Pure Michigan *Science*

Engineering Grand Ideas in Science




Conference Program

Michigan Science Teachers Accociation

62nd Annual Conference

February 26-28, 2015

Amway Grand Plaza Hotel • Grand Rapids, Michigan

MICHIGAN SCIENCE TEACHERS ASSOCIATION

AVEN

Create excitement in your classroom!

This school year, take advantage of **MSTA2015**. Michigan Science Teachers Association members receive 20-50% off from the list price of the featured items below. In addition, when placing an order on our website at **AVENINC.COM** use the code **MSTA2015** at checkout to receive a 10% discount on all other items.

Featured Item	Part Number	List Price	Discount	MSTA Member Price
zipScope 2M	26700-300	$104.21	20%	$ 83.36
Mighty Scope 5M	26700-209	$249.00	20%	$199.20
Mighty Scope Connect	26700-201	$395.00	50%	$199.00
Connect Adapt WiFi Camera	26100-256	$395.00	50%	$199.00
Cyclops Digital Microscope	26700-400	$850.00	20%	$680.00
12 Piece Dissecting Kit	15510	$16.60	20%	$ 13.28
5 Piece Tweezer Set	18473	$26.26	20%	$ 21.00

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Michigan based Aven's complete line of digital microscopes and cameras are ideal for the science classroom. From the Connect Adapt WiFi digital camera, that connects wirelessly to your iOS or Android device, to the zipScope, these easy-to-use instruments let you see high-resolution, enlarged images and video on a monitor, rather than enduring the neck strain and fatigue of looking down through the eyepieces of a traditional microscope.

Message from the 2015 Conference Chair and Assistant Conference Chair

Dear Conference Attendees,

It is with great pleasure that MSTA welcomes you to the *2015 Pure Michigan "Engineering Grand Ideas in Science" Conference*. The MSTA Conference is a place where educators will meet to share ideas, learn new strategies, and network. The MSTA conference is the "go to" destination for cutting edge information. We have about 135 sessions being offered on Friday and about 90 on Saturday, spanning levels from early elementary to college so there is something for everyone.

Do you want to hear from a national leader and author in formative assessments?
We are very excited to welcome Page Keeley as our dynamic keynote speaker. Page Keeley is the Senior Science Program Director at the Maine Mathematics and Science Alliance, where she directs projects in the areas of leadership, standards-based curriculum and instruction, formative assessment, professional development design, and instructional coaching. She is the author of the *Uncovering Student Ideas in Science* series, focusing on formative assessments. Page Keeley's session will run unopposed on Friday at 11:00 am, followed by book signings near Registration at noon. Be sure not to miss it!

How do I start bringing NGSS into my classroom?
There are many sessions being offered by NGSS specialists and teachers sharing what can be done in the classroom to embrace NGSS. Check out our program list of all the sessions that support NGSS.

Are you wondering what to do on Friday night?
There will be a Happy Hour featuring BioInteractive videos from the Howard Hughes Medical Institute at 5:00 pm Friday. The videos are about 20 minutes long and there will be someone there from the Institute to answer questions.

Join this year's MSTA award winners at the Awards Banquet being held in the Pantlind Room. Be awed by these inspirational teachers and hear what they are doing in their classrooms.

Do you want to have a more personal relationship with MSTA?
The MSTA Conference is offering a new feature this year – a meet and greet with your regional director. During the break between the morning and afternoon sessions, the regional directors will be outside of the exhibitor's hall ready to talk you and let you know what is happening in your region.

Do you have some new ideas for MSTA or want to get more involved?
Come to the 'Muffins with Members' on Saturday at 8 am, chat with Board Members, and have your voice heard.

Do you want to see the newest materials out there to use in your classroom?
Visit the exhibit hall to see the largest concentration of science educational materials available anywhere in the state. Enter one of the drawings for giveaways from the exhibitors.

We want to see you make this MSTA Conference your *Pure Michigan "Engineering Grand Ideas in Science" Conference* experience.

Karen Kelly
Conference Chair

Liz Larwa
Assistant Conference Chair

MSTA RAFFLES - PLEASE NOTE the following:

1. A Friday raffle will take place immediately prior to the Happy Hour Bio-Interactive movie with the Howard Hughes Medical Institute at 5:00 pm in the Vandenberg Rooms. There will be a Raffle Box there for you to place your FRIDAY raffle ticket into when you arrive for the movie and drawing. MUST BE PRESENT TO WIN!

2. A second raffle drawing will take place at the MSTA Booth on Saturday at approximately 12:15 pm, immediately following the MESTA raffle. If you plan on being in attendance for the Saturday raffle, you may place your SATURDAY raffle ticket in the Raffle Box at the MSTA Booth when you arrive for the drawing. MUST BE PRESENT TO WIN!

Message from the Executive Director

On behalf of the MSTA Board of Directors and the 2014 Conference Committee, I would like to welcome you to the 62nd MSTA Annual State Science Conference! We are so pleased to be in Grand Rapids at the Amway Grand Plaza Hotel. The theme of our conference is ***Pure Michigan Science: "Engineering GRAND Ideas in Science".*** Our MSTA Conference Leadership has been busy planning for how MSTA can be a professional support for you in your Michigan classrooms and schools. We have designed a conference full of sessions filled with Michigan's perspectives on the Next Generation Science Standards (NGSS).

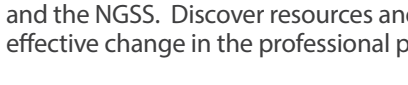
This year our MSTA Conference will have a keynote address from Page Keeley; author, Science Education Consultant, and former NSTA President. She is sharing her perspectives on **Teaching for Conceptual Change: Building a Bridge between Students' (and Teachers') Ideas and Scientific Understanding**. K-12 students hold a variety of strongly held ideas about the natural world and phenomena. Teaching for conceptual change involves starting with understanding the ideas students bring to their learning and building a bridge between their initial ideas and the scientific ideas we want them to learn and be able to use. Page Keeley will talk about her experience transitioning from inquiry to inquiry for conceptual change, how teaching for conceptual change transformed her teaching and learning, and implications for teaching and learning core disciplinary ideas, crosscutting concepts, and scientific and engineering practices.

Join us in an exploration of student assessment. After her Keynote presentation, Page will have a book signing for her new book, Uncovering Student Ideas in Science Volume IV *25 NEW Formative Assessment Probes*.

Once again the Howard Hughes Medical Institute BioInteractive is offering a free movie on Friday at 5:00 PM! Relax with your colleagues at the Happy Hour with HHMI's BioInteractive movie. Free beverages, and snacks will be available. There will be drawings and free classroom resources will be given away. We are delighted they are back for the second year in a row.

We are so pleased you are here! The Michigan Science Teachers Associations' State Conference is one of the largest state science conferences in the United States. This conference will help you and your school districts become knowledgeable about a Framework for K-12 Science Education and the NGSS. Discover resources and materials that are available to enable effective change in the professional practices of science educators!

MSTA Executive Director



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Conference Planning Committee

Crystal Brown, MSTA Director at Large

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Robby Cramer, MSTA Executive Director

Paul Drummond, MSTA Membership Chair

Karen Kelly, MSTA 2015 Conference Chair

Elizabeth Larwa, MSTA 2015 Assistant Conference Chair

Marlenn Maicki, MSTA Awards Chair

Kathy Mirakovits, MSTA High School Director

Sandra Yarema, MSTA SCST Representative

Conference At-A-Glance

Friday, February 27, 2015

7:00 a.m. – 7:00 p.m.
Pre-registration
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

7:30 a.m. – 4:00 p.m.
Registration/SCECHs/Speaker Check-in
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

7:30 a.m. – 5:15 p.m.
SCECHs Desk
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

8:00 a.m. – 4:45 p.m.
Sessions

9:00 a.m. – 5:00 p.m.
Exhibits
Location: Ambassador Ballroom, Amway Hotel, 2nd Floor

10:00 a.m. – 10:45 a.m.
Panel Discussion
Location: Pantlind

11:00 a.m. – 11:45 a.m.
KEYNOTE SPEAKER – Page Keeley

Teaching for Conceptual Change: Building a Bridge between Students' (and Teachers') Ideas and Scientific Understanding
Location: Pantlind

12:00 Noon
BOOK SIGNING with Page Keeley
Location: Center Concourse, 2nd Floor, Amway Hotel

12:00 noon – 1:00 p.m.
Meet and Greet YOUR Region Director!
Location: MSTA Booth, Center Concourse, 2nd Floor, Amway Hotel

4:30 p.m.
MESTA Rock Raffle!
Location: Ambassador West Concourse

5:00 p.m.
MSTA Raffle & HAPPY HOUR with Howard Hughes Medical Institute (HHMI)!

We will start with a Raffle! (MUST be present to WIN!)
Then view the movie – The Origin of Species!
Enjoy a complimentary drink provided by HHMI!
Location: Vandenberg A/B

6:00 p.m.
Awards Reception
Location: Gerald R. Ford Ballroom

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

Saturday, February 28, 2015

7:00 a.m. – 1:00 p.m.
Pre-registration
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

7:30 a.m. – Noon
Registration/SCECHs/Speaker Check-in
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

7:30 a.m. – 3:15 p.m.
SCECHs Desk
Location: Center Concourse, 2nd Floor, Amway Grand Plaza Hotel

8:00 a.m. – 8:45 a.m.
MUFFINS FOR MEMBERS!
Location: Governors Room

8:00 a.m. – 8:45 a.m.
HS Chemistry Teachers Meeting
Location: Vandenberg A

8:00 a.m. – 2:45 p.m.
Sessions

9:00 a.m. – 1:00 p.m.
Exhibits
Location: Ambassador Ballroom, Amway Hotel, 2nd Floor

Noon
MESTA – Rock Raffle!
Location: Ambassador West Concourse

12:30
MSTA Raffle!
MSTA Booth, Center Concourse
(MUST BE Present to win!)

1:00 p.m. – 1:45 p.m.
AP Chemistry Meeting
Location: Vandenberg A

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Past Presidents

(List shown from 1994 to current. For a full list, please contact the MSTA Office at 734-973-0433).

1994/96____Alex Azima
1996/98____Barb Berthlesen
1998/00____Robert Long
2000/02____Walter Rathkamp
2002/04____Phil Walker
2004/06____Robby Cramer
2006/08____Paul Drummond
2008/10____Betty Crowder
2010/12____Mike Klein
2012/14____Mike Sampson
2014/16____Charles Bucienski

MESTA

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 raffles — Friday @ 4:40 and Saturday @ Noon (MUST be present to win).

Will YOU be one of the lucky ones 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 – Kathleen Sparling
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

Featured Sessions

Friday, February 27, 2015

9:00 a.m. – 9:45 a.m

NGSS Unit Development – Building NGSS PEs: A 10-Step Process

Susan Cordere Kelly, Michigan Department of Education
Primary Subject: AS, GS
Interest Level: EE, LE, MS, HS
Location: **Pantlind Ballroom**
Participants will review resources for planning instruction for NGSS using a 10-step process that includes bundling related NGSS PEs, developing 3-D learning performances and assessments, and building a coherent storyline. Hands on -- will provide handouts with links to resources.

10:00 a.m. – 10:45 a.m.

Implementing NGSS Panel Discussion: Resources Available and Stories from the Front Lines

Location: **Pantlind Ballroom**

Panel: Nancy Karre, Battle Creek M/S Center, Jennifer Arnswald, MSTA Curriculum Director & Curator for NSTA Hub, Joseph Krajcik, Director CREATE for STEM Institute, Renee Bayer, Associate Director CREATE for STEM Institute

Moderator: Mike Klein, MSTA Treasurer

Questions: Robby Cramer, MSTA Executive Director, Charles Bucienski, MSTA President
Members of the Michigan Internal and External Review Team will share resources based on the K-12 Science Framework and NGSS, currently available to use with educators, department/ staff meetings, and PLCs. Updates regarding Michigan's progress on new science standards will be provided and Michigan created resources will be shared. Some time will be given to questions.

11:00 a.m. – 11:45 a.m.

Teaching for Conceptual Change: Building a Bridge between Students' (and Teachers') Ideas and Scientific Understanding

Page Keeley, Author, Speaker, & Science Education Consultant, Maine M/S Alliance (Retired Sr. Program Director), Past President of NSTA, National Science Education Leadership Association Region A Director
Location: **Pantlind Ballroom**
K-12 students hold a variety of strongly held ideas about the natural world and phenomena. Teaching for conceptual change involves starting with understanding the ideas students bring to their learning and building a bridge between their initial ideas and the scientific ideas we want them to learn and be able to use. Page Keeley will talk about her experience transitioning from inquiry to inquiry for conceptual change, how teaching for conceptual change transformed her teaching and learning and implications for teaching and learning core disciplinary ideas, crosscutting concepts, and scientific and engineering practices.

Saturday, February 28, 2015

8:00 a.m. – 8:45 a.m.

Muffins for Members!

Location: **Governor**
Advise MSTA leadership regarding your needs and recommendations on what you want as we move farther ahead with implementing NGSS. This is an opportunity for you to gain ideas about how to advocate for better science standards for our students and to share your needs! Come enjoy muffins and the discussions!

8:00 a.m. – 9:45 a.m.

Resources to Support NGSS Implementation

Susan Cordere Kelly, Michigan Department of Education
Primary Subject: AS,GS
Interest Level: EE, LE, MS, HS
Location: **Pantlind Ballroom**
During the NGSS development process, Michigan educators developed many resources to support NGSS implementation. Learn how to access these resources and use them to begin planning to support transitioning to NGSS. Access to online resources and handouts provided.

10:00 a.m. – 10:45 a.m.

Michigan's Next Generation Science Classroom

Jennifer Arnswald, Kent ISD
Primary Subject: AS, GS
Interest Level: EE, LE, MS, HS
Location: Pantlind
Learn how the S&E practices of the NGSS will transform science education. See how student engagement increases when practices are used in the classroom. Free online resources will be shared.

Session Key:

Primary Subject Levels:
AS – Assessment/Curriculum
CH – Chemistry
ES – Earth Science
GS – General Science
LT – Literacy
BI – Biology
CO – Computer/Technology
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
(V) – Vendor Session

Friday, February 27, 2015
Michigan Science Teacher's Association

2015 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:

Presidential Awardees:

Bethany Swartz, Utica Schools
Gary Koppelman, Blissfield Schools

Teacher of Promise – Ashley Meyer, Hamilton High School
Elementary Science Teacher of the Year – Patricia NcNinch, Mayville Elementary School
Middle School Science Teacher of the Year – Holly McGoran, Jennison Junior High School
High School Science Teacher of the Year – Deanna Cullens, Whitehall High School
College Science Teacher of the Year – Dr. Bradley Ambrose, Grand Valley State University
Science Administrator of the Year – Greg Johnson, Wayne RESA
Informal Science Educator – Stephen Stewart, Michigan Sea Grant Extension
MSTA Special Award – Susan Codere Kelly, Michigan Department of Education
MSTA Distinguished Service Award – Betty Crowder, Oakland University, MSTA Secretary
The George G. Mallinson Award for Lifetime Achievement in the Field of Science Education - David Bydlowski, Wayne RESA

A reception will be held from 6:00 p.m. – 6:30 p.m., with dinner and the awards program to follow. The reception will be in the Gerald R. Ford Ballroom, with dinner in the Pantlind Ballroom

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SCECH Sessions - Friday

Friday

8:00 a.m. - 8:45 a.m.

A Caring Instructor - Motivating Students for Classroom Success
Pullman

Argument Driven Inquiry: Using Science Practices: Transform Lab Activities
Ottawa

Find the Fund$ For Science: Grant Writing 101
Vandenberg A

Meeting Common Core Writing Standards in Science
Winchester

Resources for Teaching about Air Quality
Vandenberg B

STEM With Young Children
Plaza Boardroom A

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

Cheap & Dirty Science: Life Science For Fun - FEE: $5.00
Ruby

Engaging Pre-Service STEM Teachers with Chemistry Modeling
Emerald B

Engineering an Electromagnet
Riverview

Enhancing Classroom Learning through Digital Dissection
Nelson

Unpacking and Moving into NGSS
Kendall

9:00 a.m. - 9:45 a.m

All the Classrooms a Stage
Gerald R. Ford

Biologists Can Build Too!
Pullman

Biotechnology in Agriculture - From DNA to GMO
Plaza Boardroom A

Creating a Vision for Science Education
Pearl

Differentiated Instruction and Response to Intervention (RTI) In a Science Classroom
Ottawa

Energy - Avoid A Future Of Doom and Gloom!
Winchester

Engineering in the Science Classroom: You CAN Do It
Emerald A

NGSS Unit Development - Bundling NGSS PEs: A 10-Step Process
Pantlind

One Fish, Two Fish, Red Fish, Blue Fish
Atrium

STEM - Build Your Own Brushbot
Grandview

Student Choice, Student Voice: Empowering the Next Generation of Environmental Stewards
Heritage

Total Solar and Lunar Eclipses in USA!
Berkey

Wondering About Chemistry
Vandenberg A

9:00 a.m. - 10:45 a.m.

Creating Assessment for Science Aligned with Three-Dimensional Learning of NGSS
Governor

Lessons (learned) from NGSS-Aligned Inquiry-Based Physical Science Curriculum
Robinson

9:00 a.m. - 12:30 p.m.

MEECS Ecosystems and Biodiversity
Collins

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

3-2-1 Liftoff!
Campau

Academy of Natural Resources: What I Did During My Summer Vacation!
Emerald B

An Engineering Based Classroom - Classroom Strategies and Projects
Winchester

AP Environmental Science - "Global Sustainability"
Ruby

Citizen Science aboard the Schooner Inland Seas
Vandenberg B

Creating A Semi-Self-Paced Classroom without Killing the Teacher
Grandview B

Exploring Sedimentary Rocks of the Michigan Basin
Ottawa

Food Safety Is Your Right to Know And Learn
Emerald A

Getting Started with Interactive Science Notebook
Kendall

Inquiry Lessons in Biology: A Review and Some New
Nelson

Introducing Teachers and Administrators to NGSS
Pearl

Modeling Heating Curves and Phase Changes
Vandenberg A

Nature In and Out of the Classroom: A DNR Teacher Resource
Atrium

Science Near and Far: Travel Grants for Teachers
Heritage

STEM Through Origami
Grandview A

Teaching Simple Machines, Force and Motion, and Little Energy Using LEGO
Berkey

The Stories Rocks Can Tell: Interrogating a Michigan Limestone
Haldane

Water and Agriculture - Important Resources Working Together
Plaza Boardroom A

10:00 a.m. - 11:45 a.m.

Blending Art and Science STEaM
Gerald R. Ford

SCECH Sessions - Friday

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

3-D Printing: Recycled Engineering with Delta Printers and PLA Plastic
Vandenberg B

Big Ideas on a Nano Scale with Intro to Biology
Berkey

Bring Science Alive! With TCI
Kendall

CBC/NSTA Outstanding Science Trade Books in the Classroom
Riverview

Curious Crew: A Partnership Promoting Science Exploration and STEM Design
Thornapple

Engineering Innovative Instruction
Emerald A

Great Lakes, Great Activity, Great Fun
Atrium

Integrating your iPad with Vernier Technology
Grandview B

Mini Poster Magic
Haldane

Re-Engineering Inquiry: Let's Get REAL!
Pullman

Using Information Literacy to Evaluate Aspects of Hydraulic Fracturing
Ottawa

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

Dynamic Life Science
Nelson

Electrify Your Teaching Using the Simple Circuit Board
Winchester

Integrating Literacy and Engineering into a Biofuel Laboratory
Heritage

Pedaling into STEM on a Bike Generator
Ruby

Shifting to the NGSS through Assessment
Governor

Thinking, Acting and Writing like Scientists: First Grade Investigators Explore the Causes and Effects of Sounds and Vibrations
Emerald B

1:00 p.m. - 4:30 p.m.

MEECS Energy Resources
Collins

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

A Little Bit of Sol
Vandenberg B

A Telephone-Style Game for Reinforcing Free Body Diagrams
Thornapple

Ahh, the Places You'll Go! Cool Maps and Dynamic Data
Ottawa

Engineering The Future Of Energy!
Grandview B

Facilitating Students' Understanding of the Structure and Properties of Matter
Vandenberg A

Learn about the 3D Printer in Your Future
Grandview A

Making It Real....Cheap!
Riverview

Pre-School Early Elementary Environmental Education
Pullman

Processes for Collaborative Decision Making and Leveraging Different Perspectives
Pearl

Standards-Based Grading in the Next Generation: Targets, Formative Assessment and Intervention
Robinson

STEM from Nature
Atrium

Using Claim Evidence and Reasoning (CER) to Write Conclusions
Emerald A

Using Google Apps in the Science Classroom
Berkey

Viruses, Bacteria, Antibiotic Resistance - What Your Students Should Know and Why
Haldane

2:00 p.m. - 3:45 p.m.

Using NGSS Practices and Cross-Cutting Concepts to Combat Student Misconceptions
Plaza Boardroom A

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

Advanced Inquiry Labs for AP Chemistry from Flinn Scientific
Vandenberg B

Amazing: Using NGSS to Make the Great Lakes STEM-sational!
Ottawa

Biofuels - The Dance between Science and Engineering
Nelson

Encourage Reading in the Science Classroom
Winchester

Engineering is Elementary
Pullman

Forget Science Fairs, Organize a Maker Faire
Emerald A

Modern Manufacturing and STEM
Thornapple

NOAA, and Sea Grant, and GLOBE - - Oh, My!
Vandenberg A

Old Lessons CAN Do New Tricks: Modifying for NGSS and Appendix F
Haldane

Science and Engineering Practices as Interventions to Raise Academic Achievement
Grandview A

STEM Learning with Unmanned Vehicles
Robinson

The Earthquake Machine
Heritage

Use Technology to Work SmarterNot Harder
Grandview B

Using One-Minute Videos to Flip Your Lessons
Berkey

SCECH Sessions - Friday & Saturday

3:00 p.m. - 4:45 p.m.

Classify This! Build a Classroom Classification Wiki
Ruby

Cultivating the Scientific Mind Using Interactive Notebooks
Governor

First Day of Science Class
Riverview

Speak Up! Incorporating Discourse into our Classroom Instruction
Emerald B

4:00 p.m. - 4:45 p.m.

An Appetite for Chemistry
Thornapple

Bio & Chem Literacy Extravaganza
Ottawa

Biology's Best Engaged! Inquiry-Based Lessons Engagement Strategies to Activate Your Classroom
Heritage

Bringing the Body's Electrical Potential to Life
Emerald A

Integrating Chromebook, Android and BYOD with Vernier Technology
Berkey

Leading the Change toward NGSS: Department Chair Round Table
Pearl

One-Stop Shopping on the Topic of Energy
Haldane

Simple Spectroscopy: Lessons from the MAVEN Educator Ambassadors Program
Winchester

Saturday

8:00 a.m. - 8:45 a.m.

Bringing the Body's Electrical Potential to Life
Haldane

Engaged Students and Formative Assessment
Thornapple

Getting the Full Picture: Students Doing Science Using Gigapixel Panoramas
Kendall

High School Chemistry Teachers Meeting
Vandenberg A

Real Kids, Virtual Critters and Amazing Science
Plaza Boardroom A

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

Engineering an Electromagnet
Riverview

Resources to Support NGSS Implementation
Pantlind

The Arts in Engineering
Emerald B

9:00 a.m. - 9:45 a.m.

Engineering the Future: A Summer Academy for Underrepresented Students
Thornapple

Environmental Education in an Urban Setting
Plaza Boardroom A

Flinn Scientific Presents Exploring Chemistry - Connecting Content through Experiments
Vandenberg B/C

Forget Science Fairs, Organize a Maker Faire
Winchester

Hands-On Human Ecology for the Next Generation
Robinson

Modeling Science and Math in the Great Outdoors
Grandview B

One Fish, Two Fish, Red Fish, Blue Fish
Atrium

Pedaling into STEM on a Bike Generator
Campau

Re-Engineering Inquiry: Let's Get REAL!
Pullman

Reorganizing Biology Content - A Bottom up Approach
Nelson

Spectroscopy in AP Chemistry
Vandenberg A

The Power of the Questions: S & E Practice 1
Kendall

Viruses, Bacteria, Antibiotic Resistance - What Your Students Should Know and Why
Haldane

9:00 a.m. - 1:00 p.m.

MEECS Climate Change
Collins

MEECS Water Quality
Ottawa

9:00 a.m. - 10:45 a.m.

Enhancing Classroom Learning through Digital Dissection
Grandview A

Human Anatomy Lab: Built From the Inside Out
Ruby

9:00 a.m. – Noon

NGSS: Deciphering the Cross Cutting Concepts and Linking Them to the Science and Engineering Practices
Emerald A

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

A Caring Instructor - Motivating Students for Classroom Success
Kendall

SCECH Sessions - Saturday

Citizen Science aboard the Schooner Inland Seas
Berkey

Elementary Extravaganza
Emerald B

Energy - Avoid A Future Of Doom and Gloom!
Winchester

Engaging Students in Productive Task-Based Discussions in Biology
Haldane

Integrating Modeling into Your Curriculum
Vandenberg A

Journal Club: Critical Thinking on Steroids
Pullman

Nature In and Out of the Classroom: A DNR Teacher Resource
Atrium

One-to-One Technology: Tales from the Trenches
Thornapple

Rethinking Textooks with iBooks Author
Heritage

Standards-Based Grading in the Next Generation: Targets, Formative Assessment and Intervention
Robinson

STEM Across the Solar System
Campau

Thermochemistry without Energy
Vandenberg B/C

Transform Your Science Fair into a STEM Challenge Fair!
Riverview

Michigan's Next Generation Science Classroom
Pantlind

The Invisible Universe
Plaza Boardroom A

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

Citizen Scientist - Bird Data Collection for Cornell Lab of Ornithology
Heritage

Creating A Semi-Self-Paced Classroom without Killing the Teacher
Grandview B

Dangerously Beautiful: The Chemistry of Cosmetics
Berkey

Great Lakes, Great Activity, Great Fun Atrium, Mars in Your Classroom
Campau

Mi-STAR: Integrated STEM Curriculum Addressing the Three Dimensions of NGSS
Thornapple

Outside the Box: Using Integration and Environment to Teach NGSS
Kendall

Poppers: An Open-Inquiry Physics Energy Lab
Winchester

STEM Through Origami
Grandview A

Strategies for the ACT Science
Vandenberg A

Teach Students How To Write a Story Using LEGOR
Gerald R. Ford

The Great Transition in Evolutionary Biology
Nelson

Translucent, Transparent, or Opaque: Investigating the Properties of Light
Haldane

Using DNA Barcoding to Teach Biology and Chemistry Concepts
Pullman

What Can the Department of Natural Resources Do For You?
Vandenberg B/C

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

Academy of Natural Resources: What I Did During My Summer Vacation!
Winchester

CER in Middle School Classroom
Berkey

Getting Started with Interactive Science Notebook
Ruby

Mini Poster Magic
Haldane

Pre-School Early Elementary Environmental Education
Pullman

Predicting the Advance of Lava at Kilauea Volcano
Kendall

Slide Rules in the Science Classroom
Governor

Slide Rules in the Science Classroom
Governor

STEM - Build Your Own Brushbot
Grandview A

STEM from Nature
Atrium

Using Engineering Design and Data Analysis Practices in Science Classrooms
Nelson

Using Kinesthetics and Exercise to Teach Abstract Science Concepts
Gerald R. Ford

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

Let's Make Some Motors
Heritage

Physics Make and Take
Emerald A

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

AP Environmental Science - "Global Sustainability"
Pullman

Zombie Science
Haldane

Friday, February 27, 2015
5:00 p.m.

MSTA Raffle & HAPPY HOUR!!

Sponsored by: **Howard Hughes Medical Institute**

The event will start with Raffle prizes from MSTA and vendors! (MUST be present to WIN!) Then join us for the movie – *The Origin of Species!*

Enjoy a complimentary drink provided by HHMI!
Location: Vandenberg A/B

Schedule Your Day - Friday

	8:00 am - 8:45 am	8:00 am - 9:45 am	9:00 am - 9:45 am	9:00 am - 10:45 am	9:00 am - 12:30 pm	10:00 am - 10:45 am	10:00 am - 11:45 am	11:00 am - 11:45 am	
Ambassador Ballroom			EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	
Atrium			**One Fish-Two Fish (LE, MS, HS)			**Nature In and Out (EE, LE, MS, HS, CO)			
Berkey			**Total Solar & Lunar (MS, HS, CO)			**Teaching Simple Machine (EE, LE, MS, HS)			
Campau			Drill into the Past (LE, MS)			3-2-1 Liftoff!! (EE)			
Collins					**MEECS Ecosystems (LE, MS)				
Emerald A	Engage, Empower, Inspire (MS. HS)		**Engineering in the Science (MS, HS)			**Food Safety is Your (MS, HS)			
Emerald B		** Engaging Pre-Service STEM (CO)				**Academy of Natural (EE, LS, MS, HS)			
Gerald R. Ford			**All the Classrooms (EE, LE, MS, HS, CO)				**Blending Art & Science (EE, LE, MS, HS, CO)		
Governor				**Creating Assessment (LE, MS, HS)					
Grandview A	Transform Science Learning (LE, MS, HS, CO)		**STEM - Build Your (LE, MS)			**STEM through Origami (EE, LE, MS, HS, CO)			
Grandview B	Practicing Science Skills (MS, HS)		NGSS Implementation (EE, LS, MS)			**Creating a Semi-Self-Paced (MS, HS, CO)			
Haldane			EmPOWERed Kids (EE, LE)			**The Stories Rocks Can (MS, HS)			
Heritage	Rock-solid Evidence (MS, HS)		**Student Choice, Student (LE, MS, HS)			**Science Near and Far (EE, LE, MS, HS)			
Imperial	Repressive Gene Expressions (HS)		Understanding Photosynthesis (HS)			Biomes and Invasive Species (HS)			
Kendall		**Unpacking & Moving (EE, LE, MS)				**Getting Started with Interactive (LE, MS)			
Nelson		** Enhancing Classroom (LE, MS, HS, CO)				**Inquiry Lessons in Biology (MS, HS)			

= **Featured Session** = **Vendor** ****SCECH Session**

Interest Levels: EE = Early Elementary; LE = Late Elementary; MS = Middle Level; HS = High School; CO = College

Schedule Your Day - Friday

	1:00 pm - 1:45 pm	1:00pm - 2:45 pm	1:00 pm - 4:30 pm	2:00 pm - 2:45 pm	2:00 pm - 3:45 pm	3:00 pm - 3:45 pm	3:00 pm - 4:45 pm	4:00 pm 4:45 pm
	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS - TILL 5:00 P.M.!
	**Great Lakes, Great Activity (LE, MS, HS , CO)			**STEM from Nature (LE, MS, HS)				
	**Bid Ideas on a Nano (MS, HS)			**Using Google Apps (LE, MS, HS)		**Using One-Minute (MS, HS, CO)		**Integrating Chromebook (LE, MS, HS, CO)
			**MEECS Energy (LE, MS)					
	Engineering Innovative (EE, LE, MS, HS, CO)			**Using Claim Evidence (LE, MS, HS)		**Forget Science Fairs…SESSION CANCELLED		**Bringing the Body's (MS, HS, CO)
		**Thinking, Acting & Writing (EE, LE)					**Speak Up! Incorporating (EE, LE, MS, HS, CO)	
	**Enhancing the STEM (LE, MS, HS)			If a Picture is Worth (LE, MS, HS)				
		**Shifting to the NGSS (LE, MS, HS)					**Cultivating the Scientific (EE, LE, MS, HS)	
	Cool Tools for Sound (MS, HS, CO)			**Learn about the 3D (MS, HS, CO)		**Science & Engineering (EE, LE, MS, HS)		
	**Integrating your iPad (LE, MS, HS CO)			**Engineering the Future (HS, CO)		**Use Technology to (EE, LE, MS, HS)		
	**Mini Poster Magic (HS)			**Viruses, Bacteria (EE, LE, MS, HS, CO)		**Old Lessons CAN Do (HS)		**One-Stop Shopping (MS, HS, CO)
		**Integrating Literacy (HS)				**The Earthquake Machine (MS, HS)		**Biology's Best Engaged! (MS, HS, CO)
	Inertia Around the Curve (MS)			Chemical Batteries (MS)		Reclaiming the Metal (MS)		
	**Bring Science Alive! (EE, LE)				Empowered Students (EE, LE)			
		**Dynamic Life Science (MS, HS, CO)				**Biofuels-The Dance (MS, HS, CO)		Reed City Bio-Dome (LE, MS, HS)

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Schedule Your Day - Friday

	8:00 am - 8:45 am	8:00 am - 9:45 am	9:00 am - 9:45 am	9:00 am - 10:45 am	9:00 am - 12:30 pm	10:00 am - 10:45 am	10:00 am - 11:45 am	11:00 am - 11:45 am	
Ottawa	**Argument Driven Inquiry (LE, MS, HS)		**Differentiated Instruction (MS, HS)			**Exploring Sedimentary (MS, HS, CO)			
Pantlind			**NGSS Unit Development (EE, LE, MS, HS)			Implementing NGSS Panel Discussion		Teaching for Conceptual Change	
Pearl			**Creating a Vision (EE, LE, MS, HS)			**Introducing Teachers and (EE, LE, MS, HS)			
Plaza Boardroom A	**STEM with Young Children (EE)		**Biotechnology in Agriculture (LE, MS)			**Water & Agriculture (LE)			
Pullman	**A Caring Instructor (HS, CO)		**Find your Target! (LE, MS, HS)			Bug Lyphe! Student (LE, MS, HS CO)			
Riverview		**Engineering an Electromagnet (LE)				**Transform your Science Fair (LE, MS, HS)			
Robinson				**Lessons(learned) from NGSS (HS)					
Ruby		** Cheap & Dirty Science (EE, LE)				**AP Environmental Science (MS, HS)			
Thornapple			Cool Tools for Force (MS, HS, CO)			FREE Engineering Modeling (MS, HS)			
Vandenberg A	**Find the Fund$ for Science (EE, LE, MS, HS)		**Wondering about Chemistry (HS)			**Modeling Heating Curves (HS, CO)			
Vandenberg B	**Resources for Teaching (MS, HS)		Engineering for K? Yes!...(EE)			**Citizen Science aboard (LE, MS, HS, CO)			
Winchester	**Meeting Common Core (MS, HS)		**Energy-Avoid a Future (HS, CO)			**An Engineering Based Classroom (HS)			

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Schedule Your Day - Friday

	1:00 pm - 1:45 pm	1:00pm - 2:45 pm	1:00 pm - 4:30 pm	2:00 pm - 2:45 pm	2:00 pm - 3:45 pm	3:00 pm - 3:45 pm	3:00 pm - 4:45 pm	4:00 pm 4:45 pm
	**Using Information Literacy (MS, HS, CO)			**Ahh, the Places You'll (MS, HS)		**Amazing: Using NGSS (MS, HS)		**Bio & Chem Literacy (HS)
	Facilitating & Sustaining (EE, LE, MS)			**Processes for Collaborative (EE, LE, MS, HS, CO)		Creating a System of Science (EE, LE, MS)		**Leading the Change toward NGSS (EE, LE, MS, HS)
					**Using NGSS Practices & (MS, HS)			
	**Re-Engineering Inquiry (HS)			**Pre-School Early Elementary (EE, LE)		**Engineering is Elementary (EE, LE)		
	**CBC/NSTA Outstanding Science (EE, LE, MS, HS)			**Making It Real… Cheap! (LE, MS)			**First Day of Science Class (MS, HS, CO)	
	Placed-Based Education: Watershed (LE, MS, HS)			**Standards-Based Grading in (LE, MS, HS)		**STEM Leaning with (MS, HS)		
		**Pedaling into STEM (LE, MS)					**Classify This! Build a….(LE, MS, HS)	
	**Curious Crew: A Partnership (EE, LE, MS)			**A Telephone-Style Game (HS, CO)		**Modern Manufacturing and STEM (MS, HS)		**An Appetite for Chemistry (HS)
	Kalkaska HS - Square One Project (HS)			**Facilitating Students' Understanding (MS, HS)		** NOAA, and Sea Grant (LE, MS, HS)		
	**3-D Printing: Recycled Engineering (HS, CO)			**A Little Bit of Sol (MS, HS)		**Advanced Inquiry Labs for AP (HS, CO)		
		**Electrify Your Teaching (MS, HS)				**Encourage Reading in the Science (HS)		**Simple Spectroscopy: Lessons (MS, HS)

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Schedule Your Day - Saturday

	8:00 a.m. - 8:45 a.m.	8:00 a.m. - 9:45 a.m.	9:00 a.m. - 9:45 a.m.	9:00 a.m. - 10:45 a.m.	9:00 a.m. -Noon	9:00 a.m. - 1:00 p.m.	
Ambassador Ballroom			EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS	
Atrium			**One Fish, Two Fish… (LE, MS, HS)				
Berkey			Get Them Out of their Seats…(HS, CO)				
Campau			**Pedaling into STEM… (LE, MS)				
Collins						**MEECS Climate… (LE, MS)	
Emerald A					**NGSS: Deciphering the Cross…(LE, MS, HS)		
Emerald B		**The Arts in Engineering…(EE, LE, MS)					
Gerald R. Ford		Empowered Students Thinking… (EE, LE)		Empowered Students Thinking…(EE, LE)			
Governor	Muffins for Members…(EE, LE, MS, HS, CO)		A Progression of Learning K-8…(LE)				
Grandview A				**Enhancing Classroom Learning… (LE, MS, HS, CO)			
Grandview B			**Modeling Science & Math…(EE, LE)				
Haldane	**Bringing the Body's…(MS, HS, CO)		**Viruses, Bacteria,… (EE, LE, MS, HS, CO)				
Heritage							
Imperial			The Chemistry of Color: Getting…(HS)				
Kendall	**Getting the Full Picture…(MS, HS, CO)		**The Power of the Questions…(EE, LE, MS, HS)				
Nelson			**Reorganizing Biology Content…(HS)				
Ottawa						**MEECS Water…(LE, MS)	

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Schedule Your Day - Saturday

	10:00 a.m. - 10:45 a.m.	10:00 a.m. - 11:45 a.m.	11:00 A.M. - 11:45 A.M.	1:00 p.m. - 1:45 p.m.	1:00p.m. - 2:45 p.m.	2:00 p.m. - 2:45 p.m.
	EXHIBITS	EXHIBITS	EXHIBITS	EXHIBITS - CLOSE AT 1:00 P.M.		
	**Nature in and Out…(EE, LE, MS, HS, CO)		**Great Lakes, Great… (LE, MS, HS, CO)	**STEM from Nature… (LE, MS, HS)		
	**Citizen Science aboard the…(LE, MS, HS, CO)		**Dangerously Beautiful…(MS)	**CER in Middle School Classroom…(MS)		
	**STEM Across the Solar…(MS, HS)		**Mars in Your Classroom…(HS)			
					** Physics Make & Take… (MS, HS)	
	**Elementary Extravaganza…(EE, LE, MS)		Building an Environmentally…(EE, LE, MS, HS)		STEM Week-A Series of… (EE, LE, MS)	
			**Teach Students How to Write…(EE, LE)	**Using Kinesthetics Exercise to…(EE, LE, MS, HS CO)		
	Creating a New Generation of Learners… (LE)		Making Waves in the Classroom…(MS)	**Slide Rules in the Science…(MS, HS, CO)		
			**STEM through Origami…(EE, LE, MS, HS, CO)	**STEM - Build your Own Brushbot…(LE, MS)		
	NGSS Implementation: Started…(EE, LE, MS)		**Creating a Semi-Self-Paced…(MS, HS, CO)	Community Resources as Inspiration…(MS, HS)		
	**Engaging Students in Productive…(HS)		**Translucent, Transparent, or…(EE, LE, MS)	**Mini Poster Magic… (HS)		**Zombie Science…(HS)
	**Rethinking Textbooks with…(LE, MS, HS, CO)		**Citizen Scientist-Bird Data…(LE, MS, HS, CO)		**Let's Make Some Motors…(MS, HS)	
	Fingerprints of ~~a Tom~~ Atom…(HS)		Using Climate Proxies to Learn…(HS)			
	**A Caring Instructor… (HS, CO)		**Outside the Box: Using…(EE, LE)	**Predicting the Advance of Lava…(MS, HS)		
	The Origin of Species… (HS, CO)		**The Great Transition in…(HS, CO)	**Using Engineering Design & Data…(HS)		

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Schedule Your Day - Saturday

	8:00 a.m. - 8:45 a.m.	8:00 a.m. - 9:45 a.m.	9:00 a.m. - 9:45 a.m.	9:00 a.m. - 10:45 a.m.	9:00 a.m. -Noon	9:00 a.m. - 1:00 p.m.	
Pantlind		**Resource's to Support NGSS…(EE, LE, MS, HS)					
Plaza Boardroom A	**Real Kids, Virtual… (LE, MS, HS, CO)		**Environmental Education in…(EE, LE, MS)				
Pullman			**Re-Engineering Inquiry: Let's…(HS)				
Riverview		**Engineering an Electromagnet…(LE)					
Robinson			**Hands-on Human Ecology…(MS, HS)				
Ruby				**Human Anatomy Lab: Built from…(MS, HS, CO)			
Thornapple	**Engaged Students & Formative…(MS, HS)		** Engineering the Future: A…(MS, HS)				
Vandenberg A	High School Chemistry…(HS)		**Spectroscopy in AP… (HS)				
Vandenberg B			**Flinn Scientific -Exploring Chemistry… (HS)				
Winchester			**Forget Science Fairs… SESSION CANCELLED				

= Featured Session **= Vendor** ****SCECH Session**

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Schedule Your Day - Saturday

	10:00 a.m. - 10:45 a.m.	10:00 a.m. - 11:45 a.m.	11:00 A.M. - 11:45 A.M.	1:00 p.m. - 1:45 p.m.	1:00p.m. - 2:45 p.m.	2:00 p.m. - 2:45 p.m.
		**Michigan's Next Generation…(EE, LE, MS, HS)				
		**The Invisible Universe…(MS, HS)		Modeling Geothermal Systems in…(MS)		
	**Journal Club: Critical Thinking…(HS)		**Using DNA Barcoding to…(HS, CO)	**Pre-School Early Elementary…(LE, MS, HS, CO)		**AP Environmental Science…(MS, HS)
	**Transform your Science Fair…(LE, MS,HS)		iPads and NGSS: Have we…(LE, MS)	Cool Tools for Electricity…(MS, HS, CO)		
	**Standards-Based Grading…(LE, MS, HS)					
			THINK! ENERGY & Take Action!...(LE)	**Getting Started with Interactive…(LE, MS)		
	**One-to-One technology: Tales…(HS)		**Mi-STAR: Integrated STEM…(MS, HS, CO)			
	**Integrating Modeling into…(HS)		**Strategies for the ACT…(HS)	AP Chemistry Meeting…(HS)		
	**Thermochemistry without…(HS, CO)		**What Can the Department…(EE, LE, MS, HS)	STEM Grant-Michigan STEM Partnership…(EE, LE, MS, HS, CO)		
	**Energy - Avoid a Future of…(HS, CO)		**Poppers: An Open-Inquiry…(MS, HS)	**Academy of Natural Resources…(EE, LE, MS, HS)		

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Are You Prepared...

to Teach in the 21st-Century Classroom?

Lawrence Technological University Can Help!

Master of Science Education

- $1,320 per course scholarship for all K-12 educators (DI or non-DI endorsements) covers nearly 42 percent of tuition.
- Most courses offered online and asynchronous, with a science experiment component to be completed using science kits and activities.
- Science content developed by Lawrence Tech in partnership with the Detroit Zoological Institute, Cranbrook Institute of Science, Aquinas College, and the University of Detroit Mercy.
- Courses aligned with the Michigan Department of Education requirements for Science and the DI (Integrated Science) Endorsement.

Master of Educational Technology

- $1,320 per course scholarship for all participants covers nearly 42 percent of tuition.
- 100 percent online and asynchronous format.
- This practice-oriented program is offered by Lawrence Tech in partnership with Marygrove College. Courses cover up-to-date technologies in instruction, Web-based learning tools, streaming video, electronic communication, and software and hardware options.
- Complete the seven required courses of the Master of Educational Technology degree and be eligible for the NP endorsement on your existing teaching certificate.
- Some curriculum requirements will be tailored individually based on the candidate's goals. Instructional Technology graduate certificates (12 credits) are also available.

Explore over 100 undergraduate, master's, and doctoral programs in Colleges of Architecture and Design, Arts and Sciences, Engineering, and Management.

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Session Descriptions

Friday, February 28 2015

8:00 a.m. - 8:45 a.m.

A Caring Instructor - Motivating Students For Classroom Success

Laura Harris, Davenport University

Primary Subject: **BI, IN**
Interest Level: **HS, CO**
Location: *Pullman*

A caring instructor positively influences student motivation. This interactive workshop examines techniques to come across as a caring instructor to your students by applying Dale Carnegie's book to classroom-based examples.

Argument Driven Inquiry: Using Science Practice: Transform Lab Activities

Adrienne Griffith, Armstrong Middle School, James Emmerling, Genesee ISD

Primary Subject: **IN**
Interest Level: **LE, MS, HS**
Location: *Ottawa*

Explore the eight stages of ADI. Examine how this approach links Science Practices, 3 Dimensional Learning (Practices, DCIs, and CCCs) and Common Core Literacy Standards (CCLS) for Science. Handouts provided.

Engage, Empower, Inspire. Strategies for Teaching Behaviorally Challenged Students

Tim Finkel, Melissa Coulter, Neil E. Reid High School, Ben Bomgaars, Neil E. Reid High School/MISD

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Emerald A*

This session will focus on effective strategies for teaching students with severe behavioral challenges. Specifically focusing on how to reach students with varying cognitive levels while adhering to age appropriate standards.

Find the Fund$ For Science: Grant Writing 101

June Teisan, NOAA

Primary Subject: **GE**
Interest Level: **EE, LE,MS, HS**
Location: *Vandenberg A*

Do you dream BIG for your students but feel restrained by a dwindling/nonexistent classroom budget? Learn practical grant-writing tips and insights for securing funds to build vibrant, world-class science learning experiences.

Meeting Common Core Writing Standards in Science

Kimberly Sharplin, Dan Kaminski, Wayne Memorial High School

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Winchester*

Come learn some interesting ways to incorporate Common Core writing into your science class. Get your kids engaged and ready to write a paper! Handouts and Prizes!

Practicing Science Skills Using Forensic Science

Kathy Mirakovits, Portage Northern High School

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Grandview B*

This session shows how forensic science applies the NGSS Science & Engineering Practices in order to solve a crime scene.

Repressive Gene Expressions: Turning Students to Stone!

Shannon Mareski, Grand Blanc High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Imperial*

Students have trouble conceptualizing how gene expression works. We'll use manipulatives to model this concept and relate its connection to genetic engineering. During this activity we will model the Programs' philosophy, notebooking and discussion strategies that support the new teacher/student talk ratios. Innovative activities are selected from the new Science and Global Issues: Biology program from SEPUP and LAB-AIDS.

Resources for Teaching about Air Quality

Janet Vail, Grand Valley State University

Primary Subject: **EN**
Interest Level: **MS, HS**
Location: *Vandenberg B*

Engage your students in tracking air quality through this introduction to the MEECS Air Quality Unit. Real-time online resources help them relate Clean Air Action Days to predicted local weather conditions.

Session Key:

Primary Subject Levels:
AS – Assessment/Curriculum
CH – Chemistry
ES – Earth Science
GS – General Science
LT – Literacy
BI – Biology
CO – Computer/Technology
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

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

Rock-solid Evidence: Exploring Michigan's Past

Heather Albanez, Nah Tah Wahsh PSA, Emily Gochis, MTU/ Geology & Mining Engineering & Science

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Heritage*

We will explore how to bring Michigan's past back to life through modeling and exploration using the NGSS, web-based resources, base-10 blocks, a rope and a bus. Hands-on activity and handouts will be provided.

STEM with Young Children

Diana Matthews, Lisa Morgan, Detroit Country Day School

Primary Subject: **GS**
Interest Level: **EE**
Location: *Plaza Boardroom A*

STEM with young children is fun and EASY! NO more pulling your hair out trying to engage our youngest learners. This session offers authentic experiences that are guaranteed to captivate and involve students in hands-on, minds-on learning.

Transform Science Learning with PASCO's Latest Hands-On Technologies

Julie Thomas, PASCO scientific

Primary Subject: **GS, CO**
Interest Level: **LE, MS, HS, CO**
Location: *Grandview A*

PASCO Scientific offers hands-on science labs activities for Physics, Chemistry, Biology, and Environmental Science. Their probeware solutions are easy to use, cost-effective, and future-proof.

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

Cheap & Dirty Science: Life Science for Fun - FEE: $5.00

Carolyn Lowe, NMU - School of Education

Primary Subject: **BI**
Interest Level: **EE, LE**
Location: *Ruby*

Get down and dirty learning life science! Hands-on activity where you will build a habitat to take and link meaningful learning to a number of life science standards.

Engaging Pre-Service STEM Teachers with Chemistry Modeling

R. Charles Dershimer, U of M - School of Education, Mark Olson, Oakland University, School of Ed. & Human Services, Larry Kolopajlo, Eastern Michigan Univeristy

Primary Subject: **IN**
Interest Level: **CO**
Location: *Emerald B*

This hands-on session will demonstrate how three science teacher education programs (EMU, OU, and U-M) engaged our students with using key discussion and assessment practices for teaching chemistry through modeling.

Engineering an Electromagnet

Crystal Brown, Parsons Elementary School

Primary Subject: **GS, IN**
Interest Level: **LE**
Location: *Riverview*

Are you an upper elementary teacher? Do you have an old energy unit that needs a little Spark?™ You will walk away with hands on experience and resources for a unit that is project-based and developed for students to explore concepts of energy, research and learn about electricity, and apply their understanding to redesign the best performing electromagnet model. Students identify their own electromagnet model based on variables they think will improve electromagnetic performance. Students are questioning, researching, analyzing, testing, and re-designing. Get charged up for an electrifying experience!

Enhancing Classroom Learning through Digital Dissection

Samantha Suiter, PETA

Primary Subject: **BI**
Interest Level: **LE, MS, HS, CO**
Location: *Nelson*

This session will explore the educational, economic, and ethical benefits of alternatives to dissection, including a hands-on demonstration of virtual dissection software. Participants are asked to bring a laptop.

Unpacking and Moving into NGSS

Nancy Karre, Mary Lindow, Battle Creek Area Math/Science Center

Primary Subject: **AS, IN**
Interest Level: **EE, LE, MS**
Location: *Kendall*

Unpack the Performance Expectations in NGSS and evaluate alignment of an inquiry-focused activity. Make the move from scientific inquiry and performance assessment to solving problems through scientific inquiry and engineering.

9:00 a.m. - 9:45 a.m.

All the Classrooms a Stage

Corrina Strecker, Andrea Reynolds, Ann Arbor Hands on Museum

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Gerald R. Ford*

Formal educators are not typically required to be trained as actors, yet they are performing every day. Join us to learn some easy skills and practices that can enrich and develop your everyday performing.

Biotechnology in Agriculture - From DNA to GMO

Tonia Ritter, Laurie Isley, MI Farm Bureau

Primary Subject: **BI, EN**
Interest Level: **LE, MS**
Location: *Plaza Boardroom A*

Engage students in activities, informational reading and discussion to better understand this relevant topic. The lesson covers basic genetic concepts, natural and artificial selection, and real-world examples of biotechnology in action. Handouts provided.

Cool Tools for Force & Motion

Donald Pata, Arbor Scientific

Primary Subject: **GS, PH**
Interest Level: **MS, HS, CO**
Location: *Thornapple*

Learn a simple way to prove 'g' doesn't change. Launch a ball straight up from a moving car - it lands in the car!

Creating a Vision for Science Education

Jennifer Gottlieb, Macomb ISD, Sarah Coleman, Muskegon ISD

Primary Subject: **AS, IN**
Interest Level: **EE, LE, MS, HS**
Location: *Pearl*

The first step in planning a journey is knowing where you're headed. Come explore a process for leading stakeholders in creating a vision to guide your journey toward NGSS.

Differentiated Instruction and Response to Intervention (RTI) In a Science Classroom

April Holman, Central Montcalm High School

Primary Subject: **IN**
Interest Level: **MS, HS**
Location: *Ottawa*

How do differentiated instruction and RTI work together? Very well! Get a first hand account of what is working in a differentiated classroom implementing the RTI program this year and how to make it work in yours.

Drill into the Past with the International Ocean Discovery Program

Elizabeth Christiansen, Midland Public Schools

Primary Subject: **ES, GS**
Interest Level: **LE, MS**
Location: *Campau*

Dive into science aboard the Research Vessel JOIDES Resolution (JR), Travel back through Earth's history via classroom activities and live broadcasts with scientists of the JR.

EmPOWERed Kids - Energy Education Resources for Classroom Teachers

Tara Ragauss, Consumers Energy

Primary Subject: **GS**
Interest Level: **EE, LE**
Location: *Haldane*

Consumers Energy Education Programs Manager, Tara Ragauss, will demonstrate our educational app, EmPOWERed Kids and provide teachers with ideas and resources for using the app in their classroom. The app and resources are available for free on android and apple devices for teachers to use in their classrooms to teach about electricity and natural gas. Teachers will also have the opportunity to try out the app on the devices that we bring into the classroom for students to use during presenter-led presentations.

Energy - Avoid a Future of Doom and Gloom!

Andrew Frisch, Farwell Area Schools

Primary Subject: **PH, IS**
Interest Level: **HS, CO**
Location: *Winchester*

America must take the lead towards a cultural and technological shift towards energy in the future. We must develop a three-prong approach. 1. There must be new alternative energies developed. 2. We recognize how we are wasting our current energies. 3. There must be development of new, more efficient technologies.

Engineering for K? Yes!

Kevin Stinson, Carolina Biological

Primary Subject: **PH**
Interest Level: **EE**
Location: *Vandenberg B*

Yes, Kindergartners can master the E in STEM. Engage with us as we complete a variety of engineering projects specifically designed for K students and the NGSS.

Session Key:

Primary Subject Levels:

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PH – Physics
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Interest Levels:

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HS – High School
CO – College

– SCECH Session
– Vendor Session

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

Engineering in the Science Classroom: You CAN Do It

Wendy Johnson, MSU - Dept of Teacher Ed.

Primary Subject: **GS, IN**
Interest Level: **MS, HS**
Location: *Emerald A*

This session will articulate the rationale for including engineering in the science curriculum and provide strategies, examples, and resources for incorporating engineering design into your teaching.

Find your Target!

Amy Weesies, Hart High School

Primary Subject: **AS**
Interest Level: **LE, MS, HS**
Location: *Pullman*

Writing good targets isn't a bore! Leaning targets are a tool for students to learn more! Learn to use leaning targets to guide student learning and promote student ownership.

NGSS Implementation: Started at the Bottom, Now We're Here

Richard Bacolor, Pierce Middle School , Katie Stevenson, Fisher Elementary School, Greg Johnson, Wayne RESA

Primary Subject: **AS. IN**
Interest Level: **EE, LE, MS**
Location: *Grandview B*

This session describes the challenges and successes faced by a small urban district in making NGSS implementation a reality.

NGSS Unit Development - Bundling NGSS PEs: A 10-Step Process

Susan Codere Kelly, MI Department of Education

Primary Subject: **AS, GS**
Interest Level: **EE, LE, MS, HS**
Location: *Pantlind*

Participants will review resources for planning instruction for NGSS using a 10-step process that includes bundling related NGSS PEs, developing 3-D learning performances and assessments, and building a coherent storyline. Hands on -- will provide handouts with links to resources.

One Fish, Two Fish, Red Fish, Blue Fish

Shana Ramsey, Michigan DNR

Primary Subject: **EN**
Interest Level: **LE, MS, HS**
Location: *Atrium*

This session will feature aquatic-inspired hands-on activities related to fish, invasive species and natural resource stewardship. Activities offer exciting ways to learn about Michigan's natural resources, engage students, and meet standards.

STEM - Build Your Own Brushbot

David Larwa

Primary Subject: **PH, IS**
Interest Level: **LE, MS**
Location: *Grandview A*

Off to the races after you build your own brushbot. Easy to make and fun to build. Turn a toothbrush into a robot. Join me as we explore the science behind the brushbot.

Student Choice, Student Voice: Empowering the Next Generation of Environmental Stewards

Susan Tate, Whitehall Schools

Primary Subject: **GS, EN**
Interest Level: **LE, MS, HS**
Location: *Heritage*

One of the challenges of implementing PBL in your classroom is giving students ownership through choice. Come hear how we embraced this challenge with our interdisciplinary place-based stewardship projects.

Total Solar and Lunar Eclipses in USA!

Kevin Dehne, Delta Community College/MESTA

Primary Subject: **ES, PH, AST**
Interest Level: **MS, HS, CO**
Location: *Berkey*

Learn about the total solar and lunar eclipses during 2015-2017. We will be highlighting the total solar eclipse crossing the continental U.S. on August 21, 2017. Never too early to start planning! Learn how and where to observe safely. Door prize will be given!

Understanding Photosynthesis and Cellular Respiration!

Shannon Mareski, Grand Blanc High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Imperial*

Students have misconceptions about photosynthesis and cellular respiration but this content is essential for understanding how matter and energy flows, both at the micro (cellular) and macro (ecosystem) levels. You will use a computer simulation hands-on activity, engage in notebooking and model strategies that support new teacher/student discussion ratios. All from the new Science and Global Issues: Biology program from SEPUP and LAB-AIDS.

Wondering About Chemistry

Tracy Haroff, Marshall High School, Anna Biela-Robinson, Melyssa Lenon, Chesaning High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg A*

We will show you thinking strategies to get students thinking and wondering about chemistry. Most strategies include a chemical demonstration. Handouts will be provided!

Session Descriptions

9:00 a.m. - 10:45 a.m.

Creating Assessment for Science Aligned with Three-Dimensional Learning of NGSS

Deborah Peek-Brown, Michigan State University, Joe Krajcik, Renee Bayer, CREATE for STEM Institute, Jane Lee, Post-doctoarl Fellow

Primary Subject: **AS**
Interest Level: **LE, MS, HS**
Location: *Governor*

Learn how to develop and use classroom-based assessments that have disciplinary core ideas, crosscutting concepts and scientific engineering practices working together to monitor student progress in achieving NGSS performance expectations.

Lessons (learned) from NGSS-Aligned, Inquiry-Based Physical Science Curriculum

Kristin Mayer, Michigan State University, Kristen Degan, Williamston High School

Primary Subject: **CH, PH**
Interest Level: **HS**
Location: *Robinson*

Interactions is a curriculum design and researcher project through MSU and supported by a grant from NSF. Teachers will be introduced to the curriculum. Then teachers will experience hands-on lessons that support students development of scientific models that can explain observations of electrostatic interactions from the curriculum. Presenters will share example student work from the lesson, experience, and lessons-learned from the collaboration between MSU and high school. Handouts will be provided and the curriculum resources are available online.

9:00 a.m. - 12:30 p.m.

MEECS Ecosystems and Biodiversity v

Jessica Wagenmaker, Holton Middle School

Primary Subject: **AS, EN**
Interest Level: **LE, MS**
Location: *Collins*

This unit provides students with a better understanding of ecosystems by examining how organisms interact within their environment. An additional set of materials explores concepts related to biodiversity.

NOTE: Pre registration for this session is REQUIRED! Go to www.michigan.gov/deq to register.

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

3-2-1 Liftoff!

Mandy Frantti, Munising Middle/High School

Primary Subject: **PH, AST**
Interest Level: **EE**
Location: *Campau*

Use excitement of space and rockets to teach K-2 skills (e.g. counting backwards, simple experimentation, measuring, fact/fiction, spatial skills, graphing, rhymes and movement, etc.)! Hands-on and handouts. NASA materials distributed.

Academy of Natural Resources: What I Did During My Summer Vacation!

Becky Durling, Discovery Elementary School

Primary Subject: **GS, EN**
Interest Level: **EE, LE, MS, HS**
Location: *Emerald B*

The Academy of Natural Resources is truly a fun, educational summer camp for teachers! Come find out what ANR is all about! We will highlight the 2015 class offerings, day trips out in the field, curriculum materials, scholarships, and more! Come find out why YOU need to spend a week in July in beautiful Northern Michigan at ANR!!

An Engineering Based Classroom - Classroom Strategies and Projects

Lindsey McConney, Colin Killmer, Portage Northern High School

Primary Subject: **PH**
Interest Level: **HS**
Location: *Winchester*

Strategies and examples in maintaining an engineering project-based classroom where teams are established, given limitations, and assessed as groups. Hands-on examples provided.

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– SCECH Session
V – Vendor Session

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

AP Environmental Science - "Global Sustainability"

Mike Mansour

Primary Subject: **EN**
Interest Level: **MS, HS**
Location: *Ruby*

Americans are seriously ignorant of our global interdependency. Facing the Future, a non-profit organization provides resources and community action opportunities on global issues and sustainability for teachers, students and the public. We will examine these resources for consideration for the future environmental leaders in your classes.

Biomes and Invasive Species

Shannon Mareski, Grand Blanc High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Imperial*

How do the characteristics of a biome determine the plant and animal life found there? How do non-native species survive to become invasive species? In this activity from Science and Global Issues: Biology Program, students match a set of organism cards to proper climate/biome cards, then use literacy strategies to consider the impact of invasive species. You'll receive a full set of kit and print materials for later use with your students, complements of LAB-AIDS.

Bug Lyphe! Student-Centered Studies in Biodiversity and Food Webs

Marty Buehler, Hastings Area Schools

Primary Subject: **BI, IN**
Interest Level: **LE, MS, HS, CO**
Location: *Pullman*

The NGSS are about the art of teaching rather than just content expectations. In this session, we'll discuss student-centered biodiversity ecology lessons with extensions involving soil food web study techniques. Handouts provided.

Citizen Science aboard the Schooner Inland Seas

Jeanie Williams, Inland Seas Education Association

Primary Subject: **EN**
Interest Level: **LE, MS, HS, CO**
Location: *Vandenberg B*

Discover how Inland Seas engages students in active Great Lakes research aboard a traditionally rigged schooner, and how your class can get involved. Additionally, learn about our long-term Great Lakes monitoring data set and how to use it to engage your class in meaningful data interpretation. This session will give you a chance to take part in activities practiced on the ship and work with our Great Lakes data set.

Creating a Semi-Self-Paced Classroom without Killing the Teacher

Christa Graham, Morenci Area Schools

Primary Subject: **AS**
Interest Level: **MS, HS, CO**
Location: *Grandview B*

Suggestions on how to structure a semi-self-paced, mastery-model classroom that supports all levels of learners in a challenging and supportive environment all while reducing your day-to-day grading and workload. Classroom application for Middle School, High School, and Undergraduate levels. Organizational suggestions, samples of challenges and successes. Handouts will be provided.

Exploring Sedimentary Rocks of the Michigan Basin

Christina Sobolak, Steve Mattox, Grand Valley State University

Primary Subject: **ES, EN**
Interest Level: **MS, HS, CO**
Location: *Ottawa*

Sources to be explored come from websites prepared by a state university and by the Geological Society of America, a comment and response from the journal Science, and articles from National Geographic and Scientific American. The sources have been carefully chosen and encompass various perspectives on the hydraulic fracturing process.

Food Safety Is Your Right to Know and Learn

Debra Smith, Van Buren Tech Center

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Emerald A*

The FDA-Science and Our Food Supply curriculum will be presented. An investigation from bacteria to the Farm to the Table to Technology of the food we eat. Handouts provided.

Free Engineering Modeling Software in the Classroom

Rick Mushing, Ebiri Nkugba, Kent ISD

Primary Subject: **ES, CO**
Interest Level: **MS, HS**
Location: *Thornapple*

An overview presentation of free engineering software and lessons aligned to state standards. Demonstrations include 3D modeling software from Autodesk and ESRI's ArcGIS online spatial analysis software.

Getting Started with Interactive Science Notebook

Amy MacKellar, Jennifer Francis, St. Joseph Public Schools

Primary Subject: **IN**
Interest Level: **LE, MS**
Location: *Kendall*

Have you ever wished you could: Increase student engagement and organization? Encourage student creativity? Simplify grading? Explore the possibilities with teachers who have successfully implemented science notebooking in their classroom.

Implementing NGSS Panel Discussion: Resources Available and Stories from the Front LInes

Location: *Pantlind*

Panel: Nancy Karre, Battle Creek M/S Center, Jennifer Arnswald, MSTA Curriculum Director & Curator for NSTA Hub, Joseph Krajcik, Director CREATE for STEM Institute, Renee Bayer, Associate Director CREATE for STEM Institute

Moderator: Mike Klein, MSTA Treasurer

Questions: Robby Cramer, MSTA Executive Director
Charles Bucienski, MSTA President

Members of the Michigan Internal and External Review Team will share resources based on the K-12 Science Framework and NGSS, currently available to use with educators, department/ staff meetings, and PLCs. Updates regarding Michigan's progress on new science standards will be provided and Michigan created resources will be shared. Some time will be given to questions.

Inquiry Lessons in Biology: A Review and Some New

Joni VanCampenhout, Stephanie Niedermeyer, Kim Sharplin, Wayne Memorial High School

Primary Subject: **BI**
Interest Level: **MS, HS**
Location: *Nelson*

Join us for a review of some of our favorite lessons in Biology, as well as a few new ideas! Handouts and goodies will be available!

Introducing Teachers and Administrators to NGSS

Sarah Coleman, Muskegon Regional M/S Center, Jennifer Gottlieb, Macomb ISD

Primary Subject: **AS, IN**
Interest Level: **EE, LE, MS, HS**
Location: *Pearl*

The Framework for K-12 Science Education has great implications for effective science teaching in our state. Come explore resources and engage in dialogue to help support the implementation of this framework.

Modeling Heating Curves and Phase Changes

Larry Kolopajlo, EMU - Chemistry Department

Primary Subject: **CH, PH, IS**
Interest Level: **HS, CO**
Location: *Vandenberg A*

The method of modeling is applied to heating curves. Students construct representations involving Hess' Law, mathematics, and diagrams of particles, Temperature vs Time, and Enthalpy vs time. An Excel Macro is also used

Nature In and Out of the Classroom: A DNR Teacher Resource

Natalie Elkins, MI Department of Natural Resources

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

Michigan DNR Education Specialist, Natalie Elkins will share activity and program examples, and will highlight the various professional development opportunities offered through the DNR. Join in hands-on life science activities from Salmon in the Classroom, Project Learning Tree (PLT), K-12 Project WILD/Growing UP WILD for Early Learners/K-12 Aquatic WILD. Find out what you may experience if you attend the interactive week long Academy of Natural Resources each July--a 32 hour SCECH immersion into natural resource and environmental education using best-practices for adult learning, full of real-world applications to share with students.

Science Near and Far: Travel Grants for Teachers

Susan Tate, Derek Taranko, Whitehall Schools

Primary Subject: **GS**
Interest Level: **EE, LE, MS, HS**
Location: *Heritage*

Think world travel is impossible on a teacher's salary? Let me show you how I have traveled to three continents in as many years...for FREE!

STEM through Origami

David Larwa

Primary Subject: **GS**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Grandview A*

A new look at the technical, mathematical, and creative models of origami. Used today from auto design to heart operations, origami is not child's play. Hands-On

Teaching Simple Machines, Force and Motion, and Little Energy Using LEGO

Ivery Toussant, Jr., LEGO Education

Primary Subject: **AS, IS**
Interest Level: **EE, LE, MS, HS**
Location: *Berkey*

This is a hands-on session designed to teach the least science oriented educator how to put their simple machine knowledge to work to better to teach STEM concepts.

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

The Stories Rocks Can Tell: Interrogating a Michigan Limestone

Dave Chapman, Okemos High School

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Haldane*

Beginning with a rock specimen, you will make observations, analyze data, construct a graph. Inferences will be made about identification, formation environment, Michigan basin, plate tectonics, and climate change.

Transform Your Science Fair into a STEM challenge Fair!

Crystal Brown, Parsons Elementary School

Primary Subject: **GS, IN**
Interest Level: **LE, MS, HS**
Location: *Riverview*

If you've been doing the same old Science Fair, come learn about the amazing opportunities for a STEM Challenge Fair! You will leave with resources to start your own STEM Challenge Fair. The science and engineering practices of NGSS are integral to students' education, and the traditional science fair model just isn't enough anymore. Give your students the chance to be innovative!

Water and Agriculture - Important Resources Working Together

Tonia Ritter, MI Farm Bureau, Laurie Isley,

Primary Subject: **BI, EN**
Interest Level: **LE**
Location: *Plaza Boardroom A*

A hands-on, literature-based lesson which introduces the complexities of the water cycle, involves scientific experimentation and discussion of real-life issues with emphasis on how agriculture maintains water quality. Handouts provided.

10:00 a.m. - 11:45 a.m.

Blending Art and Science STEaM

Nichole Wright, Ann Arbor Hands-On Museum

Primary Subject: **IN**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Gerald R. Ford*

Explore the process of blending art and science to create exciting, interactive activities. Discuss the benefits, brainstorm curriculum ideas, and experience specific STEaM activities to take back to your classroom.

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

Teaching for Conceptual Change: Building a Bridge between Students' (and Teachers') Ideas and Scientific Understandings

Page Keeley, Author, Speaker, & Science Education Consultant Maine M/S Alliance (Retired Sr. Program Director), Past President of NSTA, National Science Education Leadership Association Region A Director

Location: *Pantlind*

K-12 students hold a variety of strongly held ideas about the natural world and phenomena. Teaching for conceptual change involves starting with understanding the ideas students bring to their learning and building a bridge between their initial ideas and the scientific ideas we want them to learn and be able to use. Page Keeley will talk about her experience transitioning from inquiry to inquiry for conceptual change, how teaching for conceptual change transformed her teaching and learning, and implications for teaching and learning core disciplinary ideas, crosscutting concepts, and scientific and engineering practices.

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

3-D Printing: Recycled Engineering with Delta Printers and PLA Plastic

Richard Eberly, Virang Patel, Ian Kirkpatrick, New Buffalo High School

Primary Subject: **EN, PH**
Interest Level: **HS, CO**
Location: *Vandenberg B*

3-D printing with open source Delta printers from 3-D4EDU compliments the NGSS. This presentation will focus on the benefits of open source design and recyclable PLA plastic printing in education.

Big Ideas on a Nano Scale with Intro to Biology

Christine Brillhart, Elizabeth Christiansen, Midland Public Schools

Primary Subject: **BI**
Interest Level: **MS, HS**
Location: *Berkey*

Nanoscience in Introductory Biology courses is easier than you think! This session will provide engaging activities representing the basic ideas of Nanotechnology. Middle & high school students will be assisting.

Bring Science Alive! With TCI

Matt Moorman, TCI

Primary Subject: **AS, GS**
Interest Level: **EE, LE**
Location: *Kendall*

In this hands-on session, participants experience learning from a student's perspective through TCI's Bring Science Alive! Participants will experience a lesson built from the ground up to meet NGSS.

CBC/NSTA Outstanding Science Trade Books in the Classroom

Conni Crittenden, Williamston Schools

Primary Subject: **GS**
Interest Level: **EE, LE, MS, HS**
Location: *Riverview*

Looking at this year's CBC/NSTA Outstanding Trade Books, as well as other years' winners and how you can integrate them into your science curriculum. Book lists and integrated lessons provided.

Cool Tools for Sound & Waves

Dale Freeland, Arbor Scientific

Primary Subject: **GS, PH**
Interest Level: **MS, HS, CO**
Location: *Grandview A*

Watch the Sound Pipe lift a pile of confetti – without touching it! Hear a spot-on rendition of Twinkle, Twinkle Little Star using Boomwhackers!

Curious Crew: A Partnership Promoting Science Exploration and STEM Design

Rob Stephenson, Ingham ISD

Primary Subject: **GS, PH**
Interest Level: **EE, LE, MS**
Location: *Thornapple*

East Lansing PBS station, Curious Crew inspires second to eighth grade students to appreciate science through exploration, design, and building, while providing online resources aligned with NGSS to classroom teachers.

Engineering Innovative Instruction

Megan Schrauben, MDE - John Hannah Bldg.

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Emerald A*

Let's remove barriers to focusing on instruction. Come to discuss the opportunities that exist for you to engineer an innovative learning experience between the hard lines of standards and assessment.

Enhancing the STEM Curriculum with Virtual Simulations

Pam Berry, ExploreLearning, Lisa Ogiemwonyl, Rochester Community Schools

Primary Subject: **CO, IN**
Interest Level: **LE, MS, HS**
Location: *Gerald R. Ford*

Online simulations help teachers take advantage of research-proven strategies and enable students develop deep conceptual science understanding by manipulating key variables, generating testing Hypotheses, and engaging in "what-if" experimentation.

Facilitating and Sustaining Change in Your School or District

Julia Alder, Birmingham Public Schools, Barbara Pepper, Derby Middle School

Primary Subject: **AS, GS**
Interest Level: **EE, LE, MS**
Location: *Pearl*

Learn from our elementary and middle school math, science, and technology integration program development initiative. Strengths, pitfalls, and current program state will be shared. See examples of process, protocols, and products from our multi-year technology integration for science and mathematics classrooms.

Great Lakes, Great Activity, Great Fun

Kevin Frailey, MI Dept. of Natural Resources

Primary Subject: **GS, EN**
Interest Level: **LE, MS, HS, CO**
Location: *Atrium*

This hands-on activity offers a fun, interactive, multi-disciplinary approach to teaching about the Great Lakes watershed. Try a new method to get your students inspired by the largest freshwater ecosystem on earth.

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

Inertia around the Curve (Force and Motion for Grade 5)

Lisa Kelp, Lab-Aids

Primary Subject: **GS**
Interest Level: **MS**
Location: *Imperial*

Students have many misconceptions about inertia, the resistance of an object to changes in its motion. In this activity, they investigate the forces needed to change the motion of moving spheres of different mass along a circular track, an activity from the SEPUP Science Grade 5 Program from LAB-AIDS that supports the new teacher/student talk ratios, and also has the literacy, notebooking, assessment strategies built in that make it Next Gen ready!

Integrating your iPad with Vernier Technology

Patti Smith, Vernier Software & Technology

Primary Subject: **GS, CO**
Interest Level: **LE, MS, HS, CO**
Location: *Grandview B*

Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how Vernier sensors, including our Go Wireless Temp, supports science inquiry in classrooms using iPad. This technology empowers students to collaboratively collect and independently analyze their data.

Kalkaska High School - Square-One Project Enhancement

Kim Cotton, Andrew Urquhart, Kalkaska Public Schools

Primary Subject: **CH, ES**
Interest Level: **HS**
Location: *Vandenberg A*

Square One provided several thousands of dollars for Kalkaska Public Schools science program. We want to share some of the fun labs and ways the funds were used.

Mini Poster Magic

Kristy Butler, Patti Richardson, Forest Hills Central High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Haldane*

Come and join us as we show you how we have used mini posters to incorporate Dimension 1: Practices of the NGSS into our classroom. Lots of examples! Handouts provided.

Place-Based Education: Watersheds of the Mitten

Tamara Coleman, Lowell Area Schools

Primary Subject: **BI, EN**
Interest Level: **LE, MS, HS**
Location: *Robinson*

Resources and assimilation of the Dan Wolz Grant, using place-based community resources.

Re-Engineering Inquiry: Let's Get REAL!

Ron Reimink, Hudsonville High School

Primary Subject: **IN**
Interest Level: **HS**
Location: *Pullman*

Come and learn how REAL Science techniques can motivate your students, promote critical-thinking, and encourage the learning of more content, even in AP courses. Complete, ready-to-use secondary activities provided.

Using Information Literacy to Evaluate Aspects of Hydraulic Fracturing

Christina Sobolak, Steve Mattox, Grand Valley State University

Primary Subject: **ES, EN**
Interest Level: **MS, HS, CO**
Location: *Ottawa*

Teachers will evaluate articles that describe hydraulic fracturing from different perspectives and develop a claim to ban or not ban it using evidence and reasoning.

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

Dynamic Life Science

John Fedors

Primary Subject: **BI**
Interest Level: **MS, HS, CO**
Location: *Nelson*

Hands-on activities, WOW demos, stimulating and sharing inquiry activities which can be immediately implemented. Bridge sciences through the development of critical thinking in Life Science.

Electrify Your Teaching Using the Simple Circuit Board

Michael Suckley, Macomb Community College, Paul Klozik, The MAP's Company

Primary Subject: **GS, IN, PH**
Interest Level: **MS, HS**
Location: *Winchester*

Using STEM principles, magnets, paperclips, and Christmas tree light bulbs, build your own inexpensive circuit board. Construct series, parallel, and combined circuits. Collect qualitative and quantitative data which will be used to describe the circuits. Use your circuit board to learn about conductors, insulators, fuses, and diodes which can be applied to everyday applications.

Integrating Literacy and Engineering into a Biofuel Laboratory

R. Charles Dershimer, U of M - School of Education, Hans Sowder, U of M College of Engineering

Primary Subject: **CH, ES, BI, IN**
Interest Level: **HS**
Location: *Heritage*

Engage your students with a chemistry or biology laboratory for designing a process to make biofuel. Specific standards based

literacy and assessment strategies provided to support students with concept development.

Pedaling into STEM on a Bike Generator

Scott Harrison, Freeland Middle School

Primary Subject: **GS, PH**
Interest Level: **LE, MS**
Location: *Ruby*

Turn on the mental lightbulbs while riding a class-made bike generator. You will get detailed plans on how to build your own bike generator and its STEM/curriculum connections. This is hands-on and handouts are provided.

Shifting to the NGSS through Assessment

Rochelle Rubin

Primary Subject: **AS, CH, ES, GS, BI, EN, PH**
Interest Level: **LE, MS, HS**
Location: *Governor*

Realizing the vision of the NGSS, depends upon a transformation of how science is assessed. During this session, participants will be introduced to a process for deconstructing NGSS Science and Engineering Practices in order to develop aligned formative and/or summative assessment resources that can be integrated into their current curriculum. Examples will be provided.

Thinking, Acting and Writing like Scientists: First Grade Investigators Explore the Causes and Effects of Sounds and Vibrations

Robby Cramer, Science Consultant, Michele Nelson, Van Andel Education Institute

Primary Subject: **GS, LT**
Interest Level: **EE, LE**
Location: *Emerald B*

Young student researchers explore their world of sounds and vibrations occurring when they play and sing! Science and writing standards (NGSS & CC) are seamlessly bundled throughout fourteen investigations for teachers to use in their classrooms. MAISA Unit available for free online.

1:00 p.m. - 4:30 p.m.

MEECS Energy Resources (V)

Philip Gersmehl, Ph.D, Central Michigan University

Primary Subject: **AS, EN**
Interest Level: **LE, MS**
Location: *Collins*

Investigate a broad array of topics such as electricity generation, renewable and nonrenewable energy resources, energy conservation and sustainability.

NOTE: Pre registration for this session is REQUIRED! Go to www.michigan.gov/deq to register.

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

A Little Bit of Sol

Jay Sinclair, Ida Middle School

Primary Subject: **Gs, AST**
Interest Level: **MS, HS**
Location: *Vandenberg B*

Participants will learn the basics of solar activity, spectroscopy, and solar observation at different wavelengths. Handouts on safe solar observation and a classroom ready lesson will be included.

A Telephone-Style Game for Reinforcing Free Body Diagrams

Ronald Schlaack, Delta College

Primary Subject: **IN, PH**
Interest Level: **HS, CO**
Location: *Thornapple*

A telephone-style game was used to teach diagramming skills to students in introductory physics classes at two community colleges with regard to free body diagrams, pictures, and actual materials.

Ahh, the Places You'll Go! Cool Maps and Dynamic Data

Ellen Spooner, Autumn Poisson, Michigan Sea Grant

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Ottawa*

What's happening in your watershed? Explore Great Lakes FieldScope through a hands-on session to engage your students in analyzing and sharing water quality data using dynamic GIS maps (free handouts).

Session Key:

Primary Subject Levels:
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Interest Levels:
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– SCECH Session
(V) – Vendor Session

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

Chemical Batteries (Energy for Grade 6)

Lisa Kelp, Lab-Aids

Primary Subject: **GS**
Interest Level: **MS**
Location: *Imperial*

Although we live a battery-powered lifestyle, middle schoolers have no idea how batteries actually work. Make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream. You'll engage in an activity from the SEPUP Science Grade 6 Program from LAB-AIDS that supports the new teacher/student talk ratios, and also has the literacy, notebooking, assessment strategies built in that make it Next Gen ready!

Engineering The Future Of Energy!

Bryan Tasior, Stockbridge High School

Primary Subject: **GS, EN, PH**
Interest Level: **HS, CO**
Location: *Grandview B*

Presentation of a unit using project-based, NGSS-aligned engineering projects to teach the concepts of energy and electricity & magnetism in a physics classroom. Projects demonstrated and handouts provided.

Facilitating Students' Understanding of the Structure and Properties of Matter

David Doherty, BitWixt Software Systems

Primary Subject: **CH**
Interest Level: **MS, HS**
Location: *Vandenberg A*

From middle to high school, students' understanding of the structure/properties of matter increases in complexity. We demonstrate interactive 3D atomic and molecular models, on iPads and laptops, to facilitate this growth in understanding. Handouts will be provided.

If a Picture is Worth...a Simulation is Worth a Million

Lisa Ogiemwonyi, Rochester Community Schools, Pam Berry, ExploreLearning

Primary Subject: **CO, IN**
Interest Level: **LE, MS, HS**
Location: *Gerald R. Ford*

Simulations are about "Ah-Hah!" moments - instances when your brain clicks! Suddenly whatever was puzzling you, now makes sense. In this session, participants will learn to create "Ah-Hah!" science moments.

Learn about the 3D Printer in Your Future

Dale Freeland, Portage Central High School

Primary Subject: **CO, PH**
Interest Level: **MS, HS, CO**
Location: *Grandview A*

How do students use a 3D printer in the science classroom? How will a 3D printer help me do my work? Students have engineered solutions to NGSS challenges and have used the 3D printer to print parts for their solutions. I will share student reactions and achievements during our first 6 months with a 3D printer. High student interest and their solutions lead me to predict that there will be a 3D printer in your near future, also.

Making It Real....Cheap!

Darrick Gregory, STARBASE Elementary School, Jodi Heaney, Julie Hahn, Parchment Middle School

Primary Subject: **GS**
Interest Level: **LE, MS**
Location: *Riverview*

This session will include a variety of examples involving "real-world" science that can be done in the classroom for little or no cost. In addition to a variety of topics, the presenters will incorporate technology to enhance ideas. Handouts with lesson ideas and suggested technology components will be provided.

Pre-School Early Elementary Environmental Education

Mike Mansour

Primary Subject: **EN**
Interest Level: **EE, LE**
Location: *Pullman*

Bring nature and outdoor fun into your early elementary program with two outstanding national programs: Growing Up WILD and Project Learning Tree Early Elementary Explorations. Nature gives us so much to explore during our lives. An early introduction guided by you will unlock adventures and interest. These guides provide structure and direction enriching our teaching. As a life-long naturalist, I will engage you in these powerful tools.

Processes for Collaborative Decision Making and Leveraging Different Perspectives

Mike Gallagher, Oakland Schools

Primary Subject: **ES, GS**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Pearl*

It's universal. Science departments are comprised of individuals with varying beliefs about our aims, instructional practices, and urgency for change. Learn to implement processes and communication norms so that energy that comes from varying perspectives can be harnessed in a productive way.

Standards-Based Grading in the Next Generation: Targets, Formative Assessment and Intervention

Phil King, Erik Johnson, Lakeview Middle School

Primary Subject: **AS**
Interest Level: **LE, MS, HS**
Location: *Robinson*

Transform your grading practices to promote proficiency on science learning targets through the use of standards-based grading and student tracker sheets. Streamline RTI/MTSS interventions and foster student ownership and reflection.

STEM from Nature

Kevin Frailey, MI Dept. of Natural Resources

Primary Subject: **GS, EN**
Interest Level: **LE, MS, HS**
Location: *Atrium*

Natural resources provide great opportunities to cover all STEM components! This session will give you some examples and ideas of how to have your students use STEM from nature.

Using Claim Evidence and Reasoning (CER) to Write Conclusions

Melissa Susan, Grandville Middle School

Primary Subject: **GS**
Interest Level: **LE, MS, HS**
Location: *Emerald A*

Our curriculum is changing and so must the format in which we write our Lab Conclusions. Claim Evidence Reasoning is the format of choice for writing conclusions to labs in Science and ELA write-ups. In this session we will look at how to explain what Claim Evidence Reasoning is to your students and how to integrate it into your current lessons.

Using Google Apps in the Science Classroom

Stacey Schuh, Dan Spencer, Jackson ISD

Primary Subject: **AS, CO, IN**
Interest Level: **LE, MS, HS**
Location: *Berkey*

How can you use Google's Free Tools in the Science classroom? Learn about how to utilize Google Forms for Exit Slips, Presentation for sharing student findings, and Blogger for creating a class science blog. Tips and tricks for organizing technology in the classroom.

Viruses, Bacteria, Antibiotic Resistance - What Your Students Should Know and Why

Jane Finn, MI Antibiotic Resistance Reduction (MARR)

Primary Subject: **BI**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Haldane*

Overview of the 2013 CDC report of "Antibiotic Resistance Threats in the U.S." Overview of "Antibiotics and You" for elementary and middle school students, and, "High School Biology/Health" curriculum. Both programs are free and funded by the Centers for Disease Control and Prevention.

2:00 p.m. - 3:45 p.m.

Empowered Students Thinking Like Engineers!

Tom Hinojosa, National Geographic/Cengage Learning

Primary Subject: **GS, IN**
Interest Level: **EE, LE**
Location: *Kendall*

Learn about an innovative approach to teaching that empowers elementary students to think like engineers and scientists. Through hands-on demonstration, teachers will leave the session with new ideas, resources, and methods to engage their classroom.

Using NGSS Practices and Cross-Cutting Concepts to Combat Student Misconceptions

Katy Adams, Ecology Center, Pam Bunch, Lenawee ISD/HLM Math Science Center

Primary Subject: **IN**
Interest Level: **MS, HS**
Location: *Plaza Boardroom A*

Join us for a "hands-on" introduction to Michigan's SaM3 program and gain practical strategies for eliciting, addressing, and reconciling student ideas that may act as barriers to learning about energy.

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

Advanced Inquiry Labs for AP Chemistry from Flinn Scientific

Mike Marvel, Mike Frazier, Flinn Scientific

Primary Subject: **CH**
Interest Level: **HS, CO**
Location: *Vandenberg B*

Hands-on, interactive workshop to help you implement the revised laboratory investigations and curriculum framework for AP Chemistry! Join Flinn Scientific as we present two new guided-inquiry chemistry experiments that support the integrated learning objectives and applied science practice skills your students will need for success. Pre-lab preparation and preliminary activities for each investigation have been optimized so teachers can effectively guide students and provide maximum opportunities for inquiry. Handouts provided for all activities!

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– SCECH Session
– Vendor Session

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

Amazing: Using NGSS to Make the Great Lakes STEM-sational!

Ellen Spooner, Autumn Poisson, Michigan Sea Grant

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Ottawa*

Explore NGSS aligned to STEM-sational K4-12 Great Lakes resources. See how we connected disciplinary core ideas, practices and crosscutting concepts to help engage students in learning about the Great Lakes.

Biofuels - The Dance between Science and Engineering

Joyce Parker, Michigan State University

Primary Subject: **BI**
Interest Level: **MS, HS, CO**
Location: *Nelson*

In this problem-based, hands-on session, we look at how engineering and science come together in the quest for sustainable biofuels that ranges across most areas of biology.

Creating a System of Science Support for Elementary Teachers

Julia Alder, Birmingham Public Schools, Michelle Ladd, West Maple Elementary School

Primary Subject: **AS, GS**
Interest Level: **EE, LE, MS**
Location: *Pearl*

Wondering how to implement, support, and sustain your elementary science program? Learn how we are leveraging teachers as science coaches in elementary schools. Explore our model, alternate models, and consider strategies that will build teacher capacity and interest in teaching science in the elementary school.

Encourage Reading in the Science Classroom

Stephanie Niedermeyer, Kevin English, Wayne Memorial High Schools

Primary Subject: **GS, IN**
Interest Level: **HS**
Location: *Winchester*

Dust off those textbooks and source materials! Get the students in your class interested and engaged in reading in your Science classroom. Handouts will be provided!

Engineering is Elementary

Connie Kennedy, Bay City Public Schools

Primary Subject: **GS, LT**
Interest Level: **EE, LE**
Location: *Pullman*

This session is designed to introduce educators to "Engineering is Elementary". Participants will explore introductory technology and engineering activities and utilize FREE resources available from the Museum of Science, Boston.

Modern Manufacturing and STEM

Ronald Schlaack, Delta College , Heather Brey, E.F. Rittmueller Middle School

Primary Subject: **IN**
Interest Level: **MS, HS**
Location: *Thornapple*

Introducing a program which allows teachers the opportunity to explore conditions within modern manufacturing facilities and to then enhance STEM education for students who might otherwise not be interested.

NOAA, and Sea Grant, and GLOBE - - Oh, My!

June Teisan, NOAA, Steve Stewart, MI Sea Grant Extension

Primary Subject: **BI, EN**
Interest Level: **LE, MS, HS**
Location: *Vandenberg A*

Michigan's Great Lakes are a global treasure, so let's grow the next generation of water stewards and open doors to careers in the STEM fields using free resources from NOAA, Sea Grant, and GLOBE! (Bonus: Prizes too!)

Old Lessons CAN Do New Tricks: Modifying for NGSS and Appendix F

Anne Jeannette LaSovage, Southfield Public Schools

Primary Subject: **BI, IN**
Interest Level: **HS**
Location: *Haldane*

NGSS doesn't mean starting from scratch. See how updating a classic evolution lesson can get your students "practicing the practices" of interpreting data, constructing and evaluating models and defending arguments.

Reclaiming the Metal (Chemistry of Materials for Grade 7)

Lisa Kelp, Lab-Aids

Primary Subject: **GS**
Interest Level: **MS**
Location: *Imperial*

Real world chemistry-- You'll engage in an activity from the SEPUP Science Grade 7 Program from LAB-AIDS that supports the new teacher/student talk ratios, and also has the literacy, notebooking, assessment strategies built in that make it Next Gen ready! Join us as we consider scenarios to reclaim copper from a circuit board manufacturer's waste. You'll then examine trade-offs of techniques used in industrial applications (metal replacement and precipitation), and come to understand the science behind complex environmental issues

Science and Engineering Practices as Interventions to Raise Academic Achievement

Greg Johnson, Wayne RESA

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS, HS**
Location: *Grandview A*

Explore strategies/activities that help ALL students. These strategies are all research-based, can be included in school improvement plans, and prepare teachers and administrators for the Next Generation Science Standards.

STEM Learning with Unmanned Vehicles

Ebiri Nkugba, Rick Mushing, Kent ISD

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Robinson*

Attendees will discover the engaging world of unmanned vehicles as a K-12 teaching tool. Lesson ideas will be presented. This is more than a high school physics demonstration!

The Earthquake Machine

Michele Svoboda, Mill Creek Middle School

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Heritage*

Explore a model of a fault to teach how energy is stored elastically in rocks and released suddenly as an earthquake. Handouts provided. Based on an IRIS Activity.

Use Technology to Work Smarter, Not Harder

Tammy Daenzer, Jenni Snider, Birch Run Area Schools

Primary Subject: **GS, CO**
Interest Level: **EE, LE, MS, HS**
Location: *Grandview B*

Technology is often intimidating to the classroom teacher and seems like a lot of hard work. Come learn how one teacher has started to use technology in the classroom to work smarter, but not harder! Technology ideas used tie all test questions to specific GLCEs, provide for pre and post-test data, provide for both formative and summative assessment, allow for effective parent communications and establish materials necessary for Student-Led Conferences. Technology featured includes: PC technology, ExamView, Planbook.com, MS PowerPoint, Skyward, Email, and Insight 360.

Using One-Minute Videos to Flip Your Lessons

Deb Yats, Nouvel Catholic Central High School

Primary Subject: **CO**
Interest Level: **MS, HS, CO**
Location: *Berkey*

Using short, self-made video clips increase student engagement and decrease lecture time. This session will demonstrate this technique using apps (Educreations, Explain Everything) and videos (using iPads or cell phones). BYOD--If you have one, bring a smart phone or tablet such as an iPad. No handouts

3:00 p.m. - 4:45 p.m.

Classify This! Build a Classroom Classification Wiki

Carolyn Lowe, NMU - School of Education

Primary Subject: **BI**
Interest Level: **LE, MS, HS**
Location: *Ruby*

Bring your computers and use my template and guidance to start a biology classification wiki your class can add to for years! A great, interactive, technology-based way to demonstrate learning.

Cultivating the Scientific Mind Using Interactive Notebooks

Carolyn Mammen, Hart Middle School, Monica Harvey, Rochester Community Schools

Primary Subject: **GS**
Interest Level: **EE, LE, MS, HS**
Location: *Governor*

Learn to provide enriched opportunities to develop student scientific thinking skills with interactive notebooks. Redesign lessons, incorporate NGSS and ECS and discover ways to promote scientific thinking for all students.

First Day of Science Class

Robert Tallman

Primary Subject: **IN**
Interest Level: **MS, HS, CO**
Location: *Riverview*

Grab student attention. Define Science and break the gender barrier. Create lab groups that work by using Learning Styles. Session will include strategies and activities.

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– Vendor Session

3:00 p.m. - 4:45 p.m. *continued*

Speak Up! Incorporating Discourse into our Classroom Instruction

Robby Cramer, Science Consultant, Cheryl Hach, Kalamazoo Area Math and Science Center

Primary Subject: **LT, IN**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Emerald B*

Consider the use of Science and Engineering Practices to drive student classroom discourse. Explore how to promote a classroom culture that provides a safe space to engage in scientific argument and fosters the exchange of students' verbal and written ideas.

4:00 p.m. - 4:45 p.m.

An Appetite for Chemistry

Cathy Farrell, Huron High School, New Boston

Primary Subject: **CH**
Interest Level: **HS**
Location: *Thornapple*

Teenagers love food! Come see how various food-themed activities can grab and hold your students' focus and help them see real-world connections to chemistry topics. Some topics include stoichiometry, molar mass, energy, unit conversions, solutions.

Bio & Chem Literacy Extravaganza

Michelle Mason, Donna Hertel, Portage Northern High School

Primary Subject: **CH, LT, BI**
Interest Level: **HS**
Location: *Ottawa*

Vocabulary and literacy strategies for Biology and Chemistry classrooms.

Biology's Best Engaged! Inquiry-Based Lessons Engagement Strategies to Activate Your Classroom

Heather Peterson, Holt High School

Primary Subject: **BI, IN**
Interest Level: **MS, HS, CO**
Location: *Heritage*

Participants will actively learn how to have all students involved and learning every day! Case study approach to Biology, Infusing, NGSS, and strategies to activate and engage your students will be shared. Biology focus, but all teachers will benefit!

Bringing the Body's Electrical Potential to Life v

Gregory Gage, Backyard Brains

Primary Subject: **GS, BI, CO**
Interest Level: **MS, HS, CO**
Location: *Emerald A*

We will focus on hands-on experiments that explore the neuroscience field of "electrophysiology". This lecture will provide a background on neuron and brain function, and will highlight basic DIY tools to explore: neurophysiology, functional electrical stimulation, micro-stimulation effect on animal behavior, neuropharmacology, even neuroprosthesis, and optogenetics!

Integrating Chromebook, Android, and BYOD with Vernier Technology V

Patti Smith, Vernier Software & Technology

Primary Subject: **GS, CO**
Interest Level: **LE, MS, HS, CO**
Location: *Berkey*

Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors, including our new Go Wireless Temp, to support science inquiry in classrooms using Chromebook, Android, or BYOD.

Leading the Change toward NGSS: Department Chair Round Table

Wendi Vogel, Crestwood Middle School

Primary Subject: **AS, IN**
Interest Level: **EE, LE, MS, HS**
Location: *Pearl*

Join department chairs, science coaches, and curriculum leaders in a round table discussion on leading the change to NGSS.

One-Stop Shopping on the Topic of Energy

Christine Webster, Hudsonville Pubic Schools

Primary Subject: **GS, IN**
Interest Level: **MS, HS, CO**
Location: *Haldane*

Energy-101.org is an excellent website with interviews from industry professionals and academic experts on the topic of ENERGY. Come find out why YOU should use this resource. Lesson plans provided.

Reed City Bio-Dome: A Science Teacher's Dream

Brad Smith, Reed City High School

Primary Subject: **CH, ES, BI, EN, IS**
Interest Level: **LE, MS, HS**
Location: *Nelson*

The session will teach participants about the use of a 52-foot diameter, geodesic greenhouse for teaching science and sustainablity. A description of the different projects taught as well as the general curriculum for the BioDome will be shared. The greenhouse, or BioDome, is an on-going project started 5 years ago. The BioDome is used mostly by the high school to teach a variety of concepts including hydroponics, aquaponics, vermiculture and regular gardening techniques. The BioDome and its projects can also be used to teach concepts relating to STEM and NGSS.

Simple Spectroscopy: Lessons from the MAVEN Educator Ambassadors Program

Cris DeWolf, Chippewa Hills High School

Primary Subject: **PH**
Interest Level: **MS, HS**
Location: *Winchester*

Walk away from this sessions with ideas on how to teach basic spectroscopy concepts to your students. Included are a make-it-take-it DVD spectroscope and hand-outs!

Saturday, February 28

8:00 a.m. - 8:45 a.m.

Bringing the Body's Electrical Potential to Life (SCECH) v

Gregory Gage, Backyard Brains

Primary Subject: **GS, BI, CO**
Interest Level: **MS, HS, CO**
Location: *Haldane*

We will focus on hands-on experiments that explore the neuroscience field of "electrophysiology". This lecture will provide a background on neuron and brain function, and will highlight basic "DIY" tools to explore: neurophysiology, functional electrical stimulation, micro-stimulation effect on animal behavior, neuropharmacology, even neuroprosthesis and optogenetics!

Engaged Students and Formative Assessment (SCECH)

Patricia Richardson, Kristy Butler, Forest Hills Central High School

Primary Subject: **AS, BI**
Interest Level: **MS, HS**
Location: *Thornapple*

Want more engaging activities to keep kids actively involved in their learning? Come and see what we are doing with whiteboards, card sorts and many other simple changes to what you already do that will increase student engagement. Formative assessment is a part of this engagement and we will share some of the tools we are using for this important part of instruction. Handouts provided.

Getting the Full Picture: Students Doing Science Using Gigapixel Panoramas (SCECH)

Jason Hunter, Grand Haven High School, Brian Bodenbender, Hope College - Dept. of Geo/Envir. Sciences

Primary Subject: **ES, BI, CO, EN**
Interest Level: **MS, HS, CO**
Location: *Kendall*

Digital photos compiled into large, web-hosted panoramas let students study detailed changes in field sites over time. We discuss an example, with curriculum, where high school students study sand dunes.

High School Chemistry Teachers Meeting

Mary Jordan McMaster, Allen Park High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg A*

Come join us fellow Chemistry teachers from all over Michigan to share news and ideas for best practices.

Muffins for Members

Location: *Governor*

Advise MSTA leadership regarding your needs and recommendations on what you want as we move farther ahead with implementing NGSS. This is an opportunity for you to share your needs! Come enjoy muffins and the discussions!

Real Kids, Virtual Critters and Amazing Science (SCECH)

Carolyn Lowe, NMU - School of Education, Amy Pihlainen, AuTrain-Onota Public Schools

Primary Subject: **GS, CO**
Interest Level: **LE, MS, HS, CO**
Location: *Plaza Boardroom A*

See how kids are learning authentic, standards-based science in a virtual environment created by Carolyn Lowe and NMU specifically for K-12. Information provided on how you can participate.

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

Engineering an Electromagnet (SCECH)

Crystal Brown, Parsons Elementary School

Primary Subject: **GS, IN**
Interest Level: **LE**
Location: *Riverview*

Are you an upper elementary teacher? Do you have an old energy unit that needs a little Spark?™ You will walk away with hands on experience and resources for a unit that is project-based and developed for students to explore concepts of energy, research and learn about electricity, and apply their understanding to redesign the best performing electromagnet model. Students identify their own electromagnet model based on variables they think will improve electromagnetic performance. Students are questioning, researching, analyzing, testing, and re-designing. Get charged up for an electrifying experience!

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(SCECH) – SCECH Session
(V) – Vendor Session

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

Resources to Support NGSS Implementation

Susan Codere Kelly, MI Department of Education

Primary Subject: **AS, GS**
Interest Level: **EE,LE, MS, HS**
Location: *Pantlind*

During the NGSS development process, Michigan educators developed many resources to support NGSS implementation. Learn how to access these resources and use them to begin planning to support transitioning to NGSS. Access to online resources and handouts provided.

The Arts in Engineering

Kimberlee Quinn, Miller Elementary School, Michael Quinn, Center Line Public Schools

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS**
Location: *Emerald B*

Ready to inquire how the 7 steps of the Engineering Process Pathway can increase student achievement and engagement, meet multiple content area expectations, align with the Common Core/NGSS and give students authentic learning experiences? Come imagine the possibilities, design inquiry-based engineering challenges, construct from everyday materials, analyze the practices of science/engineering and improve the learning experiences for your students!

9:00 a.m. - 9:45 a.m.

A Progression of Learning K-8

Kevin Stinson, Carolina Biological

Primary Subject: **ES**
Interest Level: **LE**
Location: *Governor*

CANCELED

Engage in Disciplinary Core Ideas from the NGSS and learn how to incorporate them with Engineering Practices and Cross Cutting Concepts. Experience lessons that demonstrate the progression through weather.

Engineering the Future: A Summer Academy for Underrepresented Students

Dr. Eric Mann, Hope College - Dept of Math/Phy/Eng., Susan Ipri Brown, Hope College

Primary Subject: **AS, IS**
Interest Level: **MS, HS**
Location: *Thornapple*

Lessons learned from bringing together teachers and students for engineering design workshops hosted by Hope College in partnership with the Muskegon Areas Regional Math and Science Center will be shared.

Environmental Education in an Urban Setting

Jennifer Edwards, Ronald Brown Academy

Primary Subject: **EN**
Interest Level: **EE, LE, MS**
Location: *Plaza Boardroom A*

Are you trying to bring more hands-on environmental education to your inner-city classroom? Let's talk about how to overcome the obstacles and make your program a success.

Flinn Scientific Presents Exploring Chemistry - Connecting Content through Experiments

Mike Marvel, Mike Frazier, Flinn Scientific

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg B*

Join us as we present interactive activities and demonstrations that showcase the features and benefits of our Exploring Chemistry line of kits! We will highlight integrated lab and learning activities for some of the major topics in your chemistry curriculum! These are the experiments, demonstrations, and POGIL activities that ensure students will really understand the concepts and get a glimpse of the underlying simplicity and beauty of chemistry!

Get Them Out of their Seats - A Biologist Teaching Physical Science

Lu Anne Clark, Lansing Community College

Primary Subject: **GS**
Interest Level: **HS, CO**
Location: *Berkey*

Activities I've developed or found designed to get students active and out of their seats in an integrated Physical Science class.

Hands-On Human Ecology for the Next Generation

Holly Schaeffer, Kellogg Community College

Primary Subject: **EN**
Interest Level: **MS, HS**
Location: *Robinson*

Discover innovative activities for the NGSS that explore population growth, carrying capacity, human impacts on the environment and paths to sustainability. Receive a CD of lesson plans.

Modeling Science and Math in the Great Outdoors

Jody Harrington

Primary Subject: **EN**
Interest Level: **EE, LE**
Location: *Grandview B*

Model NGSS Science Concepts in a unique, memorable environment - Outdoors at a Rain, Butterfly, or Farm Garden. Involve students in hands-on learning by connecting science and math with the best Environmental Activities. Modeling Techniques for assessment of Performance Expectations will be connected to EE Activities by Grade Level. Hand outs provided.

Session Descriptions

One Fish, Two Fish, Red Fish, Blue Fish

Shana Ramsey, Michigan DNR

Primary Subject: **EN**
Interest Level: **LE, MS, HS**
Location: *Atrium*

This session will feature aquatic-inspired hands-on activities related to fish, invasive species and natural resource stewardship. Activities offer exciting ways to learn about Michigan's natural resources, engage students, and meet standards.

Pedaling into STEM on a Bike Generator

Scott Harrison, Freeland Middle School

Primary Subject: **GS, PH**
Interest Level: **LE, MS**
Location: *Campau*

Turn on the mental lightbulbs while riding a class-made bike generator. You will get detailed plans on how to build your own bike generator and its STEM/curriculum connections. This is hands-on and handouts are provided.

Re-Engineering Inquiry: Let's Get REAL!

Ron Reimink, Hudsonville High School

Primary Subject: **IN**
Interest Level: **HS**
Location: *Pullman*

Come and learn how REAL Science techniques can motivate your students, promote critical-thinking, and encourage the learning of more content, even in AP courses. Complete, ready-to-use secondary activities provided.

Reorganizing Biology Content - A Bottom up Approach

Julie Alexander, Grand Ledge High School, Erin Marsh

Primary Subject: **BI**
Interest Level: **HS**
Location: *Nelson*

Join us on a journey through the biology content that begins in the cell and ends with ecology. Attendees will participate in a "Cellular Processes Wrap-Up" activity. Handouts provided.

Spectroscopy in AP Chemistry

Jamie Benigna, The Roeper School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg A*

Spectroscopy is one of the Chemist's most powerful tool to understanding the molecular and atomic world. This session will focus on activities and models for UV/Vis, PES, and Mass Spectrometry

The Chemistry of Color: Getting Students on the Right Frequency

Michael Shuster, Grand Blanc Schools

Primary Subject: **CH**
Interest Level: **HS**
Location: *Imperial*

Would you use a spectrophotometer in your high school chemistry classes if it were inexpensive, reliable, and easy for students to use? Since this powerful tool is a common feature in modern chemical analysis – of course you would! Join us for hands-on activities using RGB spectrophotometers to explore simple serial dilutions and core applications of the technology. From: A Natural Approach to Chemistry from LAB-AIDS!

The Power of the Questions: & E Practice 1

Wendi Vogel, Crestwood Middle School

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS, HS**
Location: *Kendall*

Asking questions and identifying problems (NGSS) are powerful tools in a unit or lesson. Get a few tips and activities that honor students' curiosity while still teaching to the standards.

Viruses, Bacteria, Antibiotic Resistance - What Your Students Should Know and Why

Jane Finn, MI Antibiotic Resistance Reduction (MARR)

Primary Subject: **BI**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Haldane*

Overview of the 2013 CDC report of "Antibiotic Resistance Threats in the U.S." Overview of "Antibiotics and You" for elementary and middle school students, and, "High School Biology/Health" curriculum. Both programs are free and funded by the Centers for Disease Control and Prevention.

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Interest Levels:
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LE – Late Elementary
MS – Middle Level
HS – High School
CO – College

– SCECH Session
– Vendor Session

Session Descriptions

9:00 a.m. - 10:45 a.m.

Empowered Students Thinking Like Engineers!

Tom Hinojosa, National Geographic/Cengage Learning
Primary Subject: **GS, IN**
Interest Level: **EE, LE**
Location: *Gerald R. Ford*

Learn about an innovative approach to teaching that empowers elementary students to think like engineers and scientists. Through hands-on demonstration, teachers will leave the session with new ideas, resources, and methods to engage their classroom.

Enhancing Classroom Learning through Digital Dissection

Samantha Suiter, PETA

Primary Subject: **BI**
Interest Level: **LE, MS, HS, CO**
Location: *Grandview A*

This session will explore the educational, economic, and ethical benefits of alternatives to dissection, including a hands-on demonstration of virtual dissection software. Participants are asked to bring a laptop.

Human Anatomy Lab: Built from the Inside Out

Pam Tejkl, Traverse Central High School

Primary Subject: **BI, IN**
Interest Level: **MS, HS, CO**
Location: *Ruby*

Explore a hands-on technique for building anatomy in clay on handheld skeleton models. This interactive experience promotes innovation, values, different learning styles, and prepares students for success in health careers.

9:00 a.m. - Noon

NGSS: Deciphering the Cross Cutting Concepts and Linking Them to the Science and Engineering Practices

Donald Pata, Grosse Pointe North HS, Laura Ritter, Troy High School

Primary Subject: **AS, GS**
Interest Level: **LE, MS, HS**
Location: *Emerald A*

As we learn more about the NGSS, the cross cutting concepts continue to be the most nebulous of the three strands. In this three-hour, hands-on workshop participants will work to decode the Cross Cutting Concepts and link them to the Science and Engineering Practices. They will experience, and take home, activities designed for students that connect the CCC and SEP in appropriate contexts. This is perfect for all levels of teachers!

9:00 a.m. - 1:00 p.m.

MEECS Climate Change

Janet Vail, Grand Valley State University

Primary Subject: **AS, EN**
Interest Level: **LE, MS**
Location: *Collins*

Learn about climate and weather, the energy balance, the carbon cycle, and the Greenhouse effect. Students will observe change in the Earth's cycles and climate.

NOTE: Pre registration for this session is REQUIRED! Go to www.michigan.gov/deq to register.

MEECS Water Quality

Joan Schumaker Chadde, W UP Cntr-Sci/M & Envir. Ed.

Primary Subject: **AS, EN**
Interest Level: **LE, MS**
Location: *Ottawa*

Discover the essential role that water plays in Michigan's economy and in everyone's lives. Students calculate how much water they use, investigate the link between land uses and water quality, and find out how water is monitored and standards are set.

NOTE: Pre registration for this session is REQUIRED! Go to www.michigan.gov/deq to register.

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

A Caring Instructor - Motivating Students for Classroom Success

Laura Harris, Davenport University

Primary Subject: **BI, IN**
Interest Level: **HS, CO**
Location: *Kendall*

A caring instructor positively influences student motivation. This interactive workshop examines techniques to come across as a caring instructor to your students by applying Dale Carnegie's book to classroom-based examples.

Citizen Science aboard the Schooner Inland Seas

Jeanie Williams, Inland Seas Education Association

Primary Subject: **EN**
Interest Level: **LE, MS, HS, CO**
Location: *Berkey*

Discover how Inland Seas engages students in active Great Lakes research aboard a traditionally rigged schooner, and how your class can get involved. Additionally, learn about our long-term Great Lakes monitoring data set and how to use it to engage your class in meaningful data interpretation. This session will give you a chance to take part in activities practiced on the ship and work with our Great Lakes data set.

Session Descriptions

Creating a New Generation of Learners K-5 with Light and Sound Waves from Building Blocks of Science Ⓥ

Kevin Stinson, Carolina Biological

Primary Subject: **PH**
Interest Level: **LE**
Location: *Governor*

Reflect on the make-up of the NGSS: Disciplinary Core Ideas, Science and Engineering Practices, Crosscutting Concepts and Performance Expectations. Experience lessons that demonstrate the three-dimensional model of learning.

Elementary Extravaganza 📖

Tim Larrabee, Betty Crowder, Oakland University

Primary Subject: **GS**
Interest Level: **EE, LE, MS**
Location: *Emerald B*

Join the fun as Oakland University pre-service teachers provide you with a wealth of inquiry and engineering activities that will engage your students and their inquisitive minds! This hands-on session targets elementary science and engineering, but many of the activities could be adjusted for younger or older students.

Energy - Avoid A Future Of Doom and Gloom! 📖

Andrew Frisch, Farwell Area Schools

Primary Subject: **PH, IS**
Interest Level: **HS, CO**
Location: *Winchester*

America must take the lead towards a cultural and technological shift towards energy in the future. We must develop a three-prong approach. 1. There must be new alternative energies developed. 2. We recognize how we are wasting our current energies. 3. There must be development of new, more efficient technologies.

Engaging Students in Productive Task-Based Discussions in Biology 📖

R. Charles Dershimer, U of M - School of Education, Paula Gentile, Belleville High School

Primary Subject: **BI, IN**
Interest Level: **HS**
Location: *Haldane*

This session will provide examples for how to get students to talk productively with each other around data representation, analysis, interpretation, and explanation activities. Handouts and rubrics provided.

Fingerprints of ~~a Tom~~ Atom Ⓥ

Michael Shuster, Grand Blanc Schools

Primary Subject: **CH**
Interest Level: **HS**
Location: *Imperial*

Students have trouble relating electron orbitals and spectral lines. Join us for a unique and fun atom building model experience. After modeling electron configurations, we'll explore how color is used to identify elements using a unique deck of spectrum cards to take home. In fact, we'll send you home with 58 engaging chemistry labs from A Natural Approach to Chemistry from LAB-AIDs that support the new teacher/student talk ratios

Integrating Modeling into Your Curriculum 📖

Peg Convery, Farmington High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg A*

Modeling instruction fits well with the Next Generation Science Standards, but our curriculum is still based on the HSCEs. Here are some of my ways to reconcile the two.

Journal Club: Critical Thinking on Steroids 📖

Ron Reimink, Hudsonville High School

Primary Subject: **BI, IN**
Interest Level: **HS**
Location: *Pullman*

Learn how to explore the exciting outer limits of human understanding with your students through journal club. Maximize critical thinking with minimal time commitment while using this REAL Science technique. Handouts provided.

Nature In and Out of the Classroom: A DNR Teacher Resource 📖 Ⓥ

Natalie Elkins, MI Department of Natural Resources

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

Michigan DNR Education Specialist, Natalie Elkins will share activity and program examples, and will highlight the various professional development opportunities offered through the DNR. Join in hands-on life science activities from Salmon in the Classroom, Project Learning Tree (PLT), K-12 Project WILD/Growing UP WILD for Early Learners/K-12 Aquatic WILD. Find out what you may experience if you attend the interactive week long Academy of Natural Resources each July--a 32 hour SCECH immersion into natural resource and environmental education using best-practices for adult learning, full of real-world applications to share with students.

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📖 – SCECH Session
Ⓥ – Vendor Session

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

NGSS Implementation: Started at the Bottom, Now We're Here

Richard Bacolor, Pierce Middle School , Katie Stevenson, Fisher Elementary School, Greg Johnson, Wayne RESA

Primary Subject: **AS. IN**
Interest Level: **EE, LE, MS**
Location: *Grandview B*

This session describes the challenges and successes faced by a small urban district in making NGSS implementation a reality.

One-to-One Technology: Tales from the Trenches

Jennifer Ward, Allegan High School

Primary Subject: **AS, CH, GS, CO, PH**
Interest Level: **HS**
Location: *Thornapple*

Lessons learned from my first year with one-to-one devices in the classroom. Types of simulations, review games, and formative assessments used will be shared. Classroom management will be discussed. Handout provided.

Rethinking Textooks with iBooks Author

Steve Dickie, Divine Child High School

Primary Subject: **IN**
Interest Level: **LE, MS, HS, CO**
Location: *Heritage*

With iBooks Author you can create awesome interactive textbooks for use on iPads. Investigate the creation of ebooks that can be used to support classroom instruction or a flipped classroom.

Standards-Based Grading in the Next Generation: Targets, Formative Assessment and Intervention

Phil King, Erik Johnson, Lakeview Middle School

Primary Subject: **AS**
Interest Level: **LE, MS, HS**
Location: *Robinson*

Transform your grading practices to promote proficiency on science learning targets through the use of standards-based grading and student tracker sheets. Streamline RTI/MTSS interventions and foster student ownership and reflection.

STEM Across the Solar System

Ardis Herrold, Grosse Pointe North High School

Primary Subject: **GS, AST**
Interest Level: **MS, HS**
Location: *Campau*

Learn how to implement solar system activities that involve math and/or engineering concepts. Some of the current NASA missions will also be featured. Handouts provided.

The Origin of Species

Mark Eberhard, St. Clair High School

Primary Subject: **BI, EN**
Interest Level: **HS, CO**
Location: *Nelson*

HHMI's short film series call the Origin of Species provides teachers with a few strong examples of modern day speciation. Participants will follow the four decades of work by Rosemary and Peter Grant on the Galapagos Island finches, the same finches that Darwin worked with. In addition, we will follow the work of Jonathan Losos on the diversity and distribution of anole lizards in the Caribbean Islands. Both films are supported by activities that provide students with the opportunity to work with the real research data from both projects. Students may work with statistical testing, giological modeling, DNA sequencing, phylogenetic trees, and the new HHMI virtual labs. FREE DVD's and numerous support materials will be provided to all participants.

Thermochemistry without Energy

Scott Milam, Plymouth High School

Primary Subject: **CH**
Interest Level: **HS, CO**
Location: *Vandenberg B/C*

Thermochemistry concepts will be explained without energy shortcuts. Endothermic reactions, exothermic reactions, entropy, specific heat capacity, and bonding will be discussed with plenty of demonstrations.

Transform Your Science Fair into a STEM Challenge Fair!

Crystal Brown, Parsons Elementary School

Primary Subject: **GS, IN**
Interest Level: **LE, MS, HS**
Location: *Riverview*

If you've been doing the same old Science Fair, come learn about the amazing opportunities for a STEM Challenge Fair! You will leave with resources to start your own STEM Challenge Fair. The science and engineering practices of NGSS are integral to students' education, and the traditional science fair model just isn't enough anymore. Give your students the chance to be innovative!

10:00 a.m. - 11:45 a.m.

Michigan's Next Generation Science Classroom

Jen Arnswald, Kent ISD,

Primary Subject: **AS, GS**
Interest Level: **EE. LE, MS, HS**
Location: *Pantlind*

Learn how the S&E practices of the NGSS will transform science education. See how student engagement increases when practices are used in the classroom. Free online resources will be shared.

The Invisible Universe

Mandy Frantti, Munising Middle/High School

Primary Subject: **PH, AST**
Interest Level: **MS, HS**
Location: *Plaza Boardroom A*

This hands-on session explores the universe's "invisible light" our eyes can't see! The electromagnetic spectrum comes alive through experiments ready to take to the classroom! Handouts and NASA materials provided.

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

Building an Environmentally Literate Community

Thomas Occhipinti, MI Department of Environmental Quality, Pam Bunch, Hillsdale Monroe M/S Center, Elaine Kampmueller, Grand Rapids Community College, Megan Schrauben , Integraed Education Consultant, MDE

Primary Subject: **EN**
Interest Level: **EE, LE, MS, HS**
Location: *Emerald B*

Learn more about the first edition of the Michigan Environmental Literacy Plan during a panel discussion with members of the MiELP task force and hear how you can comment on this plan.

Citizen Scientist - Bird Data Collection for Cornell Lab of Ornithology

Mike Mansour

Primary Subject: **EN**
Interest Level: **LE, MS, HS, CO**
Location: *Heritage*

Consider including bird observations in your spring instruction. Cornell University Lab of Ornithology has an extensive program to enhance your instruction while encouraging your students to become Citizen Scientists. This past summer I attended a seminar in Ithaca to become their ambassador here in Michigan and eager to share their resources with Michigan teachers and naturalists. Bring the joy of birding to your students as they contribute and learn to collect and share bird migration and habitat data. Window bird feeders and other resources will be given to participants who agree to adopt birding in their instruction.

Creating a Semi-Self-Paced Classroom without Killing the Teacher

Christa Graham, Morenci Area Schools

Primary Subject: **AS**
Interest Level: **MS, HS, CO**
Location: *Grandview B*

Suggestions on how to structure a semi-self-paced, mastery-model classroom that supports all levels of learners in a challenging and supportive environment all while reducing your day-to-day grading and workload. Classroom application for Middle School, High School, and Undergraduate levels. Organizational suggestions, samples of challenges and successes. Handouts will be provided.

Dangerously Beautiful: The Chemistry of Cosmetics

Katy Adams, MacKenzie Maxwell, Ecology Center

Primary Subject: **CH, EN**
Interest Level: **MS**
Location: *Berkey*

Lesson where students explore the chemistry of common cosmetics and create alternatives. We will discuss how this approach covers content, engages students, and prepares them for the future.

Great Lakes, Great Activity, Great Fun v

Kevin Frailey, MI Dept. of Natural Resources

Primary Subject: **GS, EN**
Interest Level: **LE, MS, HS, CO**
Location: *Atrium*

This hands-on activity offers a fun, interactive, multi-disciplinary approach to teaching about the Great Lakes watershed. Try a new method to get your students inspired by the largest freshwater ecosystem on earth.

iPads and NGSS: Have We Got a Project for You!

Julia Alder, Birmingham Public Schools, Ann Cole, Derby Middle School, Joanne Rowe

Primary Subject: **GS, IN**
Interest Level: **LE, MS**
Location: *Riverview*

Hands-on, minds-on. Use images, video, research, and iPads to create public service announcements, collaborate, and make connections to the NGSS. Learn how technology and collaboration connect to NGSS. Electronic hand-outs provided.

Mars in Your Classroom

Ardis Herrold, Joey Bejin, Gabrielle Feeny, Jamie Lackner, Grosse Pointe North High School
Primary Subject: **GS, AST**
Interest Level: **HS**
Location: *Campau*

Explore Mars using web-based tools and software designed to analyze NASA data. Pose research questions for your classes or for individual students. High school student researchers will co-present. Handout provided.

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– SCECH Session
V – Vendor Session

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

Mi-STAR: Integrated STEM Curriculum Addressing the Three Dimensions of NGSS

Emily Gochis, Michigan Tech-Sept of Geo/Mining/Eng/Sci

Primary Subject: **AS, GS**
Interest Level: **MS, HS, CO**
Location: *Thornapple*

Mi-Star is a model for integrated science reform collaboratively developed by Michigan school districts and universities. The theme-based units integrate standards with NGSS practices and crosscutting concepts though relevant topics. Hand outs will be provided.

Outside the Box: Using Integration and Environment to Teach NGSS

Rob Keys, Cornerstone University

Primary Subject: **EN, IN**
Interest Level: **EE, LE**
Location: *Kendall*

Connecting students to their natural environment is important in science. Explore lessons integrating NGSS performance standards and Common Core using inquiry, engineering and environmental themes. Hands-on and Handouts.

Poppers: An Open-Inquiry Physics Energy Lab

Jaime Reuter, Jim VanderWeide, Hudsonville High School

Primary Subject: **PH**
Interest Level: **MS,HS**
Location: *Winchester*

A popper toy is used to get students thinking about energy transfer. Students will use the VAEI inquiry model to design an investigation, create presentations, and defend their findings.

STEM through Origami

David Larwa

Primary Subject: **GS**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Grandview A*

A new look at the technical, mathematical, and creative models of origami. Used today from auto design to heart operations, origami is not child's play. Hands-On

Strategies for the ACT Science

Amy Zitzelberger, Hazel Park High School

Primary Subject: **AS, IN**
Interest Level: **HS**
Location: *Vandenberg A*

Practicing for the ACT improves students' scores. Come find out how to coach students on their approach to the readings and questions. Handout on strategies provided. This really works!

Teach Students How to Write a Story Using LEGO®

Ivery Toussant, Jr., LEGO Education

Primary Subject: **LT**
Interest Level: **EE, LE,**
Location: *Gerald R. Ford*

LEGO Education StoryStarter is a hands-on tool that inspires students to create and communicate stories, while working collaboratively using LEGO bricks as part of their author's toolbox. Create a storyboard using iPads or computers.

The Great Transition in Evolutionary Biology

Mark Eberhard, St. Clair High School

Primary Subject: **BI, EN**
Interest Level: **HS, CO**
Location: *Nelson*

Introducing Howard Hughes Medical Institute's (HHMI's) newest short film series which explores several of the great transitions in Earth's evolutionary history. This three-part series features Tiktaalik, Archaeopteryx, and Ardipithecus. This interactive session will investigate the transitions from water to land, dinosaurs to birds, and our own human evolution. A number of FREE supporting activities will be modeled and discussed during the session. FREE DVD's and numerous support materials will be provided to participants.

THINK! ENERGY and Take Action!

Tammi Phillippe, National Energy Foundation

Primary Subject: **ES, GS, EN**
Interest Level: **LE**
Location: *Ruby*

THINK! ENERGY - this energetic presentation is offered to 4th and 5th graders throughout Michigan - an energy optimization program from your local utility company. Hands-on with lesson plans available.

Translucent, Transparent, or Opaque: Investigating the Properties of Light

Karen Meyers, Regional M/S Center @ GVSU

Primary Subject: **GS, PH**
Interest Level: **EE, LE, MS**
Location: *Haldane*

Using hands-on strategies, participants will investigate the properties of light and materials that define translucent, transparent, and opaque. Connections will be made with the GLCEs and NGSS.

Using Climate Proxies to Learn about Earth's Climate History

Oralia Gil, Lab-Aids

Primary Subject: **ES**
Interest Level: **HS**
Location: *Imperial*

How can scientists tell what Earth's climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth

patterns are different in warm or cold water. Your students will analyze and graph samples of replicas of these organisms, and use this information to determine relative warm and cold periods in the past 200,000 years. This activity is from EDC Earth Science, a new NSF-sponsored earth systems program that uses an active, BIG DATA approach from LAB-AIDS that supports the new teacher/student talk ratios, and also has the literacy, notebooking, assessment strategies built in that make it Next Gen ready

Using DNA Barcoding to Teach Biology and Chemistry Concepts

Mindy Wilson, Lansing Community College

Primary Subject: **BI, CO**
Interest Level: **HS, CO**
Location: *Pullman*

Student-designed DNA barcoding projects can be used to teach scientific process and concepts in biology and chemistry. A DNA Barcoding curriculum and resources using DNA Subway will be presented.

What Can the Department of Natural Resources Do For You?

Jon Gray, Walden Middle School

Primary Subject: **EN**
Interest Level: **EE, LE, MS, HS**
Location: *Vandenberg B*

The Michigan DNR offers educational programs that may benefit the classroom teacher. From the Academy of Natural Resources to Salmon in the Classroom. Come learn what the DNR can do for you. Handouts provided.

Making Waves in the Classroom (V)

Kevin Stinson, Carolina Biological

Primary Subject: **PH**
Interest Level: **MS**
Location: *Governor*

Students learn how electrical energy is transformed and how wave energy is transferred through matter while describing wave properties. Waves interact and help us understand engineering designs. As a culminating application, students explore touch screen technology and properties of sense and how to respond to touch.

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

Academy of Natural Resources: What I Did During My Summer Vacation!

Becky Durling, Discovery Elementary School

Primary Subject: **GS, EN**
Interest Level: **EE, LE, MS, HS**
Location: *Winchester*

The Academy of Natural Resources is truly a fun, educational summer camp for teachers! Come find out what ANR is all about! We will highlight the 2015 class offerings, day trips out in the field, curriculum materials, scholarships, and more! Come find out why YOU need to spend a week in July in beautiful Northern Michigan at ANR!!

AP Chemistry Meeting

Jamie Benigna, The Roeper School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Vandenberg A*

Join experienced AP Chemistry teachers as they discuss 2014 and preparing for 2015.

CER in Middle School Classroom

Melissa DeSimone, Pennfield Middle School, Jennifer Arnswald, Kent ISD

Primary Subject: **IN**
Interest Level: **MS**
Location: *Berkey*

This session offers the experiences of one teacher with argumentative writing and CER in the middle school classroom. We will discuss how you can scaffold the writing of scientific explanations in your classroom and explore best practices for teaching writing in science.

Community Resources as Inspiration for Inquiry-Based Projects

Susan Ipri Brown, Hope College

Primary Subject: **GS, IN**
Interest Level: **MS, HS**
Location: *Grandview B*

Hope College teacher programs provide innovative, inquiry-based projects focusing on local dunes, watersheds, and engineering resources to inspire students. Equipment, probes, and on-line tools available for classroom use.

Cool Tools for Electricity & Magnetism (V)

Donald Pata, Arbor Scientific

Primary Subject: **GS, PH**
Interest Level: **MS, HS, CO**
Location: *Riverview*

Make a light bulb filament 'dance' 60 times/second. See why the hand-crank Van de Graaff is better than the electric.

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(book) – SCECH Session
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1:00 p.m. - 1:45 p.m. *continued*

Getting Started with Interactive Science Notebook

Amy MacKellar, Jennifer Francis, St. Joseph Public Schools

Primary Subject: **IN**
Interest Level: **LE, MS**
Location: *Ruby*

Have you ever wished you could: Increase student engagement and organization? Encourage student creativity? Simplify grading? Explore the possibilities with teachers who have successfully implemented science notbooking in their classroom.

Mini Poster Magic

Kristy Butler, Patti Richardson, Forest Hills Central High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Haldane*

Come and join us as we show you how we have used mini posters to incorporate Dimension 1: Practices of the NGSS into our classroom. Lots of examples! Handouts provided.

Modeling Geothermal Systems in Sustainable Buildings

Barb Wheeler, Grand Valley State University, Stephen Mattox, GVSU - Prof. of Geology

Primary Subject: **EN**
Interest Level: **MS**
Location: *Plaza Boardroom A*

Participants will explore the purpose of geothermal systems and learn more about a specific school utilizing such system. Then we will learn about ranking buildings based on sustainability via LEED.

Pre-School Early Elementary Environmental Education

Mike Mansour

Primary Subject: **EN**
Interest Level: **EE, LE**
Location: *Pullman*

Bring nature and outdoor fun into your early elementary program with two outstanding national programs: Growing Up WILD and Project Learning Tree Early Elementary Explorations. Nature give us so much to explore during our lives. An early introduction guided by you will unlock adventures and interest. These guides provide structure and direction enriching our teaching. As a life-long naturalist, I will engage you in these powerful tools.

Predicting the Advance of Lava at Kilauea Volcano

Tari Mattox, GRCC-Phy Sci Dept.-Calkin Sci Cntr, Stephen Mattox, GVSU - Prof. of Geology

Primary Subject: **ES**
Interest Level: **MS, HS**
Location: *Kendall*

Participants will use maps and simple graphs to predict when recent changes on Kilauea will send lava into populated areas. Discussions will include lava diversion, impacts, and careers involved.

Slide Rules in the Science Classroom

Matthew Menna, Advanced Technology Academy

Primary Subject: **GS**
Interest Level: **MS, HS, CO**
Location: *Governor*

Learn how to use a slide rule. Hands-on and leave with resources to implement a lesson in your class.

STEM - Build Your Own Brushbot

David Larwa

Primary Subject: **PH, IS**
Interest Level: **LE, MS**
Location: *Grandview A*

Off to the races after you build your own brushbot. Easy to make and fun to build. Turn a toothbrush into a robot. Join me as we explore the science behind the brushbot.

STEM from Nature

Kevin Frailey, MI Dept. of Natural Resources

Primary Subject: **GS, EN**
Interest Level: **LE, MS, HS**
Location: *Atrium*

Natural resources provide great opportunities to cover all STEM components! This session will give you some examples and ideas of how to have your students use STEM from nature.

STEM Grants - Michigan STEM Partnership

Christine Cloud-Webb, Great Lakes Math/Science Center

Primary Subject: **AS, GS**
Interest Level: **EE, LE, MS, HS, CO**
Location: *Vandenberg B*

Participants will see past Michigan STEM grant recipients projects, gather new STEM project ideas for your classroom, and learn information regarding NEW 2015 STEM grant requirements.

Using Engineering Design and Data Analysis Practices in Science Classrooms

Jenni Wilkening, Ann Arbor Huron High School, R. Charles Dershimer, U of M School of Education

Primary Subject: **CH, ES, BI, PH**
Interest Level: **HS**
Location: *Nelson*

This high-school teacher panel (biology, chemistry, earth science and physics) will present content-specific examples of classroom lessons that include practices for engaging students with data analysis and engineering activities.

Session Descriptions

Using Kinesthetics and Exercise to Teach Abstract Science Concepts

Alexandria Clement, Zachary Parkin, Nicole Weis, Mark Francek, Central Michigan University

Primary Subject: **GS, IN**
Interest Level: **EE, LE, MS, HE, CO**
Location: *Gerald R. ford*

We present how to use kinesthetics (body movement) and exercise to teach abstract biology, earth science, chemistry, physics, and math concepts. Come ready to move around! Handouts are provided.

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

Let's Make Some Motors

Michael Suckley, Macomb Community College, Paul Klozik, The MAP's Company

Primary Subject: **GS, PH**
Interest Level: **MS, HS**
Location: *Heritage*

Our world and lives are filled with motors. Electric motors operate through the interaction between a magnetic field and electrical currents. This workshop provides the opportunity to understand how motors work by constructing three uniquely different electric motors. The construction of these motors can be extended into a Challenge or an Engineering Project by inviting students to create a "better" motor that will spin faster, slower or is applied to a specific job using different materials and/or procedures.

Physics Make and Take

Steve Dickie, Divine Child High School, Jim Gell, Plymouth High School

Primary Subject: **PH**
Interest Level: **MS, HS**
Location: *Emerald A*

Participants will have the opportunity to construct several apparatuses for classroom demonstrations of physics phenomena. These apparatuses will be constructed of inexpensive and easily-obtainable materials. Sponsored by the MIAAPT.

STEM Week - A Series of Fortunate Events (In Engineering Practices)

Duha Fahmy, Crescent Academy International, Lena Abedrabbo

Primary Subject: **GS, IS**
Interest Level: **EE, LE, MS**
Location: *Emerald B*

Using hands-on activities, learn how to pique students curiosity, capture their interest, and motivate their continued study of engineering practices through a week of explorations including STEM Family Night, STEM Production, Investigative Reports, Meet the Scientist, and MAD Science Shop. Handouts provided.

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

AP Environmental Science - "Global Sustainability"

Mike Mansour

Primary Subject: **EN**
Interest Level: **MS, HS**
Location: *Pullman*

Americans are seriously ignorant of our global interdependency. Facing the Future, a non-profit organization provides resources and community action opportunities on global issues and sustainability for teachers, students and the public. We will examine these resources for consideration for the future environmental leaders in your classes.

Zombie Science

Kathy Agee, Regional M/S Center @ GVSU, Karen Meyers

Primary Subject: **BI**
Interest Level: **HS**
Location: *Haldane*

Ignite your students' enthusiasm for biology by studying characteristics of zombies! Content addressed will include human physiology and neurology, ecology, bacteriology, immunology, and epidemiology.

Session Key:

Primary Subject Levels:
AS – Assessment/Curriculum
CH – Chemistry
ES – Earth Science
GS – General Science
LT – Literacy
BI – Biology
CO – Computer/Technology
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
V – Vendor Session

Speaker Index

Speaker Index

Interest Levels

Early Elementary

Later Elementary

Interest Levels

Middle School

Interest Levels

Middle School *continued*

High School

Interest Levels

College Level

Interest Levels

College Level *continued*

MTSA Region Directors

Region 1 Director – Donna Hertel
Portage Northern High School
1000 Idaho
Portage, MI 49024
269-323-5412
dhertel@portageps.prg

Region 2 Director – Rose Marie Callahan
Ann Arbor Public Schools
2555 South State Street
Ann Arbor, MI 48104
734-994-1686
callahan@aaps.k12.mi.us

Region 3 Director –
Position currently vacant

Region 4 Director – Susan Tate
5122 Lakeview Street
Montague, MI 49437
231-893-1030
sustate@whitehallschools.net

Region 5 Director – Conni Crittenden
603 Ardson Road
East Lansing, MI 48823
517-655-2174 x5410
crittec@gmail.com

Region 6 Director – Brian Peterson
200 River Place, Unit 35
Detroit, MI 48207
248-726-4200
bpeterson@rochester.k12.mi.us

Region 7 Director – Pete Peterson
4645 Seymour Road
New Era, MI 49446
231-861-4452 x4302
mr.science_guy@yahoo.com

Region 8 Director – David McCloy
1551 Maplewood Drive
Caro, MI 48723
989-673-4528
dmccloy49@gmail.com

Region 9 Director – Jennifer Richmond
5772 Wildcat Road
Croswell, MI 48422
810-657-9318
jlzrichmond@gmail.com

Region 10 Director – Thomas Waclawski
5975 Donn Court
Traverse City, MI 49685
231-943-4804
ka8ylktom@chartermi.net

Region 11 Director –
Position currently vacant

Region 12 Director –
Position currently vacant

Region 13 Director – Carolyn Lowe
530 Old Co. Road 553
Gwinn, MI 49841
989-869-6384
clowe@nmu.edu

Region 14 Director – Lynn Thomas
8949 Stagecoach Ave.
Gladstone, MI 49837
906-786-6521 x1624
lynnthomas@eskymos.com

Award Winners

NOTE: This is only a list of the last five years of award winners. For a full list of the award winners since 1974, contact the MSTA office.

2012

Teacher of Promise	Gary G. Abud
Elementary Science Teacher of the Year	Rebecca Darling
Middle School Science Teacher of the Year	Susan Tate
High School Science Teacher of the Year	Mary Lindow
College Science Teacher of the Year	Dr. Desmond H. Murray
Informal Science Educator	Sarah Holson
Dan Wolz Clean Water Education Grant	Chris Groenhout
PAEMST Finalist	Diane Combi, Richard Tabor
PAEMST Winner	Brian Peterson

2013

Elementary Science Teacher of the Year	Diane Krzyaniak
Middle School Science Teacher of the Year	Monica Harvey
High School Science Teacher of the Year	Erika Fature
College Science Teacher of the Year	Dr. James McDonald
Informal Science Educator	Gerald Pahl
Distinguished Service Award	Roberta Cramer
Dan Wolz Clean Water Education Grant	Dave Chapman
PAEMST Finalist	Diane Combi, Richard Tabor
	Walter Ehrhardt, keith Forton, Mary Jordan McMaster, Kathy Mirakovits, Susan Tate
PAEMST Winner	Pending

2014

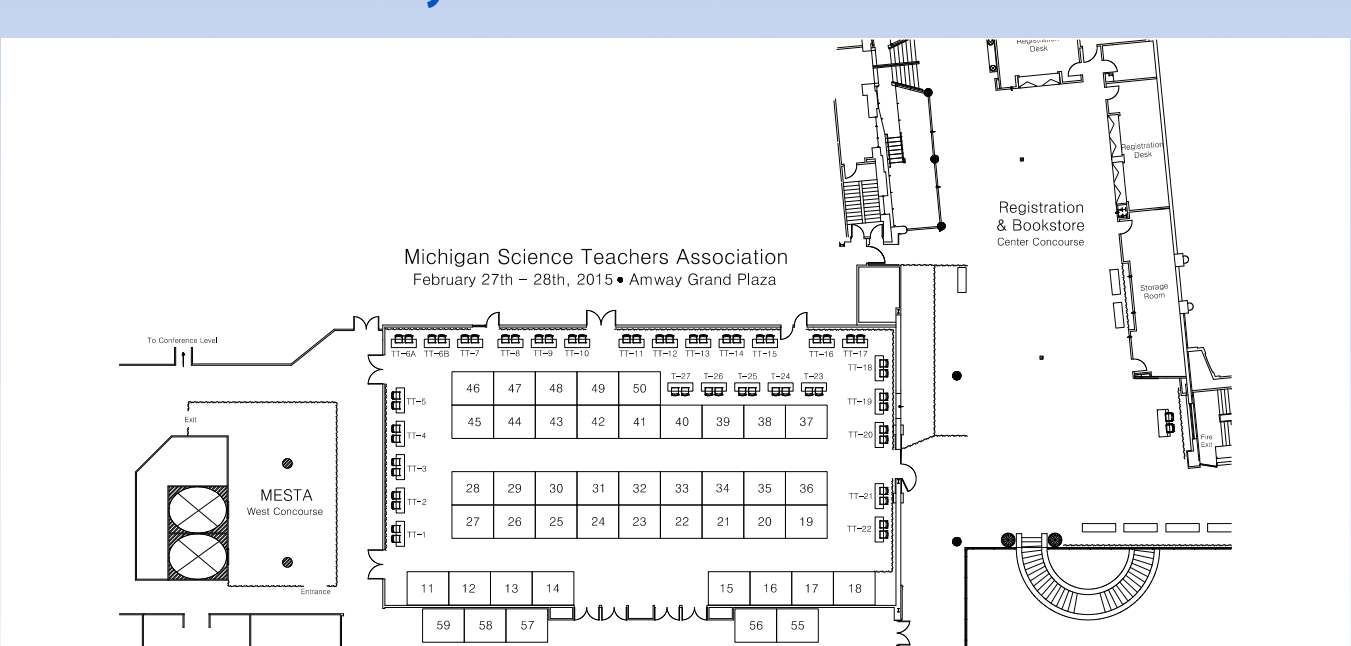
Elementary Science Teacher of the Year	Julee Cowher
Middle School Science Teacher of the Year	Mark Koschmann
High School Science Teacher of the Year	Richard Eberly
College Science Teacher of the Year	Dr. Mary Brown
Informal Science Educator	Paula Gangopadhay
Distinguished Service Award	David McCloy
Distinguished Service Award	Mike Klein
The George G. Mallinson Award	Joseph Krajcik
Dan Wolz Clean Water Education Grant	Donald Hammond/Tammy Coleman
PAEMST Finalist	Gary Koppleman, Bethany Swartz
PAEMST Winner	Pending

2015

Teacher of Promise	Ashley Meyer
Elementary Science Teacher of the Year	Patricia McNinch
Middle School Science Teacher of the Year	Holly McGoran
High School Science Teacher of the Year	Deanna Cullens
College Science Teacher of the Year	Dr. Bradley Ambrose
Administrator of the Year	Greg Johnson
Informal Science Educator	Stephen Stewart
Distinguished Service Award	Betty Crowder
The George G. Mallinson Award	David Bydlowski
Dan Wolz Clean Water Education Grant	John Travis/Josh Nichols

Exhibitor Information

Amway Grand Plaza Hotel - Exhibit Hall



Booth — Company
address
city, state, zip
whone
description

3 — Achieve3000
7191 Hawthrone Circle
Goodrich, MI, 48438
810-285-0858
Achieve3000 is the leader of online differentiated instruction with solutions that dramatically increase reading proficiency for students in grades 2 - 12.

TT 27 — Alma College
614 W. Superior Street
Alma, MI, 48801
989-463-7299
Alma College is committed to academic excellence and development of responsible leaders. Alma's undergraduates thrive on challenging academic programs in a supportive, small-college environment emphasizing active, collaborative learning and close student-faculty interaction.

10 — Ameriprise Financial Services, Inc.
3150 Livernoise, Suite 375
Troy, MI, 48083
248-817-2075
Ameriprise Financial is a full-service financial planning company which serves client's financial needs and helps them feel confident about their future.

11 — Ann Arbor Hands on Museum
220 East Ann Street
Ann Arbor, MI, 48104
734-995-5439
The mission of the Ann Arbor Hands-on Museum is to inspire people to discover the wonder of science, technology, engineering, art, and math.

19, 20 — Arbor Scientific
PO Box 2750
Ann Arbor, MI, 48106
734-477-9370
For 27 years, Arbor Scientific has worked with teachers to develop educational science supplies, instruments, and lab equipment that makes learning fun for students.

4 — Aven, Inc.
4595 Platt Road
Ann Arbor, MI, 48108
734-973-0099
Aven manufactures digital and stereo microscope solutions for educational discovery and lifetime learning.

6 — Backyard Brains
308 1/2 S. State Street, Ste. 35
Ann Arbor, MI, 48104
734-968-7570
We provide affordable neuroscience experiment kits for students of all ages to learn (hands-on) about the brain. Make your STEM lesson plans exciting and unforgettable!

2 — Battle Creek Area Math & Science Center
765 Upton Ave.
Battle Creek, MI, 49015
269-965-9440
BCAMSC a 2009 recipient of the "Education Excellence, Michigan Best" Award, develop and distribute K-7 inquiry focus science units that are aligned with the Michigan Science Content expectations.

TT 13 — Battle Creek Outdoor Education Center
10160 South M 37 Hwy
Dowling, MI, 49050
269-721-8161
The Battle Creek Outdoor Education Center offers hands-on learning experiences not found in a classroom! Day and overnight programs available.

TT 7 — Bay Sail - Appledore Tallships
107 - 5th Street, 2nd Floor
Bay City, MI, 48708
989-895-5193
BaySail is a non-profit environmental education organization offering informal STEM learning opportunities aboard the tall ship Appledore IV in the Great Lakes.

23, 24 — Benz Microscope Optics Center
3980 Varsity Drive
Ann Arbor, MI, 48108
734-994-3880

39 — Bitwixt Software Systems
PO Box 1144
Minnetonka, MN, 55345
952-937-8382
Bitwixt's AtomsmithR software products for Windows, Mac and iPad, integrate middle/high school chemistry, biology, math, language arts, and technology curriculum with interactive 3D molecular visualization technologies.

TT 26 — Camp Invention
3701 Highland Park NW
North Canton, OH, 44720
330-849--1141
Camp Invention partners with school districts to provide a summer day camp experience, focused on STEM enrichment.

57 — Carolina Biological Supply Company
2700 York Road
Burlington, NC, 27215
800-227-1150 x5262
Founded in 1927, Carolina Biological Supply Company has grown to become a worldwide leader in providing top-quality, innovative materials for science and educators. With over 18,000 products, Carolina serves the elementary school through university market with a complete line of living and preserved organisms, lab equipment, furniture, teaching kits, microscopes, books, and models - everything needed to equip a science laboratory or classroom. Carolina is the exclusive supplier of several inquiry-based, STEM programs, including STC kits, a Smithsonian created curriculum. STC kits have always had a strong STEM connection as there are engineering design practices throughout the program. With the recent STC revision, coupled with the solid reseracrh and NSF funding, these kits are designed to satisgy your STEM needs.

25 — Consumers Energy
1 Energy Drive
Jackson, MI, 48911
517-788-1347
Consumers Energy offers FREE safety presentations, lesson plans, games, and MORE to help keep students safe and learn about eneregy.

43 — CPO Science
80 Northwest Blvd.
Nashua, NH, 3063
603-579-3467
Providing high-quality inquiry-based teaching and learning systems for science grades 6-12, as well as lab equipment, supplies, and technology products for science classrooms and labs.

44, 45 — Delta Education
80 Northwest Blvd.
Nashua, NH, 3063
603-579-3467
Providing the best tools for helping students learn. Including our inquiry-based kits and hands-on classroom resources. Now offering FOSS 3rd Edition which addresses the NGSS.

TT 9 — Ecology Center
11730 Maple Road
Milan, MI, 48160
734-709-4947
A Michigan-based nonprofit that works at local, state, and national levels for healthy communities, environmental justice, and sustainable futures through organizing, advocacy, and education.

26, 27 — Educational Innovations, Inc.
5 Francis J. Clarke Circle
Bethel, CT, 6801
203-229-0730
Unique and innovative hands-on science education supplies that challenge the mind and fire the imagination.

continued...

Exhibitor Information

12 — Explore Lab Science Program
3350 North MLK Jr.
Lansing, MI, 48906
517-335-9190

46 — ExploreLearning
110 Avon Street, Suite 300
Charlottesville, VA, 22902
866-882-4141
ExploreLearning Gizmos are interactive online simulations that drive conceptual understanding in Math and Science for students in grades 3-12. Complete with inquiry lessons, assessment and reporting!

37, 38 — Flinn Scientific
770 N. Raddanat Road
Batavia, IL, 60510
800-452-1261
Flinn Scientific is the leader in science and laboratory chemical safety. Flinn develops and offers a full-line of chemistry, biology, physics, life science, earth science, physical science, and safety products.

42 — Frey Scientific
80 Northwest Blvd.
Nashua, NH, 3063
603-579-3467
Providing high-quality inquiry-based teaching and learning systems for science grades 6-12, as well as lab equipment, supplies, and technology products for science classrooms and labs.

33, 34 — Houghton Mifflin Harcourt
3800 Golf Road, Suite 200
Rolling Meadows, IL, 60008
630-467-6406
K-12 educational curricula, technology and professional development.

TT 11 — Inland Seas Education Association
PO Box 218
Suttons Bay, MI, 49682
231-271-3077
Inland Sea is a non-profit organization dedicated to promoting stewardship of the Great Lakes through hands-on Science education aboard a tall ship Schooner.

21 — International Ocean Discovery Program
1201 New York Ave., NW - 4th Floor
Washington , DC, 20005
202-448-1249
IODP is an international collaboration to recover samples and data from the sea floor to study the history and dynamics of Planet Earth.

5 — It's About Time
333 North Bedford Road
Mt. Kisca, NY, 10549
914-273-2233
It's About Time partners with educators to move STEM education forward with student focused, project-based/problem-based programs, with the engineering process embedded throughout.

Imperial Ballroom — Lab-Aids Inc.
1487 Gerrard Ave.
Columbus, OH, 43212
614-210-0610
LAB-AIDS, a catalyst for learning. Our focus is hands-on, research-based, and field-tested programs that build a strong and lasting foundation of knowledge allowing students to take ownership of their learning while supporting teachers in every possible way.

TT 3 — Lawrence Technological University
21000 West 10 Mile Road
Southfield, MI, 48075
248-204-3160
Lawrence Technological University offers over 80 academic programs through colleges of Architecture and Design, Arts and Science, Engineering and Management.

13, 14 — LEGOR Education
20355 Danbury Lane
Harper Woods, MI, 48225
313-647-0043
LEGO Education combines the unique excitement of LEGO bricks with hands-on classroom solutions.

16 — Library of Michigan
702 West Kalamazoo
Lansing, MI, 48915
517-373-4466
The Michigan eLibrary (MeL.org) is our state's digital library. Available 24/7, Mel contains no-cost, reliable, vetted resources for science teachers and their students.

17, 18 — McGraw-Hill Education
8787 Orion Place
Columbus, OH, 43240
614-430-4709
McGraw-Hill Education is a leading global provider of educational materials, information and solutions for the Pre-K through 12th grade Assessment & Instruction, Higher Education, and Professional markets.

59 — MEEMIC Insurance Company
1685 N. Opdyke Road
Auburn Hills, MI, 48326
248-373-5700 x31669
Meemic exclusively supports the educational community with auto, home, boat, and umbrella insurance products through Meemic Insurance Company and grant opportunities through the Meemic foundation.

TT 2 — Metropolitan Detroit Science Teachers Association

PO Box 2279
Detroit, MI, 48202
248-542-1781

MDSTA, the oldest science teacher organization in Michigan, dedicated to promoting excellence and innovation to educators in southeast Michigan counties since 1940.

TT 1 — MI Antibiotic Resistance Reduction (MARR) Coalition

6152 E. Longview Drive
East Lansing, MI, 48823
517-679-5345

The MARR Coalition seeks to improve the appropriate use of antibiotics and reduce antimicrobial resistance in Michigan, nationally, and internationally through collaborative efforts with academic, community, government, labor and industry partners.

TT 20 — Michigan Ag In The Classroom

7373 W. Saginaw Hwy.
Lansing, MI, 48909
517-323-7000 x3213

Michigan Farm Bureau is a non-profit that coordinates Michigan Ag in the Classroom; an entity that develops and provides agriculturally focused educational materials for K-12.

TT 23 — Michigan Alliance of Environmental & Outdoor Education

PO Box 271
Birmingham, MI, 48009
248-646-6142

The Michigan Alliance for Environmental and Outdoor Education (MAEOE) is Michigan's key professional organization for both formal and nonformal educators working in the fields EE and OE. Through networking, publications, grants, and our annual conference, members become part of an informed community who share the goal of "promoting environmental literacy through education." Find out more by visiting our booth (T19) or our website: www.maeoe.com

TT 14 — Michigan Department of Environmental Quality

525 West Allegan Street
Lansing, MI, 48933
517-284-6867

The Michigan Department of Environmental Quality's mission is to inform and educate the public on environmental issues.

50 — Michigan DNR

530 West Allegan - DNR Mason Bldg.
Lansing, MI, 48933
517-373-7306

The Michigan Department of Natural Resources (DNR) offers education programs statewide and encourages education to get their students outside.

32 — Michigan Mathematics & Science Centers Network

12620 Portsmouth Court
Plymouht, MI, 48170
734-612-8780

Michigan Mathematics and Science Centers Network provides professional learning experiences for all Michigan teachers.

41 — Michigan Nature Association

2310 Science Pkwy., Suite 100
Okemos, MI, 48864
866-223-2231

The Michigan Nature Association acquires land to protect Michigan's rare, threatened and endangered species and carries on a program of natural history and conservation education.

TT 24 — Michigan Project Learning Tree

9643 Bellevue Road
Battle Creek, MI, 49014
248-672-0682

PLT empowers educators to inspire youth through an award winning environmental education program. www.michiganplt.org

TT 15 — Michigan Science Center

5020 John R Street
Detroit, MI, 48202
313-577-8400

The Michigan Science Center is a hands-on museum, offering programs that inspire everyone to explore and appreciate STEM.

TT 10 — Michigan Sea Grant

520 E. Liberty, Suite 310
Ann Arbor, MI, 48104
734-647-0767

Michigan Sea Grant supports Great Lakes research outreach and education. Attend presentations about resources for your classroom and see our booth!

22 — Michigan State University

354 Farm Lane, Room 116
East Lansing, MI, 48824
517-355-1708

TT 5 — Michigan STEM Partnership

PO Boc 129
Cedarville, MI, 49719
906-748-0364

The Michigan STEM Partnership is a public-private collaborative focused on creating a workplace skilled in STEM related fields, problem solving, innovation and creativity.

TT 6 — Michigan Tech

1400 Townsend Drive
Houghton, MI, 49931
906-487-2263

Michigan Tech offers a masters degree in Applied Science Education and summer professional development courses for science and mathematics teachers.

continued...

Exhibitor Information

TT 6 — Mi-STAR (Michigan Science Teaching and Assessment Reform)

1400 Townsend Drive
Houghton, MI, 49931
906-487-2263

Mi-STAR is a collaborative project of Michigan Tech, other universities, and partner school districts to develop integrated science curriculum for middle school.

TT 16 — MSU College of Osteopathic Medicine

C103 East Fee Hall
East Lansing, MI, 48824
517-353-8799

MSU College of Osteopathic Medicine; Educating Michigan's future physicians; Promoting holistic healthcare through the Science of Medicine, the Art of Caring, and the Power of Touch.

40 — NASCO

901 Janesville Ave.
Fort Atkinson, WI, 53538
920-563-2446

Nasco specializes in elementary and secondary science materials, kits, live and preserved biologicals, and lab equipment. We focus on quality products. Please visit us at www.eNasco.com or call 800-558-9595.

TT 8 — National Energy Foundation

1014 Lydia Drive
St. Joseph, MI, 49085
269-208-0370

The National Energy Foundation is dedicated to cultivating and promoting an energy literate society through educational outreach in collaboration with state educators, funded by local utilities.

28, 29 — National Geographic Learning Cengage Learning

37277 Thnbark Street
Wayne, MI, 48184
248-561-7830

National Geographic Learning, a part of Cengage Learning, is a leading educational publisher of high quality PreK-12 instructional solutions for Reading, Writing, Science, Social Studies, ESL/ELD, and Spanish/Dual Language. At National Geographic Learning, we believe that an engaged and motivated learner will be a successful one, and we design our materials to motivate. We believe that learning can be exciting, inspiring, and transformational.

Visit our booth (#28 & 29) at this year's conference for FREE samples of our popular resources!

Center Councourse — NSTA Press

365 Rosewood Ave.
East Grand Rapids, MI, 49506
502-262-8118616-450-0122

NSTA Publishes outstanding Science trade books for students K-12. On display are recent and popular titles.

TT 18 — Organization for Bat Conservation

39221 Woodward Ave.
Bloomfield Hills, MI, 48303
248-645-3232

The Organization for Bat Conservation is a non-profit dedicated to teaching people about bats and other nocturnal animals, and inspiring people to protect the environment.

15 — PASCO scientific

10101 Foothills Blvd.
Roseville, CA, 95747
800-772-8700 x230

Help students "think science" with PASCO Scientific's award-winning, state-of-the-art science learning environment. Integrating the latest standards-based content, probeware, and data collection and analysis software, PASCO science solutions are easy to use, cost-effective, and work on your devices (BYOD) including iPad®, Chromebook™, Android™ tablets, Mac® and Windows® computers, and netbooks.

8, 9 — Pearson

326 Edison Blvd.
Port Huron, MI, 48060
248-420-2894

TT 17 — People for the Ethical Treatment of Animals

307 Hydrangea Stgreet
Summerville, SC, 29483
843-452-4502

People for the Ethical Treatment of Animals (PETA) is the largest animal rights organization in the world, with more than 3 million members and supporters.

48 — PLASTIVANTM

42 N. Biggs Street
Belleville, MI, 48111
734-612-7783

The PlastivanTM program travels to schools educating students about the chemistry, history, processing, manufacturing, sustainability, and applications of plastics.

30 — Potter Park Zoo

1301 S. Pennsylvania Ave.
Lansing, MI, 48912
517-342-2714

Potter Park Zoo is an escape to nature in the heart of Michigan's capital city. Open year round and home to over 500 animals!

7 — Project Lead The Way, Inc.
3939 Priority Way, South Drive, St. 400
Indianapolis, IN, 46240
317-669-0200
Project Lead The Way (PLTW) is the nation's leading provider of K-12 STEM programs. Our world-class curriculum and high-quality teacher professional development model, combined with an engaged network of educators and corporate and community partners, help students develop the skills necessary to succeed in our global economy.

35 — Rent A Rambling Naturalist
1811 West C Ave.
Kalamazoo, MI, 49009
269-343-1886
Embark on a journey through Natural Wonders exploring natural science and history. Learn to live in harmony with the earth and its diverse ecosytems.

47 — Scholastic Library Publishing
35460 Heritage Lane
Farmington, MI, 48335
248-474-6527
Scholastic Library Publishing Digital is a leading digital publisher of fiction and non-fiction materials. Live demonstrations of Popular Science and Amazing Animals from Grolier Online™, and new STEM online resource: ScienceFLIX during MSTA.

36 — Schoolmasters Science
745 State Circle - PO Box 1941
Ann Arbor, MI, 48106
734-761-5173
Your local source for science equipment and teaching aids since 1963. 100% satisfaction guaranteed!

TT 28 — Spring Arbor University
17327 W Grant
Goodyear, MI, 85338
602-677-7789

TT 21, TT 22 — Square One Education Network
670 Hillcliff Drive
Waterford, MI, 48328
248-736-7537
The Square One Education Network is a nonprofit educational organization. Our purpose is to create and fund powerful, relevant experiences for K-12 teachers and students that creatively integrate science, technology, engineering and mathematics (STEM) using best practices supported instruction through unique project designs.

31 — TCI
PO Box 1327
Rancho Cordova, CA, 95741
800-497-6138
TCI is a K-12 publishing company created by teachers, for teachers. We believe the best teaching marries great content, meaningful technology, and classroom experiences.

49 — The Air Zoo
6151 Portage Road
Portage, MI, 49002
269-382-6555
The Air Zoo is an aerospace and science education center with aviation themed experiences, flight simulators, and hands-on STEAM education programs.

TT 4 — The Mallinson Institute for Science Education
193 W. Michigan Ave.
Kalamazoo, MI, 49008
269-387-5398
Complete your MA in Science Education online with nationally recognized faculty. www.wmich.edu/science

55, 56 — The MarkerBoard People
1611 North Grand River
Lansing, MI, 48906
800-379-3727
Dry Erase Boards, marker, erasers and accessories. Perfect for Science, Graphing and MORE!!!

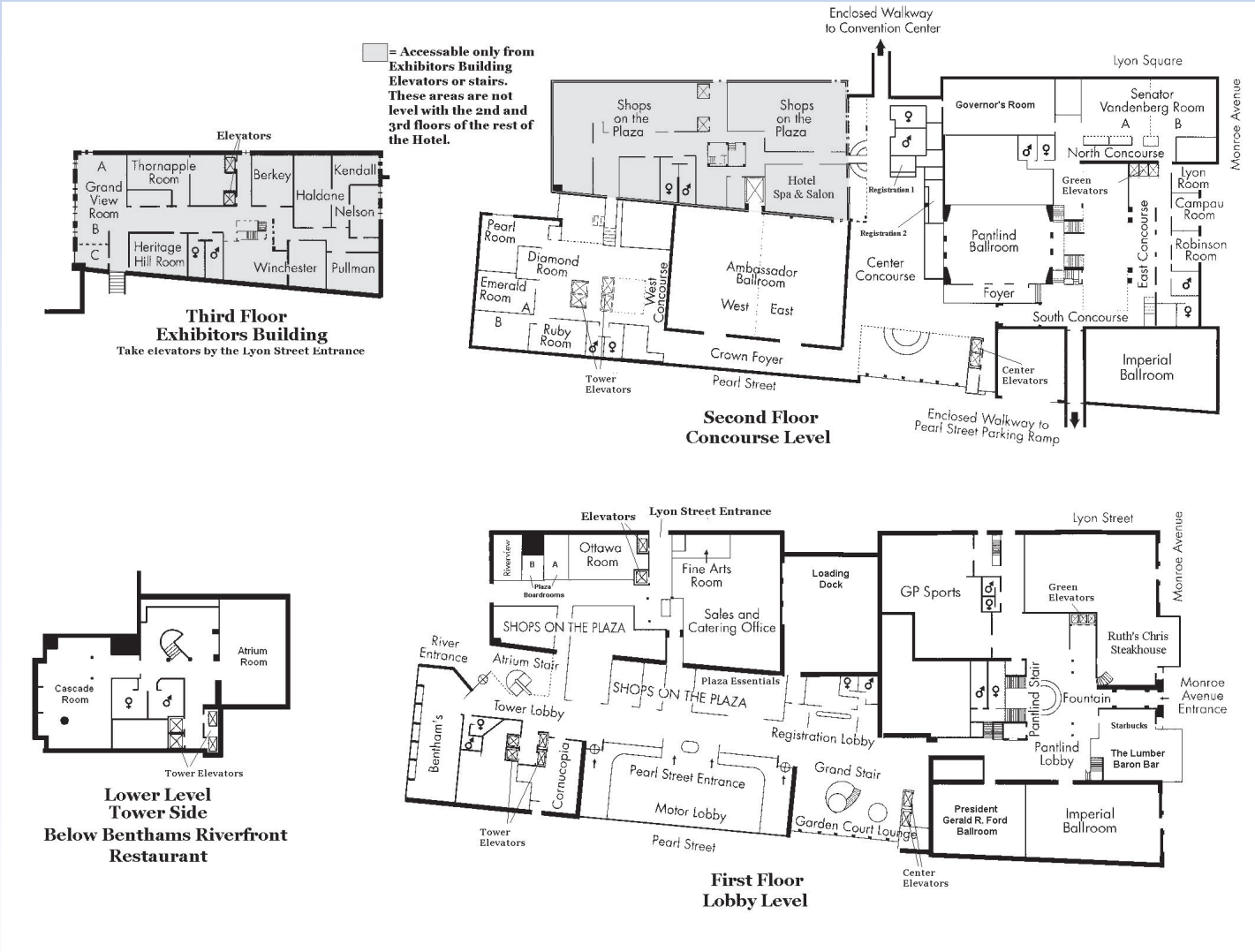
1 — The MiniOne Electrophoresis
7738 Arjons Drive
San Diego, CA, 92126
858-684-3190
Safe affordable electrophoresis in 20 minutes. The MiniOne and MiniLabs are your solution to teaching biotechnology.

TT 25 — TRACKS Magazine
211 Wood
Lansing, MI, 48912
517-346-6466
TRACKS is a science publication focused on conservation and wildlife. It covers a different Michigan animal each month and is a fantastic classroom tool!

58 — Vernier Software & Technology
13979 SW Millikan Way
Beaverton, OR, 97005
503-277-2299
Vernier creates easy-to-use and affordable science interfaces, sensors, and graphig/analysis software. Vernier's technology-based solutions enhance STEM education, increase learning, and build students' critical thinking skills.

TT 12 — Youth Education Committee American Water Works Association and Michigan Water Environment Association
PO Box 397
Bath, MI, 48808
517-641-7377
AWWA and MWEA members are dedicated to improving, preserving, restoring, and enhancing Michigan's waters and water supply as well as educating others to do the same.

Amway Grand Plaza Hotel Map




Meemic
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MEEMICFOUNDATION.COM
AUTO, HOME, BOAT, UMBRELLA INSURANCE THROUGH MEEMIC INSURANCE COMPANY
GRANT OPPORTUNITIES FOR YOUR CLASSROOM THROUGH THE MEEMIC FOUNDATION

Help Your Students Learn to Rely on Science

As popular media teaches consumers about nutrition, UDIM is here to help teach your students the facts. We can be your resource for overall wellness, physical activity, and dairy nutrition resources. We are dedicated to promoting optimal health through leadership in nutrition research and education by encouraging food choices in accordance with scientific recommendations.

MYTH ***Many different foods contain calcium, so there is no need to drink milk.***

FACTS[1]

- While many foods do contain some calcium, milk and milk products are the best sources of it and contain it in the greatest amounts.
- To provide the same amount of calcium found in one 8-ounce cup of milk (300mg) you would need to eat 3 ½ cups of broccoli, 1 cup of almonds, 10 cups of spinach, or 3 ounces of sardines with bones.
- The calcium in milk and milk products is easily absorbed and used by the body. Other foods often contain substances called oxalate, which bind calcium and make it difficult for the body to use.

MYTH ***Rice or almond milk is a good substitute for cow's milk.***

FACTS[2]

- Rice, almond, and soy beverages actually come from plants. These drinks are often fortified with a few key nutrients, but lack many of the vitamins and minerals found naturally in cow's milk.
- Not only is cow's milk packed with calcium, it contains eight other essential nutrients, including vitamin D, vitamin A, and potassium.
- Milk is a source of high quality protein, providing 8 grams of protein per cup. Alternative beverages, such as almond, coconut, and rice, have only a small amount of protein.

MYTH ***All milk contains antibiotics, except organic milk.***

FACTS[3]

- Milk produced on conventional dairy farms is strictly tested, both on the farm and at the processing plant. Any milk that tests positive for antibiotics at any point is disposed of immediately and does not get into the food supply.
- Sometimes dairy cows require antibiotics to treat an illness. Milk from a cow being treated with antibiotics is separated from other cows' milk on the farm. The milk from this cow is allowed to be sold only after the antibiotics have cleared the cow's system.

References

1. Heaney, RP et al. *Nutrition Today*. 2005; 40(1): 39-44
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