and Personalize for Your Students / Gen	Learn how to find resources to add to your Science classroom to differentiate the needs of your students.	<b>Denise Krefting</b> <b>Melissa Wicklund</b> AEA Learning Online
<b>Room 215</b> Evolution for Middle School Educators E / MS	The Teacher Institute for Evolutionary Science helps teachers teach evolution with confidence. Participants will receive a free unit of materials, including many NGSS-based active learning ideas.	<b>Patti Howell</b> <b>Bertha Vazquez</b> The Teacher Institute for Evolutionary Science



Theme	Level	Presenters		Title	Description
E	E	Connie Courbat	North Tama Elementary School	Stem and Literacy in Tandem	Students at North Tama have Stem Rotations while literacy is being taught. Students explore, run tests, build, and make sense of their world. Come learn about activities that enhance NGSS.
E, IA	E	Cindy Hall, Will Fett	Iowa Agriculture Literacy Foundation	Phenomena in Agriculture	Discover science phenomena related to crops, livestock, insects, soil & water! Explore teacher-tested agricultural phenomena and leave with a list of phenomena aligned to 34 K-5 standards.
E	E	Brenda Kaufmann	North Tama Elementary	Seed Dispersal Investigations	Come and experience seed dispersal investigation! From observational drawings to dispersal testing, experience hands-on what students will be investigating in a center during a seed dispersal unit.
3D?, E	E	Mason Kuhn, Dana Atwood-Blaine	University of Northern Iowa	The Storyline Approach: Building Coherent Unit Plans with the ASSIST Approach	In this session we will discuss how to create unit plans after Performance Expectations are bundled and a Big Idea and storyline are created. Sample unit plans and templates will be available.
E	E	Mark McDermott, Kathleen Weiss, Nathan Quarderer, Will Hansen	University of Iowa	Sensing, Processing, Acting	Engaging sensory experiences are utilized to introduce and sustain a unit on the interaction of human body systems to sense the environment, process sensory information, and act on the information.
E, A	E	Sherri Peterson, Beth Van Meeteren	University of Northern Iowa	Tinkering with Tops	Participants will explore lines of symmetry along an axis and other variables that affect rotational motion such as size, shape, and weight of the top body and its placement on the spindle.
E	E	Marcy Seavey	University of Northern Iowa	3D Printing - Disrupting Manufacturing & Design Education	Explore the disruptive influence of Additive Manufacturing and discuss how 3D printing can motivate your students to become producers.
	E	Beth Van Meeteren	University of Northern Iowa	Shadow Play	Students engage in shadow play to learn the properties of shadows
E	E	Vonna Watson	North Tama County School District	Ramps and Path Ways	Participants will interact with ramps, blocks and objects that roll. Participants will discover how using ramps with young children can teach early principles of engineering and design.



Join other Iowa science teachers in sharing great ideas in a more informal setting.



Theme	Level	Presenters		Title	Description
3D?, E, A, IA	HS	Leslie Flynn, Krystle Stehno	University of Iowa	Ten Minutes to Innovation	Create a rapid prototype product to meet multiple consumer needs. Student activity and teacher facilitation notes provided for next day implementation.
E, IA	HS	Cindy Hall, Will Fett	Iowa Agriculture Literacy Foundation	Phenomena in Agriculture	Discover science phenomena related to crops, livestock, insects, soil & water! Explore teacher-tested agricultural phenomena and leave with a list of phenomena aligned to 22 high school standards.
E	HS	Scott Wendt, Rachel Seitz	Iowa State Environmental Health and Safety	Radiation - A 3D Phenomenon that Readily Fits into the 3D Learning Metaphor	Radiation is the emission and transmission of energy across space. This process is inherently three dimensional and readily lends itself to 3D Learning with diagrams, experiments and graphing.
3D?, E, A, IA	MS	Hayden Schultz, Natalie Averkamp	Jacobson Institute	Ten Minutes to STEM Innovation	Create a rapid prototype product to meet multiple consumer needs. Student activity and teacher facilitation notes provided for next day implementation.
E, IA	MS	Cindy Hall, Will Fett	Iowa Agriculture Literacy Foundation	Phenomena in Agriculture	Discover science phenomena related to crops, livestock, insects, soil & water! Explore teacher-tested agricultural phenomena and leave with a list of phenomena aligned to 31, 6th-8th grade standards.
E	MS	Patti Howell, Bertha Vazquez	The Teacher Institute for Evolutionary Science	Evolution for Middle School Educators	The Teacher Institute for Evolutionary Science helps teachers teach evolution with confidence. Participants will receive a free unit of materials, including many NGSS-based active learning ideas.
	MS	Jody Stone	University of Northern Iowa	Using Manipulatives to Increase Understanding of Molecules, Formulas and Balancing Equations	Participants will use inexpensive manipulatives to learn the fundamentals of building molecules and balancing equations.
		Anne Turner	North Tama	Wacky Water!	Water play is an exciting way to explore and develop hand-eye coordination and explore math and science concepts! Splish, splash, let's learn in a dash! Come and play!



# Session 2 10:30–11:00

<b>Room 108</b> Nature in the NGSS: How to teach students to be stewards of nature E / Gen	Students have moved from outside play to inside play, and have lost a sense of nature. The framework discussed enables students to regain their natural wonder and responsibilities to community.	<b>Kean Roberts</b> <b>Jerrid Kruse</b> Drake University
<b>Room 109</b> Teaching the Nature of Science to Align Lessons with the NGSS AL / Gen	The nature of science (NOS) is embedded in the SEPs and CCCs of the NGSS . We'll share strategies to leverage NOS instruction to better align to the NGSS.	<b>Isaiah Kent-Schneider</b> <b>Jerrid Kruse</b> Drake University
<b>Room 112</b> Charting a Course for the Future of Conservation Education in Iowa	Join the Iowa Conservation Education Coalition and fellow educators for a discussion on conservation education (CE) in the classroom. This is part of a statewide study to develop CE priorities and capacity building recommendations.	<b>Alicia Vasto</b> Iowa Conservation Education Coalition
<b>Room 113</b> Measuring Your NGSS Implementation with IC Maps 3D?,E,IA / Gen	Teachers often say they are "implementing" the NGSS in their classrooms, but what does that really mean? The IC Map is a tool to allow teachers to measure their personal levels of implementation.	<b>Mandie Sanderman</b> <b>Peggy Christensen</b> Central Rivers AEA
<b>Room 114</b> Iowa Careers and Education in the Water and Wastewater Industry / HS	This session will cover the educational and career opportunities for science students in the water and wastewater industry in Iowa and elsewhere, with special emphasis for hands on science students.	<b>Bob Watson</b> Watson Brothers
<b>Room 115</b> Rebuild Nepal Education	Find out about the foundation established to assist Nepal recover from the devastating 2015 earthquake. The rural mountain regions were destroyed; homes, fields, animals, schools and so many lives. Find out if you would like to join our group of volunteers travel to Nepal and put your talents and teaching skills to work.	<b>Ernie Schiller</b> Rebuild Nepal Education
<b>Room 208</b> Using Scientific Explanations to Assess Student Thinking A / HS	Constructing explanations is a fundamental science practice; this session explores ways to assess student thinking by asking students to create scientific explanations for thought-provoking phenomena.	<b>Jacob Pleasants</b> Iowa State University
<b>Room 209</b> Cell Phone Case 3D?,E,A / MS, HS	Utilizing the design process, students construct a cell phone case with minimum constraints, calculate the change in momentum, and discuss the features in the design to prevent cell phone breakage.	<b>Pamela Joslyn</b> <b>Cindy Yoose</b> Muscatine CSD
<b>Room 212</b> Iowa STEM Teacher Externships E / MS, HS	Hear more about the Iowa STEM Teacher Externships Program. The session will include program details, possible summer externship experiences, classroom takeaways, and how to get involved next summer!	<b>Jason Lang</b> <b>Meghan Lang</b> Iowa Governor's STEM Advisory Council
<b>Room 214</b> STEM Resources: Hands-on Activities to Inspire and Engage E,IA / EL	We will present STEM resources and learning modules based on hands-on and inquiry-based learning. The resources are available for checkout at The Governor's STEM Advisory Council regional offices.	<b>Kelly Bergman</b> <b>Mary Trent</b> Iowa Governor's STEM Advisory Council

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

# Session 3 11:30–12:15

<b>Room 108</b> Neuroanatomy in an afternoon E,IA / HS	Here we report on a collaborative project (NeuroSMART) which harnesses the framework of 3-dimensional learning to educate students about neuroscience through active research at a medical school.	<b>Muhammad Spocter</b> <b>Kacia Cain</b> Des Moines University
<b>Room 109</b> Creating Standards-based Rubrics Grounded in Cognitive Rigor A / Gen	Come see a process for creating standards-based rubrics in science that are grounded in cognitive rigor and assess all three dimensions.	<b>Tammy Askeland-Nagle</b> Mississippi Bend AEA
<b>Room 112</b> Mining: Mining in the Class Room from A-Z! Everyone's A Miner! / Gen	Finding, utilizing, conserving, reusing our Resources. Activities: Conducting a mining exercise in the Classroom-A Hands-On Approach!	<b>Iowa Limestone Producers</b>
<b>Room 113</b> Evolution Embry-OH! 3D? / MS	What relationships across different animal species can you see in embryological data that you cannot observe by comparing mature animals? Identify patterns in embryological images from different species to provide evidence of closer evolutionary relationships.	<b>Darin Christianson</b> <b>Lab-Aids</b>
<b>Room 114</b> Considering the Crosscutting Concepts 3D? / Gen	An active-learning workshop designed to increase participants' understanding of the NGSS' Crosscutting Concepts.	<b>Dana Atwood-Blaine</b> <b>Mason Kuhn</b> University of Northern Iowa
<b>Room 115</b> A Case of Unintentional Overdose 3D? / MS, HS	Students conduct simulated laboratory tests to determine that a patient's symptoms are due to liver damage, analyze the medicines, and calculate how much acetaminophen was ingested. They learn about the role of the liver in maintaining homeostasis.	<b>Dawn Posekany</b> Solon HS
<b>Room 116</b> TinkerCAD for Beginners E / EL, MS	Open a TinkerCAD account, complete short tutorials in the context of learn how to create objects, move the camera, and merge objects to make complex shapes. Save your first designed object.	<b>Marcy Seavey</b> University of Northern Iowa
<b>Room 208</b> Science Literacy in Undergraduate Introductory Earth Science Courses E / HS , 13+	Undergraduate earth science curricula, using active learning and engaging pedagogies, provide a platform for implementing an innovative science literacy model and assessing student learning.	<b>Katherine McCarville</b> <b>Jennifer Stoffel</b> Upper Iowa University
<b>Room 209</b> Crime in the Classroom E / MS, HS	In this session gain tools to run a mock-crime scene at your school and to facilitate a partnership with local law enforcement. Participants will experience discussion and hands-on activities.	<b>Cathryn Carney</b> <b>Waylon Pollema</b> Boyden-Hull JHHS
<b>Room 212</b> Principles for Effectively Teaching the NGSS E / Gen	How can we effectively teach the NGSS? Come engage in an activity and a discussion that will highlight important principles of teaching with the NGSS.	<b>Jesse Wilcox, Emily Henry,</b> <b>Jaci Easter</b> Grand View University
<b>Room 213</b> NGSS Assessments: How will we know they are learning? A / EL	What will they look like? How are they constructed? I heard they will be performance-based! These and other questions will be part of this engaging and interactive session on NGSS	<b>Jill Krysinski</b> STEMscopes
<b>Room 214</b> Integrating Engineering into Elementary Physical Science Lessons E,A / EL	Come see how we've integrated engineering into second-grade investigations about matter and third-grade explorations of forces.	<b>Jordan Holub, Lucas Menke,</b> <b>Jerrid Kruse</b> Drake University
<b>Room 215</b> Project Second Chance: New NGSS opportunities, and a forward learning experience 3D?,E,A,IA / MS	Case Study: Innovative 12-day block of middle school earth science/sustainability with web-based tools for student collaboration and 3-D project development with an ISU FLEx collaboration/visit.	<b>Pete Evans, Micah Neary</b> Iowa State University

# Luncheon & Awards 12:15–1:30

## Keynote Speaker



**Dr. David R. Andersen**  
Professor of Electrical and Computer  
Engineering and  
Professor of Physics and Astronomy  
The University of Iowa

Dr. Andersen will be sharing his research in the area of semi-conductors as well as his ideas on how teachers of every level (K-12) can prepare students for success at the college level.

## 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.)

# 2018 Outstanding Service Award



After having taught science in the Des Moines schools for eighteen years, **Eric Hall** is currently Hoover High School's International Baccalaureate (IB) Middle Years Program Coordinator and Instructional Coach. He taught grade levels 9-12 and has worked with an academically and culturally diverse student body. In his new role as IB Coordinator, he oversees Hoover's 9<sup>th</sup> and 10<sup>th</sup> grade students' progress through the IB Middle Years Program and supports the staff in finding ways to incorporate a more global, equitable, sustainable and reflective mindset into their respective curricular areas and instructional practices.

Eric also works as a professional development coordinator for Iowa State University (ISU). In this capacity, he has the opportunity to work with a talented group of middle and high school STEM educators from around the country. At ISU, he facilitates several programs for science teachers as part of their summer research experience in plant genomics, engineering and biorenewable fuels and chemicals. In addition to supporting science education as a program facilitator, Eric has also contributed to the work of several research groups on campus and has co-authored two published studies in the areas of biochar characterization and the use of a resident scientists in K-12 science classrooms.

Eric contributes to science education in a variety of other ways, including the development of K-12 curriculum modules, serving on leadership teams and committees, presenting at numerous conferences around the country, and supporting the Iowa Academy of Science by serving as I.S.T.S. section chair for two terms of 3-years each.

Eric earned a B.A. from Simpson College and an M.A. from Morningside College. He lives in Ankeny with his two spoiled furry friends, Libby and Zoe, and thanks his parents, Tom and Bicka Hall, for their guidance and support over the years.

After spending 6 years in the ISTS Section Chairs, and serving twice as ISTS Fall Conference Chair, it is clear that Eric's service has been truly outstanding, and worthy of the ISTS Outstanding Service Award.

# Excellence in Science Teaching Award



**Scott Black**  
Earth, Space, Environmental Science  
Holy Trinity Catholic School  
in West Point, Iowa

**Phil Lala**  
General/Multiple  
Science City High  
in Iowa City

**Linda Peitz**  
Elementary  
Science Holy Trinity  
Catholic School in  
West Point, Iowa

**Ernie Schiller**  
Science Supervisory Science  
Coordinator for Holy Trinity  
Catholic Schools in Fort  
Madison and West Point

**Collin Reichert**  
S.T.E.M. Science @  
High School  
Ames High School  
(not shown)



# 2018 Friend of Science Awards



After graduating in 2012 from the University of Nebraska-Lincoln with a degree in Insect Science, **Ginny Mitchell** began her career as the Education Program Coordinator of the Insect Zoo at Iowa State University. In the past 6 years, the Insect Zoo has traveled to 89 of the 99 Iowa counties, visiting over 150,000 Iowa children, and conducting an average of 325 programs each year. Ginny is proclaimed as “The Bug Lady” of Iowa. She humbly accepts this title.

Using a hands-on approach, the Insect Zoo aspires to foster an appreciation for our arthropod friends. Ginny has developed classroom programming based on both the Iowa Core Curriculum for Science and the Next Generation Science Standards. During her programs, the students are given the title of entomologist, a scientist looking for answers. Using living animals, the students look and explore with gentle guidance from Ginny. Questions are not met with answers, but with more questions to help lead the students to develop their own answers.

When she isn't traveling thousands of miles around Iowa, Ginny oversees the insect rearing facilities and the many ISU student-workers at the Insect Zoo. Arthropod husbandry is important for the longevity of the over 115 species of arthropods at the Insect Zoo. Along with ISU students, Ginny has developed a husbandry handbook that can be used in homes and other institutions.

As a female entomologist, Ginny has a unique opportunity to inspire young girls to explore careers in STEM. She loves hearing the common misconceptions that “bugs are for boys” and “girls don't like bugs” as she holds a giant walking stick or scorpion in her hand. In fact, Ginny has found that the boys are more apprehensive than the girls! Hanging around Ginny's office you can find many drawings from girls all over Iowa expressing their desire to be “just like you when I grow up.” As Ginny always says, “Girl Bugs Rule!”

In her spare time, Ginny likes to hang out with her husband and three children, ages 3 ½, 9 and 11. She also enjoys reading, being outdoors, painting and running around the Arizona desert looking for bugs. One of her many accomplishments is being stung by both the 2<sup>nd</sup> and 3<sup>rd</sup> most painful stinging insects in the world, the Tarantula Hawk Wasp and the Velvet Ant—all done in the name of science, of course! When she “grows up”, Ginny would like to be a high school biology teacher.

The Insect Zoo is perfect for ages 1 to 112 and offers a wide variety of programming options. If you would like more information about the Insect Zoo, please visit their website, [zoo.ent.iastate.edu](http://zoo.ent.iastate.edu)



Recognized as one of the best volunteer events in the country, **Iowa Project AWARE** has amassed some impressive statistics since its inception in 2003. To date, more than 2,600 volunteers from across the country have cleaned up over 1,200 river miles, removing more than 426 tons of trash (77% of which is recycled) from Iowa rivers.

As an annual river cleanup, outdoor recreation, and environmental education event, Iowa Project AWARE provides hands-on, real-time opportunities for volunteers to learn more about the river's water quality, biology, geology, cultural history, and more. The name itself, AWARE, stands for: A Watershed Awareness River Expedition.

While the event had been coordinated by the Iowa Department of Natural Resources for 15 years, continuing to adapt to its ever-increasing success proved challenging for the agency. Thus, Iowa Project AWARE founders and dedicated event staff, whose collective river cleanup experience totals more than 100 years, formed a nonprofit, N-Compass, Inc., to continue this highly successful and valuable program. By partnering with the Iowa DNR and State Hygienic Laboratory at The University of Iowa, N-Compass, Inc. began transitioning Iowa Project AWARE from a state-organized to a nonprofit event this year.

On behalf of Iowa Project AWARE and the thousands of dedicated citizens who volunteer their time to clean up our rivers, we are honored to receive this award and look forward to many more years of hard work, nature exploration, and clean rivers.

It is easy to see that Iowa Project AWARE is an excellent choice as a 2018 ISTS Friend of Science Education Award recipient.



# 2018 Friend of Science Awards

For many years, **Robbin Dunn**, Communications and Preparedness Manager for the **City of Davenport's Public Works Department**, has been collaborating with the Davenport Community School District to foster citizenship and stewardship of our natural resources. Being responsible to maintain the natural and built environment that the city enjoys, this collaboration has focused on integrating water quality, storm water run-off, and various other public works fields into the school district's K-12 curriculum through meaningful hands-on, project based learning experiences; all of which tie to science, technology, engineering, math and a real world application of student learning.



This collaboration has included supporting teacher interest in these topics through knowledge and resource sharing, writing grants as well as attending a number of training opportunities with teachers to help teachers further students' classroom learning experiences. As a result of a Project Learning Tree's Green Schools! Grant, one of Davenport's elementary schools established a Green Team, over 8 years ago, that is still going strong; so much so, that at that school, it is an honor to be selected for the team and it has become a part of the culture at the school. More recently, a joint grant application for Iowa's Watershed Grant with Davenport North High School's Laura McCreery resulted in delivering a more meaningful learning experience in her dual credit enrollment environmental science class using project based learning. Student learning and community outcomes of the class have, to say the least, been inspiring. To better illustrate, words and phrases like the following, applied in staff review of student watershed improvement project proposals and presentations: "Changemakers"; "Students identified ways to remove known and potential barriers."; "Loved the life skills and learning that took place here, positive message, age discrimination..."; "They have this figured out - we don't want to get in the way of their plan."; "Kudos to students for their work..."; "Impressive"; "Time and attention to the project was very evident."; "Students connected with the issue."

Annually, Public Works hosts five - day long Watershed Study Trips for all Davenport Community School District 6th grade students, as well as one local private school. The field trip engages students in learning about watersheds and how people interact with our water resources. Stormwater, floods, drinking water, wastewater treatment, compost, green infrastructure, behavior and best management practices are all part of the day long experience.

To further celebrate and recognize student achievement and to promote citizenship and stewardship, public works also hosts a biennial Community Showcase of Learning. The Showcase features about 230 science based presentations from the school district's 5th, 6th, 7th and 8th grade students, and is a great opportunity for students to engage in conversation with the public about their learning and their ideas for protecting our natural resources, which public works hopes will help students, the community and public works to sustain our community and its natural resources now and into the future.

Davenport Public Works' involvement in education has also included offering professional development opportunities for teachers, student internships, and the development of 5th grade and high school level science activities that can be used in traditional and project based learning environments. These efforts have previously been recognized with the Davenport Community School District's Helping Us Grow (HUG) Award, and by the Iowa Storm Water Education Partnership.

It is an honor for Ms Dunn and other involved staff, to have the Davenport Public Works be recognized by the Iowa Academy of Science's Iowa Science Teaching Section, with the Friend of Science Award. It is through collaboration, that we are able together to build a better community. A few special school district teachers and staff should also be recognized for their contribution to science education. Without these exceptional teachers, their interest and desire to do more, the success of this Public Works' collaboration with the school district would not be what it is; Laura McCreery, life science instructor; Carey Smyser, elementary teacher, and Melissa Trimble, science curriculum specialist.

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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](mailto:iascience@uni.edu).

# Session 4 1:30–2:15

<b>Room 108</b> I.O.W.A. STEM Teacher Award Panel: Hearing From the Recipients A / Gen	In this panel, you'll hear from recipients of the Governor's STEM Advisory Council's I.O.W.A. STEM Teacher Award, sponsored by Kemin Industries, on curriculum/tactics they use in their classrooms.	<b>Kacia Cain, Holly Showalter</b> , and a panel of I.O.W.A. STEM Teacher Award recipients Iowa Governor's STEM Advisory Council
<b>Room 109</b> Are We Doing a Good Job? Evaluating NGSS Implementation 3D?,A / HS	Come see how two districts evaluated their progress towards implementing the NGSS and how your district can do the same.	<b>Christopher Like, Tammy Askeland-Nagle</b> Bettendorf High School Mississippi Bend AEA
<b>Room 112</b> 3D Learning through Authentic Projects and Citizen Science 3D?,E,A,IA / Gen	Educators will experience an authentic project proposed by a community partner, discuss how these projects support 3D learning in Science, and receive various project management tools and resources.	<b>Laura Williams</b> AEA Learning Online
<b>Room 113</b> Fostering a Science Identity E / Gen	What do you read? Why do you read it? Scientists view the world and read with a different lens than our math, history or literature counterparts. Learn how to develop students' science identities!	<b>Tami Plein</b> Great Prairie Education Agency
<b>Room 114</b> Connecting Data, Technology, & ISS to Make 3D High School Sciences Come Alive E / HS	Explore case studies across the sciences and strategies to integrate data into your HS classrooms. Use local datasets and free, research-based tools, soon to be on AIR tests, to make ISS science pop!	<b>Harshil Parikh, Kristin Hunter-Thomson</b> Tuva Labs, Inc.
<b>Room 115</b> The Science of a GMO 3D?,IA / MS, HS	But the seeds look the same! This workshop will compare conventional and GM soybeans. Learners will examine and compare the seeds and ultimately grow the plants.	<b>Will Fett, Cindy Hall</b> Iowa Agriculture Literacy Foundation
<b>Room 116</b> Programming a Microbit for Rock, Paper, Scissors E / HS	Bring your laptop and work with a partner to program a Microbit for a fun Rock, Paper, Scissors game. With no previous experience, you can see how easy it is for students (and teachers) to use block code for physical computing.	<b>J McCollam</b> Project Lead the Way
<b>Room 208</b> Water Connect Us All: 3-D Learning and Environmental Education 3D?,E / Gen	Participants experience 3-D learning of inquiry-based lessons and activities showing practices, crosscutting concepts and disciplinary core ideas associated with the study of water and soil quality.	<b>Barbara Ehlers, Cathryn Carney, Kata McCarville, Jeff Monteith</b> Upper Iowa University
<b>Room 209</b> Literacy in the 6-12 Science Classroom E,A / MS, HS	Our presentation will cover reading strategies & resources we have researched, developed & implemented in high school science classes to help our students use claims & evidence to write conclusions	<b>Alicia Schiller Haynes, JameySue Smith</b> Central Lee High School
<b>Room 212</b> Teaching Engineering in the Elementary and Middle School 3D? / EL, MS	How can you make engineering activities meaningful for your students? How can you connect engineering to science concepts? Come find out how to use engineering activities to teach science!	<b>Jesse Wilcox, Maryah Huntley, Jordan Holub</b> Simpson College
<b>Room 213</b> Creating a 3D Learning Environment through STEM Instructional Practices E / Gen	Creating a learning environment based in high impact STEM strategies will transform your student outcomes. Learn how to refine and utilize the 15 STEM Teacher Actions for NGSS 3D instruction.	<b>Jill Krynski</b> STEMscopes

Session 4 continued on next page.

# Session 4 1:30–2:15

<b>Room 214</b> Discussion Session for Elementary Science Teachers 3D?,E,A / EL	Elementary teachers who effectively transformed their classrooms integrating STEM and Literacy will lead a discussion answering questions and sharing insights for meeting challenges teachers face.	<b>Brenda Kaufmann</b> <b>Vonna Watson</b> North Tama Elementary
<b>Room 215</b> Iowa 8th Grade Science Bundles: Applying Science to Iowa 3D?,E / MS	The new Iowa Science Standards have arrived but what do you do now? Come find out how local, real-world science can be used to teach the 8th grade science standards.	<b>Ted Neal</b> <b>Nathan Quarderer</b> University of Iowa

# Session 5-6 Workshops 2:45–4:20

<b>Room 106-107</b> REAP Monarch Eggs Project and 4-H Monarchs on the Move E,IA / Gen	Participants will experience components of a K-12 progression related to the monarch butterfly. Two projects are featured: 1) The REAP Monarch Eggs Project and 2) National 4-H Monarchs on the Move.	<b>Lynne Campbell,</b> ISU Extension and Outreach <b>Keith Bidene,</b> USDA-ARS <b>Alicia Vasto,</b> ECIC <b>Mary Wilkins,</b> Story County Extension
<b>Room 108</b> Makerspace in Your Classroom: You Can Do It! E / Gen	Join the Science Center of Iowa to learn about ways to support student learning using the maker mentality. Material and tool usage, safety, learning theory as well as NGSS standards will be covered.	<b>Jolie Pelds</b> <b>Renee Harmon</b> Science Center of Iowa
<b>Room 114</b> Where Data, Technology, & 3D Learning Meet: Making Middle School ISS Sciences Pop E / MS	Use local datasets and free, research-based tools, soon to be on the AIR tests, to make ISS sciences come alive! Explore case studies and strategies to integrate data into your MS science classroom.	<b>Harshil Parikh</b> <b>Kristin Hunter- Thomson</b> Tuva Labs, Inc.
<b>Room 208</b> STEM Innovator: Creating Future Ready Innovators and Entrepreneurs 3D?,E,A,IA / MS, HS	Engage students in STEM Innovation challenges. Working on a team, employ the same STEM innovation and entrepreneurial frameworks STEM industries use to advance solutions to real-world problems.	<b>Leslie Flynn</b> <b>Krystle Stehno</b> University of Iowa Jacobson Institute
<b>Room 213</b> Take a Journey with us in Future Ready E / MS, HS	Explore the 4 C's of 21st Century Learning implemented in a community rich geometry/physics classroom. We will share curriculum webbing, project-based learning and community partnering.	<b>Shelly Nash</b> <b>Jamie Bratvold</b> Sioux City West High School

Sessions 5 & 6 on next page.

Notes:



# Session 5 2:45–3:30

<b>Room 109</b> Real Data Through Watersheds: TES-MMW E,IA / MS, HS	Model My Watershed is a free, web-based application that invites students to explore the condition of their local watershed with a scientifically valid watershed model. Grades 6-12.	<b>Audrey Nannenga</b> <b>Karen Koenig</b> Manson Northwest Webster Jr/Sr High School
<b>Room 112</b> How can NSTA help you love science teaching even more? / Gen	Learn how to get the most out of an NSTA membership! Discover how to use NSTA journals, list serves, Learning Center, and awards to increase your love of science teaching.	<b>Nicole Vick</b> NSTA National Science Teachers Association
<b>Room 115</b> Epistími Olympiáda: Are you readying for Science Olympiad at your school? E,IA / HS	Join us to learn about SO in IA. We'll explain the competition set up and play mini events. Plus learn how you can incorporate some events into the classroom, as the rule guides are free online.	<b>Jill Maroo</b> <b>Susan Noreuil</b> University of Northern Iowa
<b>Room 116</b> Programming a Microbit for Rock, Paper, Scissors E / HS	Bring your laptop and work with a partner to program a Microbit for a fun Rock, Paper, Scissors game. With no previous experience, you can see how easy it is for students (and teachers) to use block code for physical computing.	<b>J McCollam</b> Project Lead the Way
<b>Room 209</b> Pursuit of Excellence in Science Teaching: Discussion on the ISTS Survey / Gen	A very brief survey was sent to ISTS members in May of 2018. Results of the survey will be presented as a beginning of a collaborative and creative discussion on these topics. Bring your ideas!	<b>Ken Turner</b> University of Dubuque
<b>Room 212</b> What about the Cross-cutting Concepts? How to make the CCCs explicit in your science lessons. 3D? / Gen	Cross-Cutting Concepts can be a tough part of the NGSS to teach. Come get practical ideas and examples on how to meaningfully incorporate CCCs into your science lessons.	<b>Jesse Wilcox</b> <b>Jordan Holub</b> <b>Katherine Carman</b> Simpson College
<b>Room 214</b> Addressing 3 Dimensional STEM Learning Every Day in K-3 Classrooms 3D?,E / EL	1st grade teachers provide students with 3-D science learning on a daily basis resulting in rigorous scientific argumentation on grade level NGSS and rediscovering the joy of teaching and learning.	<b>Beth VanMeeteren</b> <b>Vonna Watson</b> University of Northern Iowa
<b>Room 215</b> Can you model a sustainable ecosystem...in a bottle? Sure! E / MS	Ecosystem modeling in ANY middle school classroom with an eye on nutrient management! Hands-on session with connected computer modeling. 3D alignment with Iowa Science Core Middle School Standards.	<b>Sue Meggers</b> <b>Debra Kearney</b> Interstate 35 Community School

## *Iowa Junior Academy of Science*

**Visit the IAS Booth for more information and to join.**





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



# Session 6 3:35–4:20

<b>Room 108</b> What Floats Your Boat? E / Gen	Using classroom competition to demarcate between tinkering and STEM disciplines while promoting and emphasizing 3D Learning.	<b>Alex Sobotka</b> <b>Rebekah Schumacher</b> Interstate 35 Community School
<b>Room 112</b> Introduction to Productive Talk E / Gen	Discover strategies to support student reasoning and discourse. Implementing NGSS means enabling a community of learners. Join me for a crash course in Productive Talk!	<b>Nicole Vick</b> Science Education Consultant
<b>Room 115</b> 3D Assessment - Moving beyond traditional tests A / Gen	Whether we are using assessment FOR learning or using assessment OF learning, our assessment needs to reflect the three-dimensional approach of the NGSS. This session will analyze assessments for 3D.	<b>Mandie Sanderman</b> Central Rivers AEA
<b>Room 209</b> Iowa-based Phenomena with IPTV's Iowa Land and Sky IA / MS, HS	Need Iowa-based phenomena? You need IPTV's new resource, Iowa Land and Sky! Interactive 360° videos, drone footage across Iowa & Iowa teacher created/vetted classroom materials and 3-D NGSS alignment!	<b>Tiffany Morgan</b> <b>Bryan Bauer</b> Iowa Public Television
<b>Room 212</b> Teaching Social Emotional learning alongside the NGSS 3D? / HS	We know social emotional skills are important to foster in our students for them to be well-rounded adults. Come see how to embed social emotional learning in your NGSS lessons in meaningful ways.	<b>Jesse Wilcox</b> <b>Timothy Shou</b> <b>Jaci Easter</b> Simpson College
<b>Room 215</b> Using the Activity Model for Scientific Inquiry to Support 3D Learning 3D?,E,A / Gen	We will discuss a researched-based model of scientific inquiry and how it can be used to drive classroom lessons and to guide assessment of student knowledge and skills in doing authentic science.	<b>Bill Harwood</b> University of Northern Iowa

## 2018 Exhibition Hall

 	<b>Denise Krefting</b> 515-270-9030	<b>AEA PD Online</b> <a href="mailto:dkrefting@aeapdonline.org">dkrefting@aeapdonline.org</a> <a href="http://www.bitwixt.com">www.bitwixt.com</a>
	<b>Mike Zeller</b> 515/294-5949	<b>Biotechnology Outreach (ISU)</b> <a href="mailto:biotech@iastate.edu">biotech@iastate.edu</a> <a href="http://www.biotech.iastate.edu">www.biotech.iastate.edu</a>
	<b>Gina Wofford</b> 336-538-6238	<b>Carolina Biological</b> <a href="mailto:gina.wofford@carolina.com">gina.wofford@carolina.com</a> <a href="http://www.carolinacurriculum.com">www.carolinacurriculum.com</a>

Do you have information that you want to get out to the science teachers of Iowa?  
 Exhibit in the exhibit hall at the ISTS Fall Conference.  
 Commercial and non-commercial booths available.  
 Please contact the Iowa Academy of Science at [ias0001@uni.edu](mailto:ias0001@uni.edu)



# 2018 Exhibition Hall



## Des Moines Area Community College

Ciel Friess

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515-964-6813

[www.dmacc.edu](http://www.dmacc.edu)



## EMC School / Zulama

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1-800-278-3897

[www.emcp.com/applied-learning/zulama/](http://www.emcp.com/applied-learning/zulama/)



## Flinn Scientific, Inc.

Tom Trapp

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## Houghton Mifflin Harcourt

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## Iowa Agriculture Literacy Foundation

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## Iowa Children's Water Festival

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



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## Iowa Limestone Producers Association

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Kyle Nelson

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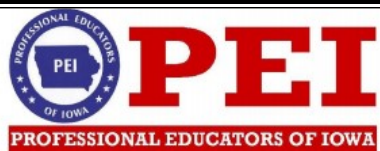
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## Lower Floor



## Upper Floor



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