



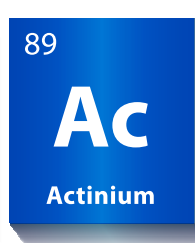
PUTTING LEGS ON THE NEW MICHIGAN SCIENCE STANDARDS

Pure Michigan *Science*



March 24-25, 2017
March 23, 2017 - Pre-conference sessions
Suburban Collection Showplace
Novi, MI

CONFERENCE PROGRAM



Meemic

THE ART OF **TEACHING**
IS THE ART OF **ASSISTING DISCOVERY**
MARK VAN DOREN



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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 MSTAs 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!***

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**Based on a 2016 Survey of Meemic Members.

From partnership to protection, Meemic supports science teachers:

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- **Home insurance** that features personal liability for tutoring sessions.
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- **Auto insurance** with industry leading claims service: over 97% of members who have had a claims experience are likely to refer others to Meemic.**



AUTO



HOME



UMBRELLA



BOAT

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, 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
Conference Chair

Sandra Yarema
Assistant Conference Chair

Crystal Brown
Assistant Conference Chair

Message from the Executive Director

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

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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/WszSNB>

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

Conference Planning Committee

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Richard Bacolor

Erica Ballard

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Diana Matthews

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 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

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

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

9:00 a.m. – 1:00 p.m.

EXHIBITS

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 off-set expenses for this year's conference! Some are here exhibiting, make sure to stop by and say "thanks"!

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Greater Lansing Convention and Visitors Bureau

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Michigan Department of Natural Resources

Michigan Science Center

Michigan Science Festival

Michigan Science Teachers Association

Michigan Tech / Mi-STAR

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SCST Representative/2017 Conference
Co-Chair

MESTA

**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

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

KEYNOTE SESSIONS

Friday, March 24, 2017

8:00 a.m. – 8:45 p.m.
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

1:00 p.m. – 1:45 p.m.
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

Saturday, March 25, 2017

8:00 a.m. – 8:45 p.m.
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. – 9:45 a.m.
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

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Sessions for SCECHs - Friday

Fri 8-8:45 am

Fall Head Over Heels for Flipping your Classroom!

Location: Amethyst

Using the KLEWS Chart to Organize Elementary Science Instruction

Location: Onyx

Where Does Your Water Go?

Location: Jasper

Neuroscience for the 99%

Location: Crystal Ballroom

Evolution for Middle School Educators

Location: Pearl

Using the Outdoors to Teach About Sustainability

Location: Coral

Using World Water Monitoring Challenge to Engage Students in Practices

Location: Topaz

Think Tubes Phenomenon/Modeling

Location: Garnet

Making It Real... Cheap!!

Location: Bronze

Salmon in the Classroom 101

Location: Ivory

Utilizing CarbonTIME in the Classroom: NGSS Science Practices in Action

Location: Moonstone

Ups and Downs of Science Modeling: A Wavy Phenomenon

Location: Emerald

Help Save Endangered Animals!

Location: Opal

An Overview of the Environmental Educator Certification (EEC)

Location: Jade

Energy: Explained in terms of Michigan's Electrical Grid

Location: Silver

Fri 8-9:45am

MEECS Ecosystems and Biodiversity

Location: Copper

Go Outside with Michigan Science Standards Using Project-Based Learning

Location: Ruby

Getting to Know the MSS-aligned Mi-STAR Curriculum for Middle Grades

Location: Gold

Giving Choice to Investigations and Living to Tell About It!

Location: Granite

Interactions: NGSS-aligned Curriculum Using Project-based Learning Approaches for Physical Science

Location: Sapphire

Fri 9-10:45 am

Cool Tools for Sound & Waves

Location: Amethyst

Fri 9-9:45 am

It's Time to Buddy Up!

Location: Jade

Baby Bottle Rocket Stoichiometry

Location: Emerald

Invasive Monsters of the Deep

Location: Ivory

MSELA: Course 1: Choosing a Science Course Pathway

Location: Opal

Engaging Students in Reflective Practices in Science Education

Location: Topaz

Storytelling in Biology and AP Biology

Location: Pearl

Waves

Location: Lab Aides Lab Demo Room

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

Location: Garnet

MDE Updates from Assessment and Curriculum/Instruction

Location: Crystal Ballroom

NGSS Yourself

Location: Bronze

Explore Environmental Phenomena with NASA's AREN Project

Location: Coral

3-D Robotic Printing Additive Manufacturing Platforms

Location: Jasper

Making Thinking Public: Multiple Options for Recording Student Thinking

Location: Onyx

Renewable Energy Dashboard for Student Education

Location: Silver

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

Location: Moonstone

Fri 10-10:45 am

Tricks of the Trade

Location: Emerald

What's in the Woods?

Location: Ivory

MSELA Course 2: Science Learning Targets for Leaders

Location: Opal

Science Talk and Beyond

Location: Garnet

Using Theatrics to Teach Environmental Topics

Location: Coral

Michigan Mammals

Location: Jade

Integrating Chromebook with Vernier Technology

Location: ExHall5

Biomes and Invasive Species

Location: Lab Aides Lab Demo Room

Using Inquiry to Tackle Misconceptions about Kinematics and Newton's Laws.

Location: Topaz

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

Location: Crystal Ballroom

Science, Media, and Art

Location: Granite

Teaching About Climate Change in Biology

Location: Pearl

Science and Engineering Practices in the NGSS

Location: ExHall2

The Reflective Assessment Practice: Improving Science Achievement in 10 Minutes

Location: ExHall1

Invigorate your Photosynthesis and Cellular Respiration Investigations with Algae Beads

Location: ExHall3

Cheap, Easy, Universal Demonstrations for All Areas of Science

Location: Sapphire

Fri 10-11:45 am

MEECS Water Quality

Location: Copper

Hands On Neuroscience Workshop: Invertebrate Spikes!

Location: Bronze

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

Science Notebooks: Making Thinking and Learning in Science Visible

Location: ExHall1

Solving the HS Course Sequence Puzzle - Integrating Earth Science

Location: Topaz

Tired of One Word Answers? Try Some of These Strategies!

Location: Granite

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

Location: ExHall3

Developing Storylines using KLEWS charts

Location: Onyx

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

Frog Wars: Genotype to Phenotype to Natural Selection

Location: Coral

STEM in Nature

Location: Jade

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

Location: Sapphire

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

Location: Ruby

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



Sessions for SCECHs - Friday & Saturday

Fri 2-2:45 pm continued

“TOTALITY” The Great American Eclipse 2017

Location: Topaz

Question and Phenomenon Pairs - Starting Storylines

Location: Onyx

The Secrets to Project Based Learning and Success in STEM

Location: ExHall5

Fri 2-3:45 pm

MEECS Energy Resources

Location: Copper

The Next M-STEP: Michigan’s new MSS-aligned assessment

Location: Crystal Ballroom

Teaching Chemistry to Make Thinkers

Location: ExHall2

NGSS - How to Talk 21st Century Science in Elementary

Location: Garnet

Fri 3-3:45 pm

MSELA Course 5: Department Chair Conversation

Location: Opal

Engineering in the New Michigan Science Standards

Location: Topaz

I’m Not a Rocket Scientist, But...

Location: Coral

Transitioning to NGSS in Chemistry

Location: Emerald

Prospecting for Mineral Ore

Location: Lab Aides Lab Demo Room

Stop Aligning Lesson Plans & Start Creating MSS Learning Experiences

Location: ExHall1

I’m NO Techie...But Even I Can Do This!

Location: Jade

Extended Learning: Making the Most of Your Field Trip

Location: Granite

Flying Wild Science

Location: Ivory

How To Create Your Own Country: Inquiry and Earth Science

Location: Jasper

Modeling Energy Transformation Systems to Get Off the Grid: A Mi-STAR Unit

Location: Onyx

Strategies For Building Inquiry and Science Practices Into Your Labs

Location: Pearl

GLOBE Teacher Training Workshop for Middle and High School Educators

Location: Moonstone

Increasing Engagement in Physics through Project based Learning

Location: Ruby

Kinesthetic Chemistry

Location: ExHall5

Using the EQulP Rubric to Evaluate Instructional Materials

Location: Amethyst

Fri 4-4:45 pm

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

Location: Emerald

Using Exhibits for Inquiry Based Learning

Location: Ivory

Modeling the Introduction of a New Species: NGSS Ecology

Location: Lab Aides Lab Demo Room

Get Students Asking Their Own Questions

Location: Garnet

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

Location: Granite

Vision for STEM Instruction--Panel Discussion

Location: Crystal Ballroom

MSS - Taught Outdoors

Location: Jade

Building A Nature Rich Education

Location: Topaz

New, Free K-3 Science Units: A Bridge to MSS Implementation

Location: Coral

NGSS Engaging Elementary Interactive Notebook Activities for Upper Elementary Classroom

Location: Opal

Formative Assessments--More Than Thumbs up, Thumbs down!

Location: Topaz

Games, Games, Games

Location: Jasper

Fri 4-5:30pm

Andrès Ruzo, Geoscientist, National Geographic Explorer

Location: Sapphire

Fri 5-6pm

HHMI Movie

Location: Opal

Sat 8-8:45 am

Making Grades More Meaningful

Location: Ruby

Games, Games, Games

Location: Emerald

Our Public Treasures, Our Public Lands

Location: Topaz

Engineering a Carnivorous Plant

Location: Ivory

Outstanding Science Trade Books from the CBC and NSTA

Location: Garnet

Using Google Docs in the NGSS Classroom

Location: Moonstone

Renewable Energy Dashboard for Student Education

Location: Jade

Antibiotic Stewardship: What should teachers and students know?

Location: Coral

Neuroscience for the 99%

Location: Crystal Ballroom

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

Location: Amethyst

‘You Be The Chemist-Teaching Chemistry through Inquiry

Location: Silver

Objectives-Based Grading: How to Make Grades Meaningful

Location: Opal

Sat 8-9:45 am

Walk Like An Engineer!

Location: Bronze

MEECS Climate Change

Location: Copper

Data Nuggets: Scaffolding Claim-Evidence-Reasoning Using Real Data in Context

Location: Sapphire

Sessions 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

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

STEM-ify Your Lessons

Location: Silver

Sat 9-10:45 am

Engaging Science-Math Teachers in Collaborative Research on Environmental Modeling

Location: Jade

Sat 9am- 12:00pm

New Models for Waves and NGSS alignment

Location: Ruby

Sat 10-10:45 am

Cheap, Easy, Universal Demonstrations for All Areas of Science

Location: Emerald

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 10-11:45am

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

Sat 10:15am-11:45am

Using Inquiry to Teach Disciplinary Core Ideas

Location: ExHall1

Sat 11-11:45 am

10 Simple to Set-up Chemistry Demonstrations

Location: Emerald

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: Ivory

Read All About It!

Location: Garnet

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

Sat 1-1:45 pm

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

UNIQUE PROGRAMS FOR UNIQUE STUDENTS

Integrated Science at Grand Valley State University

Grand Valley's ISCI curriculum is so much more than just a compilation of courses from different disciplines. ISCI courses have been uniquely developed to prepare future science teachers to integrate the sciences using active teaching methodologies. ISCI students learn through service learning experiences, and engage in authentic field and scholarship opportunities with dedicated faculty. It's never been more important to have the highest quality science teachers in K-12 classrooms, and Grand Valley is uniquely prepared to train them.

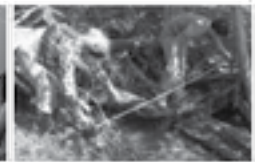
Integrated Science Options at Grand Valley:

ISCI Elementary major (K-8 Certification)

ISCI Secondary major (6-12 Certification in all science areas)

Biology, Chemistry, Earth Science and Physics Secondary majors

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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

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

MEECS 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.

Session Key:

Primary Subject Levels:

AS – Assessment/Curriculum
 CH – Chemistry
 ES – Earth Science
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 PH – Physics
 AST – Astronomy

Interest Levels:

EE – Early Elementary
 LE – Late Elementary
 MS – Middle Level
 HS – High School
 CO – College

☞ – SCECH Session

▼ – Vendor Session

Session Descriptions

Friday

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

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.

Fri 9:00 am - 5:00 pm

MESTA Rock Shop

Parker Pennington IV, MESTA

Primary Subject: ES

Interest Level: EE, LE, MS, HS, CO

Location:

The MESTA Rock Shop for your Rock, Mineral, and Fossil needs. Cash, check, and credit cards accepted. Proceeds fund our outreach programs including Stoney classroom grants and Cranson field scholarships.

Fri 9:00 am-10:45 am

Arbor Scientific: Cool Tools for Sound & Waves

Stephen Rea, University of Michigan

Primary Subject: GS, PH

Interest Level: MS, HS, CO

Location: Amethyst

Hands-on discovery brings lessons on sound & waves to life! Get ready to hear Ooh's and Aah's when you supplement your lessons with these demonstration materials!

Fri 9:00 am-9:45 am

It's Time to Buddy Up!

Becky Durling, Williamston Community Schools; Conni Crittenden, Explorer Elementary, Williamston Community Schools

Primary Subject: GS

Interest Level: EE, LE

Location: Jade

Learn how a successful buddy system between Young Fives and 4th/5th grade has been developed for science learning! Activities highlighted: gardens, arts integration, field trips, lab activities and more!

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.



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, MSELA / 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.

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▼ – Vendor Session

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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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10:00 a.m. - 10:45 a.m. *continued*

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; Jelene 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.

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.



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.

Fri 11:00 am-11:45 am

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, SRES

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 Climbing Higher!

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.!

Session Key:

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 CO – College

☞ – SCECH Session

▼ – Vendor Session

11:00 a.m. - 11:45 a.m. *continued*

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.

Phenomena and Evidenced Based Learning in Chemistry and Physics

Michelle Mason, Portage Northern High School; Kathy Mirakovits

Primary Subject: CH, PH

Interest Level: HS

Location: Emerald

Reversing the order of a unit to demonstrate a phenomena or collect evidence FIRST is a powerful tool to motivate students and address the NGSS!

Michigan Trees

Michael LeValley, Isabella Conservation District

Primary Subject: BI, EN

Interest Level: EE, LE, MS

Location: Jade

A hands-on presentation focusing on identification and classification of Michigan trees. This program identifies structures of trees and the adaptations that let them live in various environments. Hand-outs provided.

Putting Together the 8 Essential Pieces of the PBL Pie

Nickie Clark, Freeland High School; Jen Peruski, Freeland High School

Primary Subject: IN, PH

Interest Level: HS

Location: Coral

Bruised and battered, but better than ever! Learn how teaching Physics and Algebra II through PBL changed our classroom forever. Survive in the trenches with our tips and projects ideas.

Modeling--Leveraging this Practice in Science and Math

Megan Schrauben, Michigan Department of Education; Michael Gallagher, Oakland Schools

Primary Subject: AS, IN

Interest Level: MS, HS, CO

Location: Crystal Ballroom

Math/Science Partnership grants have been supporting teachers in modeling. Let's look at how this practice can build student excitement and proficiency as well as bridge the science and math classrooms.

3-Dimensional Learning in the Elementary Classroom

Matt Moorman, Teachers' Curriculum Institute (TCI)

Primary Subject: AS, GS

Interest Level: EE, LE

Location: ExHall2

Experience 3-Dimensional learning with TCI through immersion in a Bring Science Alive! investigation. Examine how to engage students in scientific and engineering practices and apply cross-cutting concepts for deeper understanding.



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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🗣️ – SCECH Session
⌵ – Vendor Session

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: ExHall1

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.



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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Session Descriptions

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 Tuitou, 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 Cliché, 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.

Fri 1:00 pm-3:45 pm

Field Trip to MSU Extension Tollgate Education Center and Farm

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

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.

Fri 2:00 pm-2:45 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!



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 🗣️ v

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 🗣️ v

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 NGSSx).

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🗣️ – SCECH Session

v – Vendor Session

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

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 LaSavage, 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 🗣️

Wendi Vogel, Kent Intermediate School District; Heather Robotham, Wyoming Intermediate School

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



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 Dinkelmann, 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, IN

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:

Primary Subject Levels:

AS – Assessment/Curriculum
CH – Chemistry
ES – Earth Science
GS – General Science
LT – Literacy
BI – Biology
EN – Environmental Education
IN – Instruction/Pedagogy
PH – Physics
AST – Astronomy

Interest Levels:

EE – Early Elementary
LE – Late Elementary
MS – Middle Level
HS – High School
CO – College

🗣️ – SCECH Session

▼ – Vendor Session

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 EQulP Rubric to Evaluate Instructional Materials

Jen Arnsward, MSTA/Ionia Public Schools; Tricia Shelton

Primary Subject: GS

Interest Level: EE, LE, MS, HS, CO

Location: Amethyst

Using the EQulP 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.

Fri 4-4:45 pm

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

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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-Aides. 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 Manion, 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.

