SCIENCE STANDARDS

PUTTING LEGS ON THE NEW MICHIGAN SCIENCE STANDARDS

Pure Michigan Science

March 24-25, 2017
March 23, 2017 - Pre-conference sessions
Suburban Collection Showplace
Novi, MI
CONFERENCE PROGRAM
At Meemic, we know that every new and innovative breakthrough — from curing diseases to developing new technologies to reaching for the stars — will be launched from lessons learned in the classroom today.

Science matters. Science teachers matter. So we applaud our partner MSTA’s mission to stimulate, support and provide leadership for the improvement of science education throughout Michigan.

Visit our booth for the opportunity to get a $20 Visa® Gift Card!*  

*No purchase necessary. For complete terms and conditions visit Meemic.com/Offer.  
**Based on a 2016 Survey of Meemic Members.
Message from the 2017 Conference Chair and Assistant Conference Chairs

Dear Conference Attendees,

It is with great pleasure that MSTA welcomes you to the 2017 Annual Conference: “Putting Legs on the New Michigan Science Standards”, at the Suburban Collection Showplace in Novi. We are delighted to be at this location for the first time. The MSTA Conference is the “go to” destination for cutting-edge information to translate the new standards to your classroom. We have over 250 sessions being offered this year, spanning levels from early elementary through college, so there is something for everyone. The MSTA Conference is also a place where educators meet to share ideas, learn new strategies, and network. Here’s a bit of what awaits you:

There are many sessions being offered by NGSS/MSS specialists and teachers who are sharing what can be done in the classroom to embrace the new standards. Be sure to look for highlighted strands addressing Elementary learners, CREATE for STEM, MSEL A, Mi-STAR, and the MI Math/Science Centers!

There will be a movie presentation featuring BioInteractive videos from the Howard Hughes Medical Institute at 5:00-6:00 p.m. Friday, in the Opal room. Popcorn and a cash bar will be available.

Join this year’s MSTA award winners at the Awards Banquet in the Platinum Ballroom at 6:30 p.m. Be awed by these inspirational teachers and hear what they are doing in their classrooms. A reception, located in the Fireside Lounge at 5:30 p.m., will precede the banquet. Tickets for the banquet are available at registration.

Come to the “Muffins with Members” session in the Fireside Lounge on Saturday at 8 a.m. Consider the next steps needed regarding the new Science standards. What do you need from your professional organization? Learn more about the current work of MSTA leaders to help Michigan teachers transition to the new Michigan Science Standards. Share your needs!

We welcome two keynote speakers this year. Tricia Shelton will be presenting Transitioning to NGSS from a Teacher’s Point of View, on Friday at 9:00 a.m. in the Crystal Ballroom, and on Saturday at 3:00 p.m. in the Onyx room. Dr. Greg Gage, from Backyard Brains, will be presenting Neuroscience for the 99% in the Crystal Ballroom at 8:00 a.m. on both Friday and Saturday. Don’t miss them!

Catch a ride over to MSU’s Tollgate Farm to learn how MSU Extension Outreach Programs can support your educational goals in growing school gardens/greenhouses, maple sugar shack, youth development programs, community food systems education, and agriculture and natural resources. Using research-based curriculum and methods, Tollgate promotes food system awareness through exploring the sustainable, nutritional, and cultural aspects of agriculture. The field trip takes place at 1:00 p.m. Friday’s session returns at 3:45 p.m. and Saturday’s session returns at 2:45 p.m. Space is limited and requires pre-registration.

Visit the exhibit hall to see the largest concentration of science educational materials available anywhere in the state. Visit the MSTA booth to enter one of the raffle drawings for giveaways from the exhibitors.

We want to see you make this year’s MSTA Conference your destination for “Putting Legs on the New Michigan Science Standards”!

Karen Kelly     Sandra Yarema     Crystal Brown
Conference Chair  Assistant Conference Chair  Assistant Conference Chair
Welcome to the 64th MSTA Annual State Science Conference! We are delighted to be on the east side of our state at the Suburban Collection Showplace in Novi, Michigan. This is our first time at this venue and we are thrilled to bring you exciting new ideas and a chance to collaborate with fellow teachers and administrators in a beautiful new spot! On behalf of the MSTA Board of Directors and the 2017 Conference Committee, we are delighted you made the commitment to attend Michigan’s premier science education conference. The theme of our conference is “Putting Legs on the new Science Standards”.

The state of Michigan is now one year into implementation of the new Michigan Science Standards! We have designed a conference focused on sharing what science educators across our state are doing in classrooms to support students as they learn science in a new way, based on these standards. Please take the time to read the session descriptions to find ideas and resources to take back to your classroom, school, and or district.

This year, our MSTA Conference will have two keynote addresses presented on both Friday and Saturday. Both speakers will offer new thoughts and ideas to move our professional practice forward.

We welcome Tricia Shelton as she discusses Transitioning to NGSS from a Teacher’s Point of View. Tricia is a highly respected high school teacher from Kentucky who frequently speaks on topics such as: “NGSS Why?” “Students as Partners,” “Science for All Students,” and “Phenomena – Focus on Figuring Out!” She has worked with educators across the United States to develop best practices in the science and engineering classroom through virtual and face-to-face professional learning offerings. Her credentials include conference presentations, webinars, and coordinating and co-moderating #NGSSchat on Twitter.

Tricia’s current professional learning facilitation includes work around the Next Generation Science Standards and helping STEM students develop the 21st Century Skills of critical and creative thinking, collaboration and communication.

Michigan’s own Dr. Greg Gage of Backyard Brains and TED Talk fame will offer perspectives on Neuroscience for the 99%. He will share student-led neuroscience investigations that integrate science and engineering practices with brain content and discuss their implementation into NGSS biology, physics, physiology and engineering standards. Greg is a highly regarded national science education keynote speaker on neuroscience.

The Michigan Department of Education is offering several sessions both Friday and Saturday to share the latest updates on implementation and assessment plans for the Michigan Science Standards.

Explore the multitude of sessions to gain insight on how educators in Michigan are indeed putting legs on our new Michigan Science Standards. Many exciting curriculum units and free resources are being developed. Take time to ask questions and consider how to take many of these ideas back to your home setting.

Thank you for joining us! We believe this conference will help you and your school districts deepen your understanding about the variety of ways to implement the Michigan Science Standards!

MSTA Executive Director
Conference At A Glance
Friday, March 24, 2017

7:00 a.m. – 7:00 p.m.
Pre-Registration
Location: Suburban Collection Showplace

7:30 a.m. – 4:00 p.m.
On-site Registration/Speaker Check-In/Help Desk
Location: Suburban Collection Showplace

7:30 a.m. – 5:15 p.m.
SCECHs Desk
Location: Suburban Collection Showplace

8:00 a.m. – 4:45 p.m.
Sessions
Location: Suburban Collection Showplace

8:00 a.m. – 8:45 p.m.
KEYNOTE SESSION
Neuroscience for the 99%
Greg Gage, Backyard Brains
Bring the NGSS biology, physics, physiology and engineering standards to life with fascinating student-led neuroscience investigations which deeply integrate science practices, engineering practices, and brain content together.
Location: Crystal Ballroom

9:00 a.m. – 5:00 p.m.
EXHIBITS
Location: Exhibit Hall C

Noon – 1 p.m.
RAFFLE items!
Make sure to put your raffle ticket next to the item you want to win! Items in the raffle are displayed at the MSTA booth (104,106). Raffle at noon on Saturday. Need not be present to win. Non-present winners will be notified by text. Any items not picked up by 11 am Saturday will go in the Saturday drawing.
Location: Exhibit Hall C

Noon – 1 p.m.
MESTA Rock Raffle!
Check out the extraordinary samples you could win in the famous MESTA Rock Raffle! (MUST be present to win).
Location: Exhibit Hall C

1:00 p.m. – 1:45 p.m.
KEYNOTE SESSION
Transitioning to NGSS from a Teacher’s Point of View
Tricia Shelton, Boone County Schools
Join Tricia Shelton as she discusses:
Trish’s NGSS WHY
• Students as Partners
• Science for all Students
• Phenomena—focus on figuring out
Location: Crystal Ballroom

4:00 p.m. – 5:30 p.m.
National Geographic Explorer Andrés Ruzo, Geoscientist
Andrés is the founder and director of the Boiling River Project, a non-profit organization, as well as a geoscientist, science communicator, author, and educator. He is a TED Speaker, TED Book Author, and National Geographic Explorer. Andrés holds degrees in Geology and Finance from Southern Methodist University (Dallas, TX), where he is currently finishing a Ph.D. in Geophysics. His primary research focus is geothermal exploration and heat flow mapping. Andrés originally heard about the Boiling River as a detail in a childhood legend. He began investigating the claim in 2010, while working on the Geothermal Map of Peru, and became the first geoscientist to obtain permission to study the Sacred river in 2011. He returns to the Amazon every year to continue the scientific research and conservation work in the Boiling River area. Event Flyer: https://goo.gl/WiszSNB
Location: Sapphire

4:45 p.m. – 5:15 p.m.
Meet and Greet YOUR Region Director!
See who from your region received this year’s conference scholarships, and pick up your gift from your Region Director!
Location: Registration area

5:00 p.m. -6:00 p.m.
NIGHT AT THE MOVIES!
Presented by the Howard Hughes Medical Institute!
Location: Opal

5:30 p.m.
Awards Reception
Prior to Awards Program
Location: Platinum Ballroom pre-function area

6:30 p.m.
Awards Program
Location: Platinum Ballroom

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Holly McGoran
Kathy Mirakovits
Deborah Peek-Brown
Derek Sale
Mike Sampson
Sandra Yarema, 2017 Assistant Conference Chair
Conference At A Glance

Saturday, March 25, 2017

7:00 a.m. – 1:00 p.m.
Pre-Registration
Location: Suburban Collection Showplace

7:30 a.m. – Noon
On-site Registration/Speaker Check-in
Location: Suburban Collection Showplace

7:30 a.m. – 3:15 p.m.
SCECHs Desk
Location: Suburban Collection Showplace

8:00 a.m. – 8:45 a.m.
KEYNOTE SESSION
Neuroscience for the 99%
Greg Gage, Backyard Brains
Bring the NGSS biology, physics, physiology and engineering standards to life with fascinating student-led neuroscience investigations which deeply integrate science practices, engineering practices, and brain content together.
Location: Crystal Ballroom

8:00 a.m. – 2:45 p.m.
Sessions
Suburban Collection Showplace

9:00 a.m. – 9:45 a.m.
KEYNOTE SESSION
Transitioning to NGSS from a Teacher’s Point of View
Tricia Shelton, Boone County Schools
Join Tricia Shelton as she discusses:
Trish’s NGSS WHY
• Students as Partners
• Science for all Students
• Phenomena-- focus on figuring out
Location: Onyx

9:00 a.m. – 1:00 p.m.
EXHIBITS
Location: Exhibit Hall A

Noon – 1 p.m.
RAFFLE items!
Make sure to put your raffle ticket next to the item you want to win! Items in the raffle are displayed at the MSTA booth (104,106).
Raffle starts at Noon! MUST BE PRESENT TO WIN!
Location: Exhibit Hall A

Noon – 1 p.m.
MESTA Rock Raffle!
Check out the extraordinary samples you could win in the famous MESTA Rock Raffle! Raffle is Saturday at noon immediately following the MSTA raffle. (MUST be present to win).
Location: Exhibit Hall A

Sponsors/Advertisers

THANK YOU to the following! They have advertised, provided a Bag Insert, supported our “Sponsor-a-Teacher” program, provided a raffle item, or helped with funds to offset expenses for this year’s conference! Some are here exhibiting, make sure to stop by and say “thanks”!

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BaySail
Central Michigan Online Degree
GVSU – Integrated Science Program
Kellogg Biological Station – Michigan State University
Greater Lansing Convention and Visitors Bureau
Lawrence Technological University
MEEMIC Insurance
MEEMIC Foundation
Michigan Department of Natural Resources
Michigan Science Center
Michigan Science Festival
Michigan Science Teachers Association
Michigan Tech / Mi-STAR
Rent A Rambling Naturalist
TCI
Wayne State University – College of Education
Wayne State University – College of Liberal Arts and Sciences
Western Michigan University
WorldStrides
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Region 14 Director
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Past Presidents
(List shown from 1994 to current. For a full list, please contact the MSTA Office at 734-973-0433).

1994/96  Alex Azima
1996/98  Barb Berthlesen
1998/00  Robert Long
2000/02  Walter Rathkamp
2002/04  Phil Walker
2004/06  Robby Cramer
2006/08  Paul Drummond
2008/10  Betty Crowder
2010/12  Mike Klein
2012/14  Mike Sampson
2014/16  Charles Bucienski

MSTA
Suburban Collection
Showplace, Exhibit Hall A

Friday: 9:00 a.m. – 5:00 p.m.
Saturday: 9:00 a.m. - 1:00 p.m.

Come in and check all this fun stuff...and educational too! You may need a tote bag or cart to carry away all the goodies, or better yet, a friend/colleague to help you carry it!

Rock Raffle – Tabby Eldredgee
Check out the extraordinary samples you could win in the famous MESTA Rock Raffle! Buy your tickets anytime Friday and Saturday for the raffle Saturday at noon.

Will YOU be one of the lucky to walk away with an amazing rock, mineral, or fossil from the famous MESTA Rock Raffle? Bring your MESTA raffle tickets on Saturday and, “cross your fingers”!

Rock Shop – Parker Pennington
Need something to get your students excited about science? Come visit MESTA’s fabulous Rock Shop! We have a variety of rocks, minerals, fossils and other oddities that will spark your student’s curiosity. These purchases can be used as classroom showpieces and make great gifts. There is something for everybody. All proceeds go towards Earth Science scholarships and grants through the Michigan Earth Science Teachers Association. Major credit cards accepted.

FREE & Inexpensive – Judy Ruddock
This is it! Our famous FREE and Inexpensive rock and mineral sale. Lots of classroom samples, teaching kits and answers to your Earth questions.

www.mestarocks.org
KEYNOTE SESSIONS

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8:00 a.m. – 8:45 p.m.
Neuroscience for the 99%
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Location: Onyx
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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>Fri 8-8:45 am</td>
<td>Fall Head Over Heels for Flipping your Classroom!</td>
<td>Amethyst</td>
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<td>Using the KLEWS Chart to Organize Elementary Science Instruction</td>
<td>Onyx</td>
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<td>Where Does Your Water Go?</td>
<td>Jasper</td>
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<td>Neuroscience for the 99%</td>
<td>Crystal Ballroom</td>
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<td>Evolution for Middle School Educators</td>
<td>Pearl</td>
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<td>Using the Outdoors to Teach About Sustainability</td>
<td>Coral</td>
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<td>Using World Water Monitoring Challenge to Engage Students in Practices</td>
<td>Topaz</td>
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<td>Think Tubes Phenomenon/Modeling</td>
<td>Garnet</td>
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<td>Making It Real... Cheap!!</td>
<td>Bronze</td>
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<td>Salmon in the Classroom 101</td>
<td>Ivory</td>
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<td>Utilizing CarbonTIME in the Classroom: NGSS Science Practices in Action</td>
<td>Moonstone</td>
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<td>Ups and Downs of Science Modeling: A Wavy Phenomenon</td>
<td>Emerald</td>
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<td>Help Save Endangered Animals!</td>
<td>Opal</td>
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<td>An Overview of the Environmental Educator Certification (EEC)</td>
<td>Jade</td>
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<td>Energy: Explained in terms of Michigan’s Electrical Grid</td>
<td>Silver</td>
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<td>Fri 9-9:45 am</td>
<td>Interactions: NGSS-aligned Curriculum Using Project-based Learning Approaches for Physical Science</td>
<td>Sapphire</td>
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<td>Cool Tools for Sound &amp; Waves</td>
<td>Amethyst</td>
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<td>It’s Time to Buddy Up!</td>
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<td>Baby Bottle Rocket Stoichiometry</td>
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<td>Invasive Monsters of the Deep</td>
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<td>MSEL: Course 1: Choosing a Science Course Pathway</td>
<td>Topaz</td>
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<td>Storytelling in Biology and AP Biology</td>
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<td>Waves</td>
<td>Pearl</td>
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<td>MEECS Ecosystems and Biodiversity</td>
<td>Copper</td>
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<td>Go Outside with Michigan Science Standards Using Project-Based Learning</td>
<td>Ruby</td>
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<td>Getting to Know the MSS-aligned Mi-STAR Curriculum for Middle Grades</td>
<td>Gold</td>
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<td>Giving Choice to Investigations and Living to Tell About It!</td>
<td>Granite</td>
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<td>Fri 10-10:45 am</td>
<td>Tricks of the Trade</td>
<td>Emerald</td>
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<td>What’s in the Woods?</td>
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<td>MSELA Course 2: Science Learning Targets for Leaders</td>
<td>Opal</td>
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<td>Science Talk and Beyond</td>
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<td>Using Theatrics to Teach Environmental Topics</td>
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<td>Michigan Mammals</td>
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<td>Integrating Chromebook with Vernier Technology</td>
<td>ExHall5</td>
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<td>Biomes and Invasive Species</td>
<td>Lab Aides Lab Demo Room</td>
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<td>Using Inquiry to Tackle Misconceptions about Kinematics and Newton’s Laws.</td>
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<td>3-D State Science Assessment: Design Decisions and Validity Claims</td>
<td>Crystal Ballroom</td>
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<td>Science, Media, and Art</td>
<td>Granite</td>
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<td>Teaching About Climate Change in Biology</td>
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<td>Science and Engineering Practices in the NGSS</td>
<td>ExHall2</td>
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<td>The Reflective Assessment Practice: Improving Science Achievement in 10 Minutes</td>
<td>ExHall1</td>
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<td>Invigorate your Photosynthesis and Cellular Respiration Investigations with Algae Beads</td>
<td>ExHall3</td>
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<td>Cheap, Easy, Universal Demonstrations for All Areas of Science</td>
<td>Sapphire</td>
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<td>Fri 10-11:45 am</td>
<td>MEECS Water Quality</td>
<td>Copper</td>
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<td>Hands On Neuroscience Workshop: Invertebrate Spikes!</td>
<td>Bronze</td>
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Sessions for SCECHs - Friday

**The Science of Storytelling**
Location: Moonstone

**Defining and Modeling Community Water Problems: A Mi-STAR Unit**
Location: Gold

**How Can a Sand-rat Simulation Investigate Human Health?**
Location: Ruby

**Rube Goldberg, a Metacognitive Activity**
Location: Silver

**Fri 11-11:45 am**
**Challenge Your Students to Make Motors**
Location: Sapphire

**MSELA Course 3: Constructing Science PLCs**
Location: Opal

**Academy of Natural Resources: Professional Development Climbing Higher!**
Location: Ivory

**Enhancing Curriculum Through Student-Developed Research Projects**
Location: Jasper

**Biology’s Best Engaged! Inquiry-Based Lessons & Engagement Strategies**
Location: Pearl

**Photosynthesis and Respiration Shuffle**
Location: Lab Aides Lab Demo Room

**STEM & Makerspace at Elementary Level**
Location: Garnet

**Three-Dimensional Science Performance Assessments**
Location: Amethyst

**Phenomena and Evidenced Based Learning in Chemistry and Physics**
Location: Emerald

**Michigan Trees**
Location: Jade

**Putting Together the 8 Essential Pieces of the PBL Pie**
Location: Coral

**Modeling--Leveraging this Practice in Science and Math**
Location: Crystal Ballroom

**3-Dimensional Learning in the Elementary Classroom**
Location: ExHall2

**Fri 1-1:45 pm**
**K-4 Earth Science with Elementary GLOBE - Free and Fun!**
Location: Garnet

**Introduction to MEECS Online Learning Portal**
Location: Copper

**Modeling Learning Labs - Job Embedded PD**
Location: Granite

**Making Informed Decisions about Environmental Impacts: RED-YELLOW-GREEN Ratings**
Location: ExHall2

**Cell Differentiation and Gene Expression**
Location: Lab Aides Lab Demo Room

**Card Sort Extravaganza!**
Location: Pearl

**Paths to a Growth Mindset**
Location: Moonstone

**Why NGSS? Why Now?**
Location: Opal

**Overcoming Challenges within the Modeling Chemistry Curriculum**
Location: Emerald

**Everything Moves...**
Location: ExHall3

**STEM-gineering**
Location: ExHall1

**Using Google Docs in the NGSS Classroom**
Location: ExHall5

**Transitioning to NGSS from a Teacher’s Point of View**
Location: Crystal Ballroom

**Introduction to NGSx (Next Generation Science Exemplar)**
Location: Onyx

**Fri 1-2:45 pm**
**Hands On Neuroscience Workshop: Human Electrophysiology**
Location: Bronze

**Cool Tools for Electricity & Magnetism**
Location: Amethyst

**Asking Questions About Our Changing Climate: A Mi-STAR Unit**
Location: Gold

**Lloyd’s Toolbox of Engineering Ideas and Activities**
Location: Silver

**Developing Storylines using KLEWS charts**
Location: Onyx

**Fri 2-2:45 pm**
**Bat Behavior - An Inquiry-based Program with Live Animals**
Location: ExHall3

**Middle School Share-a-thon**
Location: Emerald

**Goldilocks Was a Scientist**
Location: Jasper

**MSELA Course 4: A 2020 Vision for Science Classrooms**
Location: Opal

**Shifting to MSS and NGSS through Assessment**
Location: Granite

**Classifying Space Objects**
Location: Lab Aides Lab Demo Room

**Trophic Cascades: Bottom Up and Top Down Controls in Ecosystems**
Location: Pearl

**Observe, Investigate and Enjoy: New Conservation Education Toolkit**
Location: Ivory

**Engineering Made Easy**
Location: ExHall1

**Earth Science Explorations Using Airborne and Ground-Based Sensors**
Location: Moonstone
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<th>Time</th>
<th>Session</th>
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<tr>
<td>Fri 2-2:45 pm</td>
<td>“TOTALITY” The Great American Eclipse 2017</td>
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<td>Location: Topaz</td>
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<td>Question and Phenomenon Pairs - Starting Storylines</td>
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<td>Location: Onyx</td>
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<td>The Secrets to Project Based Learning and Success in STEM</td>
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<td>Fri 2-3:45 pm</td>
<td>MEECS Energy Resources</td>
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<td>The Next M-STEP: Michigan’s new MSS-aligned assessment</td>
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<td>Teaching Chemistry to Make Thinkers</td>
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<td>NGSS - How to Talk 21st Century Science in Elementary</td>
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<td>Location: Garnet</td>
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<td>Fri 3-3:45 pm</td>
<td>MSELA Course 5: Department Chair Conversation</td>
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<td>Location: Opal</td>
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<td>Engineering in the New Michigan Science Standards</td>
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<td>I’m Not a Rocket Scientist, But...</td>
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<td>Transitioning to NGSS in Chemistry</td>
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<td>Prospecting for Mineral Ore</td>
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<td>Stop Aligning Lesson Plans &amp; Start Creating MSS Learning Experiences</td>
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<td>I’m NO Techie...But Even I Can Do This!</td>
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<td>Extended Learning: Making the Most of Your Field Trip</td>
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<td>Flying Wild Science</td>
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<td>How To Create Your Own Country: Inquiry and Earth Science</td>
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<td>Modeling Energy Transformation Systems to Get Off the Grid: A Mi-STAR Unit</td>
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<td>Location: Onyx</td>
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<td>Fri 4-4:45 pm</td>
<td>Strategies For Building Inquiry and Science Practices Into Your Labs</td>
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<td>Location: Pearl</td>
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<td>GLOBE Teacher Training Workshop for Middle and High School Educators</td>
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<td>Increasing Engagement in Physics through Project based Learning</td>
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<td>Location: Ruby</td>
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<td>Kinesthetic Chemistry</td>
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<td>Location: ExHall5</td>
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<td>Using the EQuIP Rubric to Evaluate Instructional Materials</td>
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<td>Location: Amethyst</td>
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<tr>
<td>Fri 4-5:30pm</td>
<td>Andrés Ruzo, Geoscientist, National Geographic Explorer</td>
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<td>Location: Sapphire</td>
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<td>Fri 5-6pm</td>
<td>HHMI Movie</td>
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<td></td>
<td>Location: Opal</td>
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<td>Sat 8-8:45 am</td>
<td>Making Grades More Meaningful</td>
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<td>Location: Ruby</td>
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<td>Games, Games, Games</td>
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<td>Location: Emerald</td>
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<td>Our Public Treasures, Our Public Lands</td>
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<td>Location: Topaz</td>
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<td>Engineering a Carnivorous Plant</td>
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<td>Outstanding Science Trade Books from the CBC and NSTA</td>
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<td>Using Google Docs in the NGSS Classroom</td>
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<td>Renewable Energy Dashboard for Student Education</td>
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<td>Antibiotic Stewardship: What should teachers and students know?</td>
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<td>Neuroscience for the 99%</td>
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<td>Enhance your Classroom Experience with Animals 4 Kidz(Tadpoles &amp; more!)</td>
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<td>‘You Be The Chemist-Teaching Chemistry through Inquiry</td>
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<td>Objectives-Based Grading: How to Make Grades Meaningful</td>
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<td></td>
<td>Location: Opal</td>
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<td>Sat 8-9:45 am</td>
<td>Walk Like An Engineer!</td>
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<td>Location: Bronze</td>
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<td>MEECS Climate Change</td>
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<td>Data Nuggets: Scaffolding Claim-Evidence-Reasoning Using Real Data in Context</td>
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<td>Location: Sapphire</td>
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Scheduling for SCECHs - Saturday

**Saving Elephants: Using Molecular Tools to Solve Ecological Problems**  
*Location: Pearl*

**Reducing Natural Hazard Risk: A Mi-STAR Unit**  
*Location: Gold*

**Sat 9-9:45 am**  
How To Create Your Own Country: Inquiry and Earth Science  
*Location: Garnet*

**Practice Make Perfect: Developing Science Teaching Excellence**  
*Location: Opal*

An Overview of the Environmental Educator Certification (EEC)  
*Location: Moonstone*

**Sat 9-10:45 am**  
Carbon TIME: Free NGSS-aligned Curriculum, PD, and Teaching Networks  
*Location: Coral*

STEAMing Up Our Science Program  
*Location: Amethyst*

Outdoor Science Education on a Budget  
*Location: Ivory*

Chemistry Modeling - Particle drawings and the Gas Laws  
*Location: Granite*

Transitioning to NGSS from a Teacher’s Point of View  
*Location: Onyx*

MDE Updates from Assessment and Curriculum/Instruction  
*Location: Crystal Ballroom*

Goldilocks Was a Scientist  
*Location: Topaz*

Panel - ify Your Lessons  
*Location: Silver*

**Sat 10-11:45 am**  
Engaging Science-Math Teachers in Collaborative Research on Environmental Modeling  
*Location: Jade*

New Models for Waves and NGSS alignment  
*Location: Ruby*

Cheap, Easy, Universal Demonstrations for All Areas of Science  
*Location: Emerald*

**Sat 10:15am-11:45am**  
Making Lab Reports Come Alive!  
*Location: Sapphire*

Physics with the Raspberry Pi Computer  
*Location: Amethyst*

STEM and Inquiry Elementary Extravaganza!  
*Location: Onyx*

Teaching Elementary Science Should be “Phenomena-L”!  
*Location: Garnet*

Conservation Project: Connecting the Classroom to the Field  
*Location: Ivory*

Effective use of Screencasts and Simulations for Online Learning  
*Location: Granite*

One in a Million  
*Location: Lab Aides Lab Demo Room*

Transforming Student Illustrations into Scientific Models  
*Location: Pearl*

Engaging in Argument from Evidence in Secondary Urban Science Classrooms  
*Location: Coral*

Rates of Earth Processes: Extremely Fast to Super Slow  
*Location: Moonstone*

Invigorate your Photosynthesis and Cellular Respiration Investigations with Algae Beads  
*Location: ExHall3*

Integrating Science in Social Studies  
*Location: Silver*

The Secrets to Project Based Learning and Success in STEM  
*Location: ExHall5*

**Sat 10:15am-11:45am**  
Natural Resources, Thermal Energy, and the Life of the Stuff We Make: A Mi-STAR Unit  
*Location: Gold*

Modeling in Physical Science: A New Approach for New Standards  
*Location: Copper*

Engineering the Future - Exploring Engineering Design in the MSS  
*Location: Opal*

Integrating Literacy Skills in Science Investigations  
*Location: ExHall2*

The Next M-STEP: Michigan’s new MSS-aligned assessment  
*Location: Crystal Ballroom*

Hands On Neuroscience Workshop: Invertebrate Spikes!  
*Location: Bronze*

10 Simple to Set-up Chemistry Demonstrations  
*Location: ExHall1*

Innovative STEM: Students Become Wildlife Scientists  
*Location: Pearl*

Photosynthesis: Using Experimental Evidence to Construct Understanding  
*Location: Moonstone*

Explaining Phenomena and Designing Solutions in BCAMSC Science Unit Kits  
*Location: Sapphire*

Forensics For Free  
*Location: Jade*

Population Education: Curriculum for a Crowded Planet  
*Location: Ivy*

Mastering the Chemical Formula  
*Location: Lab Aides Lab Demo Room*

Engaging through Inquiry  
*Location: Coral*

Conserving Giant Panda Populations: One Hormone Test at a Time!  
*Location: ExHall3*

Testing Success for All  
*Location: Silver*

LEGO Education-STEM-Simple Machines  
*Location: ExHall5*

Advanced Research: How Independent Student Research Projects Drive Curriculum  
*Location: Moonstone*

Energy: Explained in terms of Michigan’s Electrical Grid  
*Location: Topaz*

An Elemental History of the Universe  
*Location: Granite*
Sessions for SCECHs - Saturday

Sat 1-1:45 pm continued

Enhance your Classroom Experience with Animals 4 Kidz (Tadpoles & more!)
Location: Garnet

Leveraging Scientific Literacy Practices to Support Students in Sense-making
Location: Coral

Green Chemistry Connections - Inspiring Students with Innovations
Location: Emerald

The Science of Storytelling
Location: Opal

Upstream Downstream--You Make a Difference
Location: Ruby

A Middle School Wind Turbine Project for Math-Science Integration
Location: Sapphire

Sat 1-2:45 pm

STEM to STERN Essential Elements
Location: Pearl

Physics Make and Take
Location: Crystal Ballroom

Cool Tools for Force & Motion
Location: Amethyst

Rube Goldberg, a Metacognitive Activity
Location: Ivory

Make Decisions Regarding Michigan’s Changing Ecosystems: A Mi-STAR Unit
Location: Gold

Hands On Neuroscience Workshop: Human Electrophysiology
Location: Bronze

Treading the Transition Tightrope - MSS Activities for ESS
Location: Emerald

Water and Carbon Footprints of Food - NGSS Style
Location: ExHall2

Using Children’s Books to Engage Young Scientists & Engineers
Location: Garnet

What’s in the Middle?
Location: Granite

Animal Needs: Building Literacy through Science
Location: Moonstone

Do you have a “STEM Personality”? 
Location: Opal

Shake, Rattle and Roll: Earthquake Proof Towers
Location: Coral

Your Reading Toolbox: Strategies for Building Strong Readers in Science
Location: Copper

NGSS Yourself
Location: Ruby
Friday, March 24, 2017

Michigan Science Teacher’s Association

2017 Awards Program

Please join us as we celebrate to honor individuals who have been awarded Teacher or Educator of the Year. They were chosen for their use of modeling best practices, inspiring students, demonstrating innovative teaching strategies, being an excellent role model for students and other teachers, demonstrating leadership, and exhibiting a passion for science and teaching.

MSTA will be honoring:

*Dan Wolz Water Education Grant Winner* - Sarah Geborkoff, Houghton Middle School, Houghton

*Teacher of Promise* – Hadley Brill, Northville Schools, Northville

*Elementary Science Teacher of the Year* – Robert Thomson, Alpena Public Schools, Alpena

*Middle School Science Teacher of the Year* – Leigh Ann Roehm, Saline Public Schools, Saline

*High School Science Teacher of the Year* – Scott Milam, Plymouth Canton Public Schools, Plymouth

*College Science Teacher of the Year* – Dr. Janet Vigna, Grand Valley State University, Allendale

*Administrator of the Year* – Thomas Ten Brink, Jenison Public Schools, Jenison

*Informal Science Educator* – Brandon Schroeder, Michigan Sea Grant, Alpena County

*MSTA Special Award* – Sue Campbell, AMR, Ann Arbor

*Distinguished Service Award* – Conni Crittenden, Williamston Community Schools, Williamston

*Mallison Award* – Karl Klimek, Square One Education Network

2017 MSTA Awards Committee

LuAnne Clark
Conni Crittenden
Marlenn Maicki, Committee Chair
Mary Jordan McMaster
Susan Tate
Session Descriptions

Friday, March 24, 2017

Fri 8:00 am-8:45 am

**Fall Head Over Heels for Flipping Your Classroom!**

Lisa Wolfinger, Michigan Connections Academy; Molly Clark, Michigan Connections Academy
Primary Subject: CO, IN
Interest Level: EE, LE, MS, HS, CO
Location: Amethyst

Want to further engage students in science? Come to our flipped session that integrates mastery learning and focuses on individualized instruction to help your students find success.

**Using the KLEWS Chart to Organize Elementary Science Instruction**

Jan Douglas, Michigan Math and Science Centers Network; Mary Starr, PhD, Exec Director, Michigan Math and Science Centers Network and President, Starr and Assoc.
Primary Subject: IN
Interest Level: EE, LE
Location: Onyx

Learn how to organize phenomena-based explanations, integrate science and ELA, and promote equitable science education with a powerful tool: the KLEWS chart.

**Where Does Your Water Go?**

Joan Chadde, Michigan Tech Center for Science & Environmental Outreach
Primary Subject: EN
Interest Level: LE, MS
Location: Jasper

Explore how we use water and how environmental engineers design the wastewater treatment process for cities and the space shuttle. Work in teams to design the best WWT process.

**Neuroscience for the 99%**

Greg Gage, Backyard Brains
Primary Subject: BI, PH
Interest Level: MS, HS, CO
Location: Crystal Ballroom

Bring the NGSS biology, physics, physiology and engineering standards to life with fascinating student-led neuroscience investigations which deeply integrate science practices, engineering practices, and brain content together.

**Evolution for Middle School Educators**

Rebecca Brewer, Troy School District
Primary Subject: BI
Interest Level: MS
Location: Pearl

Attention will be paid to the NGSS middle school disciplinary core ideas in evolution and natural selection along with sharing activities to effectively cover these ideas.

**Using the Outdoors to Teach About Sustainability**

Wil Reding, WMU, KVCC and Rent A Rambling Naturalist
Primary Subject: BI, EN
Interest Level: EE, LE, MS, HS, CO
Location: Coral

Come walk with me outside and learn exciting environmental concepts and how the out-of-doors helps to excite and entice future naturalists!

**Using World Water Monitoring Challenge to Engage Students in Practices**

Mary Lindow, Battle Creek Area Mathematics and Science Center
Primary Subject: GS
Interest Level: MS, HS
Location: Topaz

Learn how teachers in the Kalamazoo River Watershed are using simple WWMC kits and world-wide water quality data to engage their students in the Science and Engineering Practices. Handouts provided.

**Think Tubes Phenomenon/Modeling**

Conni Crittenden, Explorer Elementary, Williamston Community Schools
Primary Subject: GS
Interest Level: LE, MS, HS
Location: Garnet

Come find out how you can use an activity from the past to teach the science of today.

**Making It Real... Cheap!!**

Darrick Gregory, STARBASE- Battle Creek; Jodi Heaney, Parchment Middle School; Julie Hahn
Primary Subject: GS
Interest Level: LE, MS
Location: Bronze

This session will include a variety of examples involving “real-world” science that can be done for little or no cost. Presenters will incorporate technology, and handouts will be provided.

**Salmon in the Classroom 101**

Shana Ramsey, Michigan DNR; Susan Tate, Whitehall Middle School
Primary Subject: BI, EN
Interest Level: EE, LE, MS
Location: Ivory

Nearly 250 Michigan schools are raising salmon in their classroom and teaching across curriculum. Presenters will highlight the advantages and excitement students experience with a living resource in their classroom.
Utilizing CarbonTIME in the classroom: NGSS science practices in action
Colleen Chapoton, Kalamazoo Area Mathematics and Science Center; Elizabeth de los Santos, Michigan State University
Primary Subject: BI, EN
Interest Level: MS, HS
Location: Moonstone
Hear a teacher’s perspective on how implementation of the CarbonTIME curriculum in the biology classroom can transform student learning through inquiry, modeling, experimentation, and reflection. Get ready to explore!

Ups and Downs of Science Modeling: A Wavy Phenomenon
Christie Gayheart, Jefferson Middle School-Midland Public Schools; Jennifer Lehman, Jefferson Middle School-Midland Public Schools
Primary Subject: GS, IN
Interest Level: MS
Location: Emerald
The purpose of this activity was to have students elaborate upon scientific explanations and understand real-world phenomenon through the NGSS modeling science and engineering practice using a wavy road phenomenon.

Help Save Endangered Animals!
Nicole Jakubowski, Detroit Country Day Junior School; Marlenn Maicki, Detroit Country Day School
Primary Subject: BI, EN
Interest Level: LE
Location: Opal
Using two NSTA recommended trade books as starters, transition from learning about ecosystems to saving endangered animals. Students will do STEM activities, simulations, research, and group presentations. Hands-on. Handouts provided.

An Overview of the Environmental Educator Certification (EEC)
Cindy Fitzwilliams-Heck, MAEOE - Michigan Alliance for Environmental and Outdoor Education; MAEOE Education Committee, MAEOE
Primary Subject: GS, EN
Interest Level: EE, LE, MS, HS, CO
Location: Jade
The Michigan Alliance for Environmental and Outdoor Education (MAEOE) is offering a state environmental education certification following the guidelines of the North American Association for Environmental Education (NAAEE). Much of the process is self-paced and requires five strands to be completed before certification is conferred.
For more information on the EE certification go to www.maeoe.com

Energy: Explained in Terms of Michigan’s Electrical Grid
Andrew Frisch, Farwell Area Schools
Primary Subject: GS, PH
Interest Level: LE, MS, HS
Location: Silver
Our modern society is fueled by electricity, but how is our electrical grid fueled? Examples and demonstrations will explain how Michigan obeys the law of conservation of energy to power our state. Students of all levels will benefit from this simple and thought-provoking session.

Fri 8:00 am-9:45 am

MECS Ecosystems and Biodiversity
Jessica Wagenmaker, DEQ
Primary Subject: AS, EN
Interest Level: LE, MS
Location: Copper
Ecosystems and Biodiversity Unit: This unit provides students with an understanding of ecosystems by examining how organisms interact within their environment. Additional sets of materials explores concepts related to biodiversity.

Go Outside with Michigan Science Standards Using Project-Based Learning
Kara Haas, Michigan State University; Renee Bayer, CREATE for STEM Institute, Michigan State University
Primary Subject: EN
Interest Level: EE, LE
Location: Ruby
Every schoolyard has free, unique phenomena waiting to be used in science investigations. What does elementary instruction look like? We'll go outside to find out. Dress for Michigan weather!

Getting to Know the MSS-aligned Mi-STAR Curriculum for Middle Grades
Doug Oppliger, Michigan Technological University; Brenda Bergman, Michigan Technological University; Barb McIntyre, Midland PS
Primary Subject: AS
Interest Level: MS
Location: Gold
Learn about this new integrated science and engineering curriculum for Grades 6-8. Discover the sequence of units, how students address real-world challenges, results from pilot testing, and the implementation timeline.
Interactions: NGSS-aligned curriculum using project-based learning approaches for physical science

Angela Kolonich, Michigan State University - College of Education
Primary Subject: AS, CH
Interest Level: MS, HS
Location: Sapphire

Experience a free, project-based, online curriculum on intermolecular forces aligned with the Framework, Michigan Science Standards, and NGSS. Explore lessons and find out how to access for use in classrooms.

Friday

8:00 a.m. - 9:45 a.m. Workshop continued

Baby Bottle Rocket Stoichiometry
Mary Hillebrand, Calvary Baptist Academy
Primary Subject: CH
Interest Level: HS, CO
Location: Emerald
Using hands-on fun to teach a tough topic is a win-win situation. Students love the challenge and are learning problem-solving skills at the same time. Caution harmless explosions possible! :-)

Invasive Monsters of the Deep
Kevin Frailey, Michigan DNR
Primary Subject: BI, EN
Interest Level: LE, MS, HS, CO
Location: Ivory
Long before the Walking Dead, Michigan was fending off an invasion of live, flesh eating monsters. Come see one of the captured monsters how it has changed the Great Lakes.

MSELA: Course 1: Choosing a Science Course Pathway
Sarah Coleman, Muskegon Regional Math Science Center
Primary Subject: GS
Interest Level: MS, HS
Location: Opal
The Michigan Science Standards do not designate standards into middle and high school courses. Explore resources available to support instructional leaders in choosing the right pathway for your school.

Engaging Students in Reflective Practices in Science Education
Lina H. Jawad, University of Michigan-Dearborn
Primary Subject: IN
Interest Level: HS, CO
Location: Topaz
Reflective practices are helpful tools to facilitate student learning of scientific concepts. Examples of reflective practices and ways to implement them in the science classroom are presented (hands on/handouts).

Storytelling in Biology and AP Biology
Patti Richardson, Forest Hills Central High; Kristy Butler, Forest Hills Central High School
Primary Subject: BI
Interest Level: HS
Location: Pearl
Using the curriculum to tell a story helps kids make connections to their learning. Join us as we share story lines we have created and how we are using them in the classroom.

Waves
Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS
Primary Subject: PH
Interest Level: MS
Location: Lab Aides Lab Demo Room
Waves transmit energy and information, join us for an activity from the SEPUP Waves unit for the middle grades, newly updated for NGSS. Interaction of light will be explored.
### Session Descriptions

#### Phenomenal Science Units: A Comprehensive Science Curriculum for Grades k-5

Darcy McMahon, Science, Mathematics, Technology Center at Central Michigan University; Matt Samocki, Science, Mathematics, Technology Center at Central Michigan University  
**Primary Subject: AS**  
**Interest Level: EE, LE**  
**Location: Garnet**

Come discover this comprehensive science curriculum for K-5, written by teachers for teachers. Units are aligned to MSS and soon available for free. Adoption details available.

#### MDE Updates from Assessment and Curriculum/Instruction

Tamara Smolek, Michigan Department of Education; Megan Schrauben, Michigan Department of Education  
**Primary Subject: AS, IN**  
**Interest Level: EE, LE, MS, HS**  
**Location: Crystal Ballroom**

MDE will share current updates related to the state summative assessment and the science implementation plan. This session will be interactive to allow for questions from the audience.

#### NGSS Yourself

Walter Charuba, Brownell Middle School  
**Primary Subject: ES, AST**  
**Interest Level: MS**  
**Location: Bronze**

Experience how to incorporate and develop older lessons around the Next Generation Science Standards. There will be seven earth and astronomy lessons to take home and use immediately.

#### Explore Environmental Phenomena with NASA’s AREN Project

David Bydlowski, Wayne RESA; Andy Henry, Wayne RESA  
**Primary Subject: ES, EN**  
**Interest Level: MS, HS**  
**Location: Coral**

Using NASA-designed tethered airborne and remotely operated aquatic platforms, AREN Project, is training the next generation of scientists/engineers to observe and understand Earth through experiential learning through integrating STEM.

#### 3-D Robotic Printing Additive Manufacturing Platforms

Richard Eberly, New Buffalo Area Schools  
**Primary Subject: EN, PH**  
**Interest Level: HS**  
**Location: Jasper**

The open source Athena 3-D robotic printers utilizing Franklin software are simple, multipurpose, and robust giving students and teachers creative and artistic freedom. Come and experience their capabilities!

#### Making Thinking Public: Multiple Options for Recording Student Thinking

Richard Bacolor, MSEA / Wayne RESA; Jan Douglas, Michigan Math and Science Centers Network  
**Primary Subject: IN**  
**Interest Level: EE, LE, MS, HS, CO**  
**Location: Onyx**

Recording student thinking and making it public provides a great resource for student learning. In this session we will share and explore the pros and cons of multiple tools.

#### Renewable Energy Dashboard for Student Education

Christine Gleason, Retired from Greenhills School in Ann Arbor  
**Primary Subject: CO, EN**  
**Interest Level: MS, HS**  
**Location: Silver**

The Greenhills School Renewable Energy Dashboard monitors, displays, and archives performance data from multiple renewable energy resources for use in middle/high school student education. Data can be shared with schools.

#### Great Lakes Learning Meets Environmental-STEM and Place-based Stewardship Education Opportunity!

Brandon Schroeder, Michigan Sea Grant / Michigan State University Extension; Steve Stewart, Michigan Sea Grant / Michigan State University Extension  
**Primary Subject: EN, IN**  
**Interest Level: EE, LE, MS, HS**  
**Location: Moonstone**

Michigan Sea Grant and the Center for Great Lakes Literacy offers teacher training, educational resources and curricula, and hands-on ways to connect students in Great Lakes learning and leadership experiences.

### Session Key:

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Our online Master of Arts in Science Education is:

- Flexible (online courses and a variety of electives)
- 30 credits (average completion time is 18 months)
- Pretty thrilling, if we may say so ourselves

Learn more at wmich.edu/online/ScienceEd or explore all of our online and regionally-offered education degrees at wmich.edu/extended/MSTAtteachers.
Session Descriptions

Fri 10:00 am-10:45 am

Tricks of the Trade
Amy Zitzelberger, Hazel Park High School
Primary Subject: CH
Interest Level: HS
Location: Emerald
I’ve packed my favorite stuff and brought it to share: high school chemistry activities, labs and demos. Classroom tested with a dash of eye-catching silliness.

What’s in the Woods?
Kevin Frailey, Michigan DNR
Primary Subject: BI, EN
Interest Level: LE, MS, HS, CO
Location: Ivory
Bears, cougars, wolves? Come get the latest information, population estimates and management techniques involving Michigan wildlife. Up-to-date, science-based information that will resonate with your students.

MSELA Course 2: Science Learning Targets for Leaders
Wendi Vogel, Kent Intermediate School District; Sarah Coleman, Muskegon Regional Math Science Center
Primary Subject: GS
Interest Level: EE, LE, MS, HS
Location: Opal
Join administrators and instructional leaders to learn what a three dimensional learning target might look like and understand how teachers might use them in their instruction.

Science Talk and Beyond
Nancy Karre, Battle Creek Area Mathematics and Science Center
Primary Subject: LT
Interest Level: EE, LE
Location: Garnet
Engage in an activity that provokes questions and discussion. See how Science Talk facilitates meaning making and provides opportunity for rich conversation in your classroom.

Using Theatrics to Teach Environmental Topics
Wil Reding, WMU, KVCC and Rent A Rambling Naturalist
Primary Subject: EN
Interest Level: EE, LE, MS, HS
Location: Coral
Come learn simple theatrical props and techniques to grab the attention of students and help them learn and remember environmental themes or lessons.

Michigan Mammals
Michael LeValley, Isabella Conservation District
Primary Subject: BI, EN
Interest Level: EE, LE, MS
Location: Jade
A hands-on presentation using skins, skulls, and tracks that focuses on observable physical characteristics and adaptations of Michigan mammals that enable them to live in various Michigan environments. Hand-outs provided.

Integrating Chromebook with Vernier Technology
Angie Harr, Vernier Software & Technology
Primary Subject: GS, CO
Interest Level: LE, MS, HS, CO
Location: ExHall5
Learn how experiments that use Chromebooks and Vernier technology teach students about data collection and analysis?practices that promote science inquiry and boost test scores.

Biomes and Invasive Species
Bill Cline, LAB-AIDS; Shannon Mareski, Grand Blanc High School
Primary Subject: BI
Interest Level: HS
Location: Lab Aides Lab Demo Room
Explore biomes and invasive species with the SGI Biology Program. Students match a set of organism cards to corresponding climate/biome cards, then use literacy strategies to consider the impact of invasive species.

Using Inquiry to Tackle Misconceptions about Kinematics and Newton’s Laws.
Kevin Sylvester, Grand Haven Area Public Schools; Joseph Lutz, Grand Haven Area Public Schools
Primary Subject: IN, PH
Interest Level: MS, HS
Location: Topaz
Participants will learn about inquiry activities for kinematics graphing and Newton’s Laws that force students to confront their misconceptions along with technology to collect and analyze data for these activities.

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CO – College
– SCECH Session
– Vendor Session
### Session Descriptions

#### 10:00 a.m. - 10:45 a.m.  

**3-D State Science Assessment: Design Decisions and Validity Claims**

Tamara Smolek, Michigan Department of Education  
*Primary Subject: AS, GS  
Interest Level: EE, LE, MS, HS, CO  
Location: Crystal Ballroom*

Learn about the rationale for the design of the new MSS-aligned science assessments and the validity claims to support the use of M-STEP science data.

**Science, Media, and Art**

Mary Jordan McMaster, Allen Park High School; Jelane Richardson, Allen Park High School  
*Primary Subject: GS  
Interest Level: HS  
Location: Granite*

Science events in the media are a daily occurrence, yet there is little time to make relevant connections in the science classroom. See how to blend science, media, and art.

**Teaching About Climate Change in Biology**

Wendy Johnson, Michigan State University; Christie Morrison Thomas, Michigan State University  
*Primary Subject: ES, BI  
Interest Level: HS  
Location: Pearl*

Wondering where and how to address the new climate change standards? We will share research on student learning and free NGSS-aligned curriculum for addressing climate change in high school biology.

**Science and Engineering Practices in the NGSS**

Matt Moorman, Teachers’ Curriculum Institute (TCI)  
*Primary Subject: GS  
Interest Level: EE, LE  
Location: ExHall2*

Join TCI for an engaging Bring Science Alive! investigation. Participants will learn how to help their students investigate, model, and explain the world just like professional scientists and engineers!

**The Reflective Assessment Practice: Improving Science Achievement in 10 Minutes**

Roxane DuPuis, Delta Education/Foss  
*Primary Subject: AS, IN  
Interest Level: LE, MS  
Location: ExHall1*

Create a classroom culture of self-motivation and growth mindset by adding a ten-minute reflective practice to your day. The next-step assessment strategies presented can be applied to any teaching situation.

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**MISCIPLAN.com - Michigan Science Professional Learning @ the Network**

Mary Lindow, Battle Creek Area Mathematics and Science Center  
*Primary Subject: IN  
Interest Level: EE, LE, MS, HS, CO  
Location: Onyx*

MISCIPLAN.com is a set of free professional learning resources for introducing and developing ideas of 3D learning. Learn more about how to implement professional learning with these materials.

**Invigorate your Photosynthesis and Cellular Respiration Investigations with Algae Beads**

Tamica Stubbs, Bio-Rad Laboratories  
*Primary Subject: BI  
Interest Level: MS, HS, CO  
Location: ExHall3*

Learn how to upgrade your classroom experiences using a simple algae bead system and a colorimetric, CO2 tracking solution while invigorating your passion to teach photosynthesis and cellular respiration.

**Cheap, Easy, Universal Demonstrations for All Areas of Science**

Andrew Frisch, Farwell Area Schools  
*Primary Subject: CH, GS  
Interest Level: LE, MS, HS  
Location: Sapphire*

Several cheap and easy demonstrations will be performed along with explanations as to how they can be incorporated into a variety of science classroom settings. These demonstrations will emphasize the Laws of Conservation of Mass and Energy using NGSS.

**Fri 10:00 am-11:45 am**

**MEECS Water Quality**

Joan Chadde, Michigan Tech Center for Science & Environmental Outreach  
*Primary Subject: AS, EN  
Interest Level: LE, MS  
Location: Copper*

Discover the essential role that water plays in Michigan’s economy and everyone’s lives. Students calculate how much water they use and investigate the link between land uses and water quality.

**Hands On Neuroscience Workshop: Invertebrate Spikes!**

Greg Gage, Backyard Brains  
*Primary Subject: BI, CO  
Interest Level: MS, HS, CO  
Location: Bronze*

In this workshop, you will be able to experiment on living invertebrate brains to record individual spikes from neurons, and understand electrophysiology through electrical manipulation.
**Session Descriptions**

**Get Hands On With The FARM Science Lab Vendor**
Lyndsay Grasman, Michigan Farm Bureau; Tonia Ritter, Michigan Farm Bureau
Primary Subject: CH, BI
Interest Level: EE, LE
Location: ExHall4
Teach biology, chemistry and more through the tangible topic of agriculture! Demo these hands-on experiments in our state of the art mobile lab! Sign-up to bring us to your school!

**The Science of Storytelling**
Cheryl Matas, retired
Primary Subject: IN
Interest Level: EE, LE, MS
Location: Moonstone
In this participatory session, learn how to incorporate stories using visual, audio, kinesthetic and emotional anchors, which will engage your students to the fullest and result in learning that sticks.

**Defining and Modeling Community Water Problems: A Mi- STAR Unit**
Emily Gochis, Michigan Technological University; Tony Mathys, Michigan Technological University, Jayme Swanson, Midland PS
Primary Subject: GS
Interest Level: MS
Location: Gold
Participate in activities from a middle school, integrated STEM unit centered on defining engineering problems and modeling a local community water cycle. Aligns with MS-ESS2-4, MS-PS1-4 and MS-ETS1-1. Handouts provided.

**How Can a Sand-rat Simulation Investigate Human Health?**
Idit Adler; Irene Bayer, CREATE for STEM Institute, Michigan State University
Primary Subject: BI, CO
Interest Level: LE, MS
Location: Ruby
Try out a sand-rat simulation to plan and carryout an investigation about diabetes in humans. Gain hands-on experience with project-based learning in a technology-rich environment. Bringing a device is ideal.

**Rube Goldberg, a Metacognitive Activity**
Rachel Badanowski, Wayne State University
Primary Subject: GS
Interest Level: CO, HS, LE, MS
Location: Silver
Create a Rube Goldberg device in this hands-on session that will stretch the limits of your imagination.

**Challenge Your Students to Make Motors**
Michael Suckley, Macomb Community College
Primary Subject: GS, PH
Interest Level: LE, MS, HS
Location: Sapphire
Fundamental concepts of magnetic and electromagnetic fields and their interaction will be demonstrated and applied to building eight different classroom motors. Participants will receive a teaching unit including materials, step-by-step instructions, explanations of each motor’s operation and hands-on experience building them. The construction of these motors can be extended into a STEM Challenge or an Engineering Project by inviting students to create improved motors by using materials that will spin faster or slower or that can be applied to a specific job. Such projects can be related to real-world applications ranging from home appliances, transportation methods, robotics and even to national defense.

**MSELA Course 3: Constructing Science PLCs**
Wendi Vogel, Kent Intermediate School District; Lori Thayer, SRESD
Primary Subject: AS
Interest Level: EE, LE, MS, HS, CO
Location: Opal
Science leaders, administrators, department chairs, and coaches, spend an hour learning steps to help develop a productive, professional learning community for your science educators.

**Academy of Natural Resources: Professional Development**
Becky Durling, Williamston Community Schools
Primary Subject: GS, EN
Interest Level: EE, LE, MS, HS, CO
Location: Ivory
Come learn about two exciting opportunities for environmental education professional development with the Academy of Natural Resources: our classic program and newest adventure, ANR North, in the U.P.!

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Enhancing Curriculum Through Student-Developed Research Projects
Sarah Beery, St. Louis High School; Sandra Dubridge, St. Louis High School; Matt Burleson; Tommy Reck; Kevin Stedman
Primary Subject: IS
Interest Level: HS
Location: Jasper
Students can explore their interests in a STEM-based research project. This motivates students to discover and answer their own questions while integrating the engineering design process.

Biology’s Best Engaged! Inquiry-Based Lessons & Engagement Strategies
Heather Peterson, Holt Public Schools
Primary Subject: BI, IN
Interest Level: MS, HS, CO
Location: Pearl
Back by popular demand! Students actively learn & connect their biology knowledge through inquiry-based lessons, units, and engagement strategies. Move and share with one another too!

Photosynthesis and Respiration Shuffle
Bill Cline, LAB-AIDS; Shannon Mareski, Grand Blanc High School
Primary Subject: BI
Interest Level: HS
Location: Lab Aides Lab Demo Room
Address your students’ misconceptions about photosynthesis and cellular respiration. Using a computer simulation, a hands-on activity, and notebooking and discussion strategies, extend student thinking all from LAB-AIDS SGI Biology Program.

STEM & Makerspace at Elementary Level
Diana Matthews, Detroit Country Day; Lisa Morgan, Detroit Country Day School
Primary Subject: GS
Interest Level: EE
Location: Garnet
This workshop will focus on using STEM activities in the elementary classroom. We'll share projects, new technologies, and innovative ideas that you can take with you. We'll introduce school Makerspaces.

Three-Dimensional Science Performance Assessments
Darcy McMahon, Science, Mathematics, Technology Center at Central Michigan University; Jennel Martin-Powell, Science, Mathematics, Technology Center at Central Michigan University
Primary Subject: AS
Interest Level: LE, MS, HS
Location: Amethyst
These performance tasks have developed by teachers. Come learn how to access and use them in your classroom. Aligned with MSS and state assessment.
Session Descriptions

Science Notebooks: Making Thinking and Learning in Science Visible  
Roxane DuPuis, Delta Education/Foss  
Primary Subject: LT, IN  
Interest Level: EE, LE, MS  
Location: ExHall1  
Participants will work with notebooks to establish age-appropriate elements and options for science notebooks. Identify organizational features, strategies for formative assessment, and opportunities to apply reading, writing, and math skills.

Solving the HS Course Sequence Puzzle - Integrating Earth Science  
Brian Langley, Novi High School; Emily Pohlonski, Novi High School/ Novi Community Schools  
Primary Subject: AS  
Interest Level: HS  
Location: Topaz  
We will present our design for allocating the MSS Earth Science topics within our newly organized physics, chemistry and biology courses. Gain ideas on concept flow and HS course organization.

Conserving Giant Panda Populations: One Hormone Test at a Time!  
Tamica Stubbs, Bio-Rad Laboratories  
Primary Subject: BI  
Interest Level: MS, HS, CO  
Location: ExHall3  
Come and put your immunology and endocrine system knowledge basics to the test as you engineer a hormone detection system that can be utilized for Giant Panda Population Conservation efforts.

Developing Storylines using KLEWS charts  
Mary Starr, PhD, Exec Director, Michigan Math and Science Centers Network and President, Starr and Assoc.  
Primary Subject: IN  
Interest Level: EE, LE, MS, HS, CO  
Location: Onyx  
In this session, teachers will explore PE bundles and begin to build a storyline using the KLEWS chart. (This session is planned to support teachers who have completed NGSx).

De-mystifying the NGSS with STEMscopes  
John Spicko, Accelerate Learning - STEMscopes  
Primary Subject: GS  
Interest Level: EE, LE, MS, HS  
Location: ExHall5  
Through collaborative discussion, we will unravel the architecture of the NGSS and see how STEMscopes meets the need for 3 dimensional learning through engineering, project-based learning, hands-on investigations and more.

Water and Carbon Footprints of Food - NGSS Style  
Jane Rice, Michigan State University; Joyce Parker, Michigan State University  
Primary Subject: ES, BI  
Interest Level: MS, HS  
Location: Granite  
Use the three dimensions of NGSS (thinking, knowing, and doing science) to explore the carbon and water footprints of the food you eat.

Fri 12:00 pm-1:00 pm  
MESTA Rock Raffle  
Tabby Eldredge, MESTA  
Primary Subject: ES  
Interest Level: EE, LE, MS, HS, CO  
Location:  
Check out the extraordinary samples you could win in the famous MESTA Rock Raffle! Raffles Friday @ Noon and Saturday @ Noon (MUST be present to win).

Fri 1:00 pm-1:45 pm  
K-4 Earth Science with Elementary GLOBE - Free and Fun!  
June Teisan, National Oceanic and Atmospheric Administration  
Primary Subject: ES, EN  
Interest Level: EE  
Location: Garnet  
Elementary GLOBE offers instructional units with science-based storybooks (all free online) that introduce students to key concepts in climate, water, soil, clouds, seasons, and aerosols. (Free storybook today-while supplies last!)

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Session Descriptions

1:00 p.m. - 1:45 a.m. continued

Introduction to MEECS Online Learning Portal
Amanda Syers, Grand Valley State University
Primary Subject: AS, EN
Interest Level: LE, MS
Location: Copper
MEECS Online! MEECS workshops have been offered to Michigan’s leaders in education since 2006. MEECS is now adding online courses to supplement the workshop training.

Modeling Learning Labs - Job Embedded PD
Tina M Larson, Oakland Schools (Contractor)
Primary Subject: IN
Interest Level: MS, HS, CO
Location: Granite
Aspiring Modeling Facilitators participate in job-embedded Modeling Learning Labs to hone their own modeling teaching skills to become Facilitators for future workshops in Michigan. Come hear testimonials to the process!

Making Informed Decisions about Environmental Impacts: RED-YELLOW-GREEN Ratings
Jane Rice, Michigan State University; Laura Markham, Michigan State University
Primary Subject: ES, EN
Interest Level: LE, MS, HS
Location: ExHall2
The three dimensions of NGSS can be used to develop principles on which to base everyday decisions that impact the environment. Explore our red-yellow-green rating system for human impacts.

Cell Differentiation and Gene Expression
Bill Cline, LAB-AIDS; Shannon Mareski, Grand Blanc High School
Primary Subject: BI
Interest Level: HS
Location: Lab Aides Lab Demo Room
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.

Card Sort Extravaganza!
Patti Richardson, Forest Hills Central High School; Kristy Butler, Forest Hills Central High School
Primary Subject: BI
Interest Level: MS, HS
Location: Pearl
Join us as we share several different types of card sort activities that can be used to see the student’s visual thinking. Lots of examples and handouts provided!

Paths to a Growth Mindset
Susan Disch, ETHOS Science Center; Lisa Nyers, ETHOS Science Center
Primary Subject: GS
Interest Level: EE, LE, MS, HS, CO
Location: Moonstone
Participants will:
- Examine the importance of cultivating resiliency and perseverance
- Consider equitable access opportunities
- Participate in tasks to help build an understanding of neural networks

Why NGSS? Why Now?
Jason Marshall, McGraw-Hill Education
Primary Subject: GS, IN
Interest Level: EE, LE, MS, HS
Location: Opal
Understanding the NGSS Standards, STEM Connections and why the shift to NGSS is critical. Construct a 3-tab book identifying/detailing the 3 disciplinary core ideas, crosscutting concepts, and science engineering practices.

Overcoming Challenges within the Modeling Chemistry Curriculum
Casey King, Allen Park Public Schools; James Victor, Allen Park Public Schools
Primary Subject: CH
Interest Level: HS
Location: Emerald
Model development provides an excellent framework for NGSS, but presents some challenges. In this session, year three modelers share experiences and activities that address challenges within the modeling curriculum.

Everything Moves...
Thom OBrien, Explorelearning
Primary Subject: GS, PH
Interest Level: LE, MS
Location: ExHall3
Building understanding in Physical Sciences can take a lot of time. Air tracks, dropping objects, viewing/measuring waves can all be investigated in much greater detail with simulations.

STEM-gineering
Roxane DuPuis, Delta Education/Foss
Primary Subject: IN
Interest Level: LE
Location: ExHall11
Experience active learning, research-based investigations that naturally lead to engineering. Receive workshop materials, readers, and online resources and strategies that you can use in your classroom tomorrow.
Session Descriptions

Using Google Docs in the NGSS Classroom

Cheryl Matas, retired
Primary Subject: AS, IN
Interest Level: CO, EE, HS, LE, MS
Location: ExHall5

Get ready to go deeper into Google Docs. Participants will learn the awesome features that students can use to bump up their projects that teachers can easily assess. Handout provided.

Transitioning to NGSS from a Teacher’s Point of View

Tricia Shelton
Primary Subject: GS
Interest Level: EE, LE, MS, HS, CO
Location: Crystal Ballroom

Join Tricia Shelton as she discusses:
• Trish’s NGSS WHY
• Students as Partners
• Science for all Students
• Phenomena-- focus on figuring out

Tricia Shelton is a High Science Teacher and Teacher Leader with a BS in Biology and MA in Teaching, who has worked for 22 years in Kentucky driven by a passion to help students develop critical and creative thinking skills. Tricia is a 2014 NSTA Distinguished Teaching Award winner for her contributions to and demonstrated excellence in Science Teaching. As a Professional Learning Facilitator and NGSS Implementation Team Leader, Tricia has worked with educators across the United States to develop Best Practices in the Science and Engineering classroom through conference presentations, webinars, coordinating and co-moderating #NGSSchat on Twitter, and virtual and face to face PLC work. Tricia’s current Professional Learning Facilitation includes work around the Next Generation Science Standards and helping STEM students develop the 21st Century Skills of critical and creative thinking, collaboration and communication.

Introduction to NGSx (Next Generation Science Exemplar)

Greg Johnson, Wayne RESA
Primary Subject: GS, IN
Interest Level: EE, LE, MS, HS, CO
Location: Onyx

Do you know what our new science standards might look like in your classroom? In this session, you will experience NGSx and learn how to enroll in a study group.

Cross Cutting Curriculum with Bog Zombies

Kevin Frailey, Michigan DNR; Katie McGlashen
Primary Subject:
Interest Level:
Location: Ivory

Cross Cutting Curriculum with Bog Zombies

Fri 1:00 pm-2:45 pm

Hands-on Neuroscience Workshop: Human Electrophysiology

Greg Gage, Backyard Brains
Primary Subject: BI, PH
Interest Level: MS, HS, CO
Location: Bronze

Understand the electrical signals in the human body: muscles (EMG), Brain (EEG) and more. We will do hands-on experiments to record signals and use them to create fun brain-machine interfaces.

Arbor Scientific: Cool Tools for Electricity & Magnetism

Don Pata
Primary Subject: GS, PH
Interest Level: MS, HS, CO
Location: Amethyst

Make a light bulb filament “dance” 60 times/second. See why the hand-crank Van de Graff is better than the electric. Presented by award-winning teacher Don Pata.

Asking Questions About Our Changing Climate: A Mi-STAR Unit

Emily Gochis, Michigan Technological University; Kendall Grazul, Jenison Public Schools; Dawn Kahler, Kalamazoo PS; Gregg Bluth, Michigan Tech University
Primary Subject: ES, GS
Interest Level: MS, HS
Location: Gold

Participate in three-dimensional, hands-on activities from a classroom-tested, integrated science unit exploring causes of global climate change and possible mitigation strategies. Aligns with MS-ESS3-4 & MS-ESS3-5. Handouts provided.

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Friday

1:00 p.m. - 2:45 p.m. continued

Lloyd’s Toolbox of Engineering Ideas and Activities

Lloyd Hilger, Hanover Horton Elementary School
Primary Subject: GS
Interest Level: LE, MS, HS, CO
Location: Silver

In this presentation we will be looking at the engineering design process and how to teach engineering in a variety of grade levels. We will also look at ways to help students become more aware of various engineering careers. Many lesson plans and resources will be provided. Also, please come ready to share any engineering resources that you have.

Frog Wars: Genotype to Phenotype to Natural Selection

William Hodges, Holt High School
Primary Subject: BI
Interest Level: HS
Location: Coral

Come learn how to use origami frogs to teach students how different genes lead to different traits that actually affect how a paper population changes.

STEM in Nature

Ashlie Smith, Farmington Hills Nature Center
Primary Subject: GS, EN
Interest Level: EE, LE, MS, HS
Location: Jade

Discover how you can merge Nature and STEM concepts to enhance any lesson! Participate in hands-on examples of design and engineering challenges that get students outdoors and solving real-world problems!

Energy in Middle School: Focusing on Transfers, Systems, and Fields

Sebastian Opitz, Israel Touitou, CREATE for STEM - MSU
Primary Subject: GS, BI
Interest Level: MS
Location: Sapphire

Participants try out activities that exemplify a new project-based learning unit on energy to see how students use models to analyze energy transfers, systems, and fields in the phenomena.

Using Life and Physical Science Assessment Tasks in Project-based Learning

Phyllis Pennock, Samuel Severance
Primary Subject: AS
Interest Level: EE, LE, MS, HS
Location: Ruby

Create three-dimensional assessment tasks for project-based learning! This session will include physical and life science task examples integrated into a technology platform. Handouts will be provided. Please bring your laptops!

IQWST-Making Critical Thinking More than a Cliche, Using 3-dimensional Learning

Christine Gleason, Activate Learning
Primary Subject: IN
Interest Level: MS
Location: ExHall4

Come engage in investigations where middle school students experience phenomena, construct explanations, and argue from evidence. Teach students to think like scientists applying a claim, evidence, reasoning framework to explain investigations.

Field Trip to MSU Extension Tollgate Education Center and Farm

Primary Subject: EN, IS
Interest Level: EE, LE, MS, HS
Location: Carpool

Carpool 4 miles to MSU’s Tollgate Farm to learn how MSU Extension Outreach Programs can support your educational goals with experiential, educational programs and field trips for your students that connect to the curriculum in your classroom. You will tour the growing school gardens & greenhouse, the sugar shack where the students and volunteers make maple syrup, and learn about youth development programs, community food systems education, and agriculture and natural resources. Using research-based curriculum and methods, Tollgate promotes food system awareness through exploring the sustainable, nutritional, and cultural aspects of agriculture. The field trip takes place on both Friday (3-hour session) and Saturday (2-hour session), so you can choose the day that works best for you. Cost is $10 and requires registration. We suggest that you wear farm appropriate footwear if possible. Meet at the seating area in the lobby across from the Sapphire ballroom at 1:00 pm.

Bat Behavior - An Inquiry-based Program with Live Animals

Aja Marcato, Organization for Bat Conservation
Primary Subject: BI, EN
Interest Level: CO, EE, HS, LE, MS
Location: ExHall3

In this two-part program, students will make their own observations, formulate questions, then get a chance to meet live bats and discuss their observations with a bat expert!

Middle School Share-a-thon

Susan Tate, Whitehall Middle School
Primary Subject: GS, IN
Interest Level: MS
Location: Emerald

Learn and interact with a room full of enthusiastic science teachers as they share their favorite activities for engaging middle school students. Leave with plenty of handouts and great ideas!
Session Descriptions

**Goldilocks Was a Scientist**
Rachel Badanowski, Wayne State University
Primary Subject: LT
Interest Level: EE, LE
Location: Jasper
Explore engaging science activities based on any book or story in this hands-on workshop complete with handouts.

**MSELA Course 4: A 2020 Vision for Science Classrooms**
Wendi Vogel, Kent Intermediate School District; Richard Bacolor, MSELA / Wayne RESA
Primary Subject: GS, IN
Interest Level: EE, LE, MS, HS
Location: Opal
How do district level systems (curriculum, common assessments, teacher evaluation, etc.) align with the new Michigan Science Standards? We’ll clarify the vision and connect the dots.

**Shifting to MSS and NGSS through Assessment**
Rochelle Rubin, Oakland Schools ISD; Amanda Becket, Huron Valley Schools
Primary Subject: AS, IN
Interest Level: LE, MS, HS
Location: Granite
NGSS vision depends upon transforming how science is assessed. Examples of performance assessment tasks will be shared and examples of classroom implications of task implementation will be presented.

**Classifying Space Objects**
Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS
Primary Subject: ES
Interest Level: MS
Location: Lab Aides Lab Demo Room
In this activity from the space science unit of SEPUP’s middle level earth science program, participants classify 24 space object cards using criteria used by modern astronomers. Addresses NGSS: MS-ESSI-3.

**Trophic Cascades: Bottom Up and Top Down Controls in Ecosystems**
Mark Eberhard, St. Clair High School
Primary Subject: BI, EN
Interest Level: MS, HS, CO
Location: Pearl
Using HHMI award winning interactive resources we will explore the impacts bottom up and top down controls have on ecosystem biodiversity, stability and function. Incorporating NGSS science practices! FREE resources!

**Observe, Investigate and Enjoy: New Conservation Education Toolkit**
Natalie Elkins, Department of Natural Resources
Primary Subject: EN
Interest Level: MS, HS
Location: Ivory
Tour FREE materials created by biologists & curriculum coordinators to engage students in hands-on, field investigations & the scientific process, using place-based inquiry to examine fish and wildlife habitat systems.

**Engineering Made Easy**
Roxane DuPuis, Delta Education/Foss
Primary Subject: IN
Interest Level: MS
Location: ExHall1
Experience active learning, research-based investigations for Middle School that include science and engineering practices. Leave with strategies, workshop materials and online resources that you can use tomorrow.

**Earth Science Explorations Using Airborne and Ground-Based Sensors**
David Bydlowski, Wayne RESA; Andy Henry, Wayne RESA
Primary Subject: ES, EN
Interest Level: MS, HS
Location: Moonstone
You and your students can design and use low cost sensors to collect, process and share data about our Earth’s atmosphere, biosphere, hydrosphere, and cryosphere.

**“TOTALITY” The Great American Eclipse 2017**
Kevin Dehne, Delta College & MESTA; Norbert Vance, Eastern Michigan University
Primary Subject: ES, AST
Interest Level: EE, LE, MS, HS, CO
Location: Topaz
This presentation is all about the total solar eclipse of 2017 that will cross through the heart of the United States on Aug. 21.

**Question and Phenomenon Pairs - Starting Storylines**
James Emmerling, Michigan Math and Science Centers Network; Michelle Neelands, Clio Area Schools
Primary Subject: IN
Interest Level: EE, LE, MS, HS, CO
Location: Onyx
In this session, teacher groups will collaborate in developing several question and phenomenon pairs using PE bundles. (This session is planned to support teachers who have completed NGSx).

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- BI = Biology
- EN = Environmental Education
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- PH = Physics
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Interest Levels:
- EE = Early Elementary
- LE = Late Elementary
- MS = Middle Level
- HS = High School
- CO = College

- SCECH Session
- – Vendor Session
The Secrets to Project Based Learning and Success in STEM

John Spicko, Accelerate Learning - STEMscopes
Primary Subject: GS
Interest Level: EE, HS, LE, MS
Location: ExHall5

Project-based Learning can be challenging. Experience how hands-on, engaging PBL strategies provide student autonomy to solve problems of interest; see high levels of engagement lead to high levels of learning.

Fri 2-3:45 pm

MEECS Energy Resources

Jessica Wagenmaker, DEQ
Primary Subject: AS, EN
Interest Level: LE, MS
Location: Copper

MEECS Energy Resources Unit: Investigate a broad array of topics such as electricity generation, renewable and nonrenewable energy resources, energy conservation and sustainability in Michigan.

The Next M-STEP: Michigan’s New MSS-aligned Assessment

Trish Maxwell, Lowell High School; Christie Morrison Thomas, Michigan Department of Education; Tamara Smolek, Michigan Department of Education
Primary Subject: AS, GS
Interest Level: EE, LE, MS, HS, CO
Location: Crystal Ballroom

Hear about the new MSS-aligned Michigan science assessment straight from an expert writing team! Review processes used for designing item clusters and how to use them to support your instruction.

Teaching Chemistry to Make Thinkers

Anne LaSovage, Southfield Public Schools
Primary Subject: CH, IN
Interest Level: MS, HS
Location: ExHall2

Experience selected minds-on (and easily transferable) activities that help students build a foundation in chemistry. Expect to participate and change your perspective about what a chemistry lesson can look like!

NGSS - How to Talk 21st Century Science in Elementary

Kelli Hixon; Andrew VandenHeuvel
Primary Subject: CO, IN
Interest Level: EE, LE
Location: Garnet

This will be an energetic, hands-on workshop focused on engaging students in learning NGSS through F2F and digital activities. We will explore free tools/resources to design and support student learning.

Fri 3-3:45 pm

Pearson Interactive Science K-8

Chuck McMillan, Pearson
Primary Subject: AS, IN
Interest Level: EE, LE, MS
Location: ExHall3

Bring the new Michigan Science Standards to life with Pearson Interactive Science. Let’s explore how Pearson makes your new Science Standards Relevant, Engaging & Personal for every learner!

MSELA Course 5: Department Chair Conversation

Primary Subject: AS, IN
Interest Level: EE, LE, MS, HS, CO
Location: Opal

Network with other Department Chairs and share successes and challenges as a science leader during Michigan Science Standards implementation.

Engineering in the New Michigan Science Standards

Greg Johnson, Wayne RESA
Primary Subject: AS, IN
Interest Level: EE, LE
Location: Topaz

Are you meeting the engineering targets in our new Michigan Science Standards? What does STEM look like in the elementary classroom? Explore with this hands-on workshop using Engineering is Elementary.

MESTA’s Free and Inexpensive Earth Materials

Judith Ruddock, Michigan Earth Science Teachers Association
Primary Subject: ES
Interest Level: EE, LE, MS, HS, CO
Location: ExHall4

This is it! Our Famous FREE AND INEXPENSIVE rock and mineral sale sponsored by the Michigan Earth Science Teachers Association. Classroom samples, teaching kits and answers to your Earth questions.

I’m Not a Rocket Scientist, But...

Jon Gray, Waldon Middle School
Primary Subject: PH
Interest Level: LE, MS
Location: Coral

Looking for a fun way to integrate engineering standards into your energy instruction? Learn how a piece of paper, tape and compressed air can make for an engaging lesson. Handouts.

Transitioning to NGSS in Chemistry

Melyssa Lenon, Chesaning Union High School; Tracy Haroff, Marshall High School
Primary Subject: CH
Interest Level: HS
Location: Emerald

Chemistry activities used to transition to NGSS will be shared in this
Session Descriptions

hands-on session. Activities will be tailored to general Chemistry and AP Chemistry. Handouts will be provided.

Prospecting for Mineral Ore
Bill Cline, LAB-AIDS
Primary Subject: ES
Interest Level: MS, HS
Location: Lab Aides Lab Demo Room
How do geologists look for mineral ore? In this activity from EDC Earth Science, participants search for a layer of rock that contains a valuable mineral, molybdenum, by testing sediments collected.

Stop Aligning Lesson Plans & Start Creating MSS Learning Experiences
Bill Dinkellmann, Van Andel Education Institute
Primary Subject: GS, IN
Interest Level: LE, MS, HS
Location: ExHall1
Focus on MSS Practices to engage students in thinking and acting like scientists. Transform your lesson plans into inquiry-based learning experiences. Leave with strategies & tools to make it happen.

I’m NO Techie...But Even I Can Do This!
Brad Gerbe, Manchester HS
Primary Subject: GS, IS
Interest Level: MS, HS
Location: Jade
I will share multiple technological mechanisms used for instruction. These include Schoology, Edmodo, EdPuzzle, Kahoot and more.

Extended Learning: Making the Most of Your Field Trip
Jennifer Horvatin, Potter Park Zoo
Primary Subject: IS
Interest Level: EE, LE, MS, HS
Location: Granite
Field trips are invigorating, with the promise of adventure outside the classroom. But how do you capitalize on the experience? Discover strategies to extend the excitement beyond field trip day.

Flying Wild Science
Kathleen Dougherty, Freelance
Primary Subject: BI, EN
Interest Level: LE, MS
Location: Ivory
Explore Flying Wild, an interdisciplinary supplementary curriculum that incorporates birds into your classroom. Migration is underway. Learn one activity that you can use to help students understand this amazing journey.

How To Create Your Own Country: Inquiry and Earth Science
Cheryl Matas, retired
Primary Subject: ES
Interest Level: EE
Location: Jasper
What could be more exciting than creating your own country? In this session, participants will be introduced to a project that integrates curriculum and uses creating maps and models extensively.

Modeling Energy Transformation Systems to Get Off the Grid: A Mi-STAR Unit
Katelyn Sutton; Kevin Cliff, Bangor Township Schools
Primary Subject: IN, PH
Interest Level: MS, HS
Location: Onyx
Interact with materials from a Mi-STAR middle school NGSS-aligned unit. Classroom-tested activities focus on kinetic and potential energy, electric and magnetic forces, electricity generation, math computation, and engineering. Handouts provided.

Strategies For Building Inquiry and Science Practices Into Your Labs
Mark Eberhard, St. Clair High School
Primary Subject: BI, IN
Interest Level: MS, HS, CO
Location: Pearl
Participants play the role of the student in this hands-on laboratory session. Using peer review and formative assessment strategies, participants will learn how to scaffold inquiry and incorporate science practices.

GLOBE Teacher Training Workshop for Middle and High School Educators
David Bydlowski, Wayne RESA; Jeff Bouwman, Shumate Middle School, Gibraltar School District
Primary Subject: ES, EN
Interest Level: MS, HS
Location: Moonstone
Implement GLOBE where your students can do inquiry-based research to answer their questions about the environment. Learn some GLOBE atmosphere protocols along with collecting and reporting data to GLOBE’s website.

Session Key:

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### Session Descriptions

**3:00 p.m. - 3:45 p.m. continued**

**Increasing Engagement in Physics through Project based Learning**

Israel Touitou, CREATE for STEM - Michigan State University; Deborah Peek-Brown, Michigan State University  
**Primary Subject:** PH  
**Interest Level:** HS  
**Location:** Ruby  
Experience teacher-developed, Project-Based Learning units designed as part of a research project to increase high school student engagement, creativity, and challenge while using advanced real-time data collection methods.

**Kinesthetic Chemistry**

Audrey Richardson, Detroit Public Schools; Kalonda McDonald, Detroit Public Schools  
**Primary Subject:** AS, CH  
**Interest Level:** HS  
**Location:** ExHall5  
Provide 2-3 activities that engage teachers  
Required to move, model and explain

**Using the EQUIP Rubric to Evaluate Instructional Materials**

Jen Arnswald, MSTA/Ionia Public Schools; Tricia Shelton  
**Primary Subject:** GS  
**Interest Level:** EE, LE, MS, HS, CO  
**Location:** Amethyst  
Using the EQUIP Rubric to Evaluate Instructional Materials

**ECA Field Trip- As we all transition to the new standards and implement new programs, the next question is how do we manage the materials?**

Heidi Harlan  
**Primary Subject:** GS  
**Interest Level:** EE, LE, MS, HS, CO  
**Location:** General Exhibit Area  
ECA Science Kit Services is a unique service that manages and refurbishes science kits for school districts. No matter which science program your district implements or plans to implement, ECA can help! Take the trip during this session to their local warehouse and see their operation in action! Discover a better way to manage science materials for your school district! http://www.eca.bz/

**Fri 3:15 pm-4:45 pm**

**Using Inquiry to Teach Disciplinary Core Ideas**

Kelly Otto, Concord Middle School; Rebecca Hutchinson, Concord Middle School  
**Primary Subject:** AS, IN  
**Interest Level:** MS  
**Location:** ExHall1  
Using at least one of the Next Generation Science Standards you will be guided through the inquiry process; complete with a grading rubric.

**What Does Three-Dimensional Science Learning Look and Sound Like?**

Wendy Johnson, Michigan State University  
**Primary Subject:** GS, IN  
**Interest Level:** MS, HS  
**Location:** Emerald  
I will share classroom videos and examples of talk and writing strategies that engage students’ curiosity to transform lessons from learning about science to figuring out phenomena.

**Using Exhibits for Inquiry-based Learning**

Susie Marvin, Michigan Science Center; Charles Gibson, Michigan Science Center  
**Primary Subject:** IS  
**Interest Level:** EE, LE, MS, HS  
**Location:** Ivory  
Join Michigan Science Center’s educators for a hands-on exploration of inquiry-based approaches to science exhibits. Gain inquiry techniques, facilitation strategies, and lesson plans for your next field trip or lab.

**Modeling the Introduction of a New Species: NGSS Ecology**

Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS  
**Primary Subject:** GS, LT  
**Interest Level:** MS  
**Location:** Lab Aides Lab Demo Room  
How does a new species affect the flow of matter and energy in an ecosystem? This card sort-style activity models the introduction of a new species with special attention to the effect on existing predators and producers...from the new SEPUP middle level Ecology unit, revised and updated for the NGSS and published by Lab-Aids. Participants will receive free samples of this activity.

**Get Students Asking Their Own Questions**

Katie Stevenson, Fisher Elementary School  
**Primary Subject:** GS, IN  
**Interest Level:** EE, LE  
**Location:** Garnet  
Need ideas to get students to ask their own questions, develop inquiry skills, and improve dialogue? Walk away with strategies that can be used with any grade and content area.

**“Invade” Your Parks! Students Make a Difference with Interdisciplinary STEM!**

Christine Kelly, Allendale Middle School; Melanie Mansion, Ottawa County Parks and Recreation Commission, Natural Resources Management Supervisor  
**Primary Subject:** GS, EN  
**Interest Level:** EE, LE, MS, HS, CO  
**Location:** Granite  
Cross-cut your way through the NGSS by working with parks and DNR staff! Active lessons, low-cost field trips revolving around invasive species, and the effect humans have on the natural world.