CELEBRATE

MICHIGAN SCIENCE

MSTA Making a Difference for 65 Years!

CONFERENCE PROGRAM

MARCH 2-3, 2018 • RADISSON HOTEL AND LANSING CENTER • LANSING, MICHIGAN

elevate science ©2019

littleBits and Pearson have partnered to revolutionize STEM Instruction!

New standards call for a new way to learn. ***Elevate Science ©2019*** and ***Miller & Levine Biology ©2019*** empower students to become more self-directed, curious, and accountable with a new instructional learning model that focuses on three-dimensional learning.

Built to match the expectations of the NGSS*, these programs will meet the way you teach, and the way your students learn!

Pearson's ***Elevate Science ©2019*** is a fully integrated 3-Dimensional program rooted in project-based activities for every level of instruction.

- ***BRAND NEW*** and built from the ground up to meet the expectations of phenomena-based science instruction.
- Engineering and STEM activities focused on real-world problems and applications
- A project-based/hands-on approach to teaching and learning, balanced with interactive media and a consumable student worktext

Look at What's New!

Miller & Levine Biology

The new ***Miller & Levine Biology*** is here! Developed by preeminent biologists and passionate educators, Ken Miller and Joe Levine, this blended print and digital curriculum immerses students in biological inquiry. Students think, investigate, and talk about biology. They interact with natural phenomena through problem-based learning, research, and lab experiments.

Pearson
PearsonSchool.com/Science
800-848-9500

Stop by the Pearson booth or contact your Representative to learn more!
PearsonSchool.com/find-my-rep

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A Message from the 2018 Conference Committee Chairs

Dear Conference Attendees,

It is with great pleasure that MSTA welcomes you to the 2018 Annual Conference: "***Celebrate Michigan Science!***", at the Lansing Center in Lansing. We are delighted to be back in the capital city. The MSTA Conference is the "go to" destination for cutting-edge information to translate the new standards into your classroom instruction. We have over 250 sessions being offered this year, spanning levels from early elementary through college, so there is something for everyone. The MSTA Conference is also a place where educators meet to share ideas, learn new strategies, and network. Here's a bit of what awaits you:

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

There will be a movie presentation featuring BioInteractive videos from the Howard Hughes Medical Institute at 5:00-6:00 p.m. Friday, in the Lansing Center Ballrooms 1 and 3. Popcorn and a cash bar will be available.

Join this year's MSTA award winners at the Awards Banquet in the Lansing Center Ballrooms 2 and 4 at 6:30 p.m. Be awed by these inspirational teachers and hear what they are doing in their classrooms. A reception, located in the River Street Pub at 5:30 p.m., will precede the banquet.

Come to the "Muffins with Members" session in the Lansing Center- Room 101 on Saturday at 8 a.m. Consider the next steps needed regarding the new Michigan science standards. Tell us what you need from your professional organization, meet your Regional Directors, and learn more about the current work of MSTA . This is a chance to share your needs and ideas with the board.

We welcome our keynote speaker this year. ***Christine Royce*** will be presenting "***The Voice of the Teacher For Students, For Science, For Our Futures***" on **Friday, March 1, 2018 from 11:00-11:45 am in Lansing Center - Banquet 1**.

Visit the exhibit hall to see the largest concentration of science educational materials available anywhere in the state. Visit the MSTA booth to enter one of the raffle drawings for giveaways from the conference exhibitors. New this year- try out our food truck scene at Cooley Law School Stadium next door to the Lansing Center on Friday.

We want to see you make this year's MSTA Conference your destination and help us, "Celebrate Michigan Science!"

The 2018 Conference Committee Chairs:

Paul Drummond	**Marlenn Maicki**	**Karen Kelly**
Mike Klein	**Rich Bachlor**	**Liz Larwa**
Robby Cramer	**Conni Crittenden**	**Jen Arnswald**
Betty Crowder	**Sandra Yarma**	
Crystal Brown	**Yonee Kuiphoff**	

Message from the Executive Directors

Welcome to the 65th MSTA Annual State Science Conference! On behalf of the MSTA Board of Directors and the 2018 Conference Committee, we are happy you made the commitment to attend Michigan's premier science education conference. The theme of our conference is "***Celebrate Michigan Science***".

Michigan is two years into implementation of the new Michigan Science Standards (MSS). We have designed a conference that enables science educators across our state to share strategies that support their students. MSTA has encouraged speakers to consider how they are using Phenomena and Storylines to construct their lessons based on MSS.

We have brought Featured Speakers, Samantha Johnson and Jim Clark, Master classroom teachers from California. Four and a half years into their NGSS implementation, these California state trainers will share their strategies for classroom implementation of these standards. Look for their Friday morning workshops on **How to See What Your Students Are Thinking: Student Modeling and the NGSS** followed by **What Did They Say? Student Discourse and the NGSS**. Consider using your Friday afternoon exploring aspects of **Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom**.

This year, our MSTA Conference keynote address will be presented on Friday by Christine Royce, NSTA President Elect . Her message is titled, ***The Voice of the Teacher For Students, For Science, For Our Futures.*** We believe you will be inspired by her thoughts: "Using **OUR** 'teacher's voice' is exactly what is needed when we talk with stakeholders about the importance of scientific literacy, utilizing three-dimensional teaching in our classrooms, and the impact that STEM fields will have on future employment opportunities."

We encourage you to seek out sessions that will enable you to uncover ideas and resources to take back to your classroom, school, and or district.

MSTA Executive Directors

Robby Cramer

Betty Crowder

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Conference Planning Committee

Jen Arnswald
Richard Bacolor
Crystal Brown
Yonee' Bryant-Kuiphoff
Tony Campana
Robby Cramer
Conni Crittenden, Conference Committee Chair
Betty Crowder
Paul Drummond
Karen Kelly
Michael Klein
Liz Larwa
Marlenn Maicki
Pete Peterson
Sandra Yarema

Conference At-A-Glance

Friday, March 2, 2018

7:00 a.m. – 7:00 p.m.
Pre-Registration
Location: Center Concourse, Lansing Center

7:30 a.m. – 4:00 p.m.
On-site Registration/Speaker Check-In/Help Desk
Location: Center Concourse, Lansing Center

7:30 a.m. – 5:15 p.m.
SCECHs Desk
Location: Center Concourse, Lansing Center

8:00 a.m. – 4:45 p.m.
Sessions
Radisson Hotel and Lansing Center

9:00 a.m. – 5:00 p.m.
EXHIBITS
Location: Lansing Center, Exhibit Hall A

11:00 a.m. – 11:45 a.m.
KEYNOTE SESSION
The Voice of the Teacher - For Students, For Science, For Our Futures - KEYNOTE

Christine Anne Royce, Ed.D., Shippensburg University, NSTA President Elect
Location: Capitol 2

11:30 a.m. – 3:00 p.m.
RAFFLE items!
Make sure to put your raffle ticket next to the item you want to win! Items in the raffle are displayed at the MSTA booth. Raffle starts at 3:00!

1:00 p.m. – 2:45 p.m.
KEYNOTE SESSION
Taking Flight with Children's Literature

Christine Anne Royce, Ed.D., Shippensburg University, NSTA President Elect; Dr. Steve Rich, University of West Virginia
Location: Banquet 1

3:00 p.m.
Friday Raffle Tickets...
Can be placed at the MSTA store until 3:00pm. Winner will be drawn at 3:00pm — need not be present to win. Winners will be texted and can pick up their prizes until 12 noon on Saturday.

3:00p.m. - 3:45 p.m.
Explore Hands-On Science For Elementary Students at Impressions 5!

4:30 p.m.
MESTA Rock Raffle!
Location: Lansing Center, Exhibit Hall A

4:45 p.m. – 5:00 p.m.
Meet and Greet YOUR Region Director!
See who from your region received this year's conference scholarships, and pick up your gift from your Region Director!
Location: Lansing Center, Banquets 1 & 3

5:00 p.m.
NIGHT AT THE MOVIES!
Come see a movie presentation featuring BioInteractive videos! Enjoy refreshments and the movies provided by the Howard Hughes Medical Institute!
Location: Lansing Center, Banquets 1 & 3

Awards Reception
Location: Lansing Center, Pub Area

6:30 p.m.
Awards Program
Location: Lansing Center, Banquets 2 & 4

Saturday, March 3, 2018

7:00 a.m. – 1:00 p.m.
Pre-Registration
Location: Center Concourse, Lansing Center

7:30 a.m. – Noon
On-site Registration/Speaker Check-in
Location: Center Concourse, Lansing Center

7:30 a.m. – 3:15 p.m.
SCECHs Desk
Location: Center Concourse, Lansing Center

8:00 a.m. – 8:45 a.m.
MUFFINS FOR MEMBERS!
Consider the next steps needed regarding the new Science standards. What do you need from your professional organization? Let us know!
Location: LC - 101

8:00 a.m. – 2:45 p.m.
Sessions
Radisson Hotel and Lansing Center

8:00 a.m. – Noon
RAFFLE items!
Saturday raffle tickets can be placed at the MSTA bookstore until 12 noon. Winner will be drawn at 12 noon. You MUST be present to win. If Winners are not present, a new winner will be drawn immediately.

Noon
MESTA Rock Raffle!

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

MSTA Board of Directors

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President

Richard Bacolor
Technology Director/ Science Matters Representative

Rachel Badanowski
Region 2 Director

Erica Ballard
MDSTA Liasion

Linda Bradlin
Region 3 Director

Crystal Brown
Elementary Director

Yonee' Bryant-Kuiphoff
Middle School Director

Chris Chopp
Journal Editor

Lu Anne Clark
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Laura Ritter
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Michael Sampson
SCHECH's Coordinator

Tamara Smolek
MDE Assessment Representative

Chris Standerford
Region 13 Director

Susan Tate
Region 4 Director

Lynn Thomas
Region 14 Director

Sandra Yarema
Secretary

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
2016/18____Jennifer Arnswald

MESTA

Lansing Center, Exhibit Hall A

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

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

Rock Raffle –Jay Sinclair
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 @ 4:15 p.m. and Saturday @ Noon (MUST be present to win).

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

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

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

KEYNOTE SESSIONS

Friday, March 2, 2018

11:00 a.m. – 11:45 a.m.

The Voice of the Teacher - For Students, For Science, For Our Futures

Christine Anne Royce, Ed.D., Shippensburg University, NSTA President Elect

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Capitol 2*

As we look towards our futures, there is no doubt that we as teachers have a very strong role in shaping what is to come for our students. The challenge before us lies with the multitude of stakeholders who voice their thoughts on what our students need in order to be successful which then impacts our daily classrooms. "Don't Make Me Use My Teacher's Voice" is a phrase that many a teacher has used in both seriousness, as well as, lightheartedness in their career. However, "using OUR teacher's voice" is exactly what is needed when we talk with the same stakeholders about the importance of scientific literacy, utilizing three-dimensional teaching in our classrooms, and the impact that STEM fields will have on future employment opportunities. Examples of being advocates for our students, for science, and for our futures will be highlighted as we consider how we deliver the message through tenacity, leadership, and collaboration.

Friday, March 2, 2018

1:00 p.m. – 2:45 p.m.

Taking Flight with Children's Literature

Christine Anne Royce, Ed.D., Shippensburg University, NSTA President Elect; Dr. Steve Rich, University of West Virginia

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 1*

Regardless of whether science is taught in a classroom, at home, or outdoors, in a formal or informal setting, a trade book can be a source of inspiration, curiosity or information for children. A good story can serve as a catalyst for future questions, ideas, and learning opportunities. With that in mind, teachers can capitalize on the use of trade books by maximizing instructional time and allowing trade books to serve as a bridge between many different skill and content areas. Join us as we examine strategies, engage in activities, share trade books, and provide examples of varying ways to integrate science content with children's trade books. Throughout the session we will connect some featured and favorite trade books to certain literacy strategies in order to help students learn science content.

Sponsors and Advertisers

THANK YOU to the following! They have advertised, provided a Bag Insert, provided the bags for attendees, supported our "Sponsor-a-Teacher" program, provided a raffle item, or help with funds to help off-set expenses for this year's conference! Some are here exhibiting, make sure to stop by and say "thanks"! (Booth numbers indicated by company name).

Activate Learning (Lansing Center - Room 103)

Amplify (300, 302)

Delta Education (404)

ExploreLearning (227)

Howard Hughes Medical Institute

IQhub (TT8)

Lawrence Tech University (TT25)

Learning A - Z (211)

MEEMIC Insurance (221)

Merling Entertainment, LLC (203, 205)

Michigan Chemistry Council (TT41)

Michigan Nature Center (TT27)

Michigan State University Science

Organization for Bat Conservation (TT5)

Pearson (204, 206)

Potter Park Zoo (208)

Wayne State University (218, 220)

- College of Education

- College of Liberal Arts & Sciences

Worldstrides

Lansing Center Rooms:

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Meeting Room 102
Meeting Room 103
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Meeting Room 205
Governor
Banquet 1
Banquet 2
Banquet 3
Banquet 4
Banquet 5
Banquet 6
Banquet 7
Banquet 8

Radisson Rooms:

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Capital 2
Capital 3
Capital 4
Michigan 1
Michigan 2
Michigan 3
Regency 1
Recengy 2

Schedule Your Day - Friday LANSING CENTER

	8:00 AM	9:00 AM	10:00 AM	11:00 AM	Lunc
101	Science Talk…MS	Making Sense of Science Through Notebooks…MS	It's Phenomenal!...EE, LE	Science Talk…EE, LE	
102	Claims, Evidence, and Reasoning in Action…EE, LE, MS		Virtual Field Trips with Google Expeditions…EE, LE, MS, HS, CO	Lesson Planning with NGSS: The 5E Instructional Model…EE, LE, MS, HS	
103	Incorporating STEM into the Classroom…HS	Structuring Discussion to Be Equitable and Rigorous…MS		A Focus on Modeling in the Phenomenon-Based Classroom…MS	
104	Mastering the Chemical Formula…HS		One in a Million…HS		
201	An Administrators Guide to the New Michigan Science Standards…EE, LE	Incorporating Science Practices into STEM...	Super Protection from Superbugs…MS	What the Heck Happened?	
202	Teaching about Floods Using Extreme Weather Events…MS, HS, CO	Science Talks…MS, HS		A Long Walk to Water - A Cross-Curricular Unit…MS	
203	The Lake Michigan Food Web: What Did the Lampreys Do?...MS, HS	Becoming a Certified Environmental Educator…EE, LE, MS, HS CO		Forestry and Forest Ecology for Elementary and Middle School…LE, MS	
204	Making Grades More Meaningful…MS, HS	Using Wildlife CSI to Teach Claim, Evidence, Reasoning…LE, MS, HS	Observe, Investigate and Enjoy! A Tour of Free, NGSS Aligned…LE, MS, HS	What's in the Woods?...EE, LE, MS, HS, CO	
205	Digital Data Nuggets - Real Research, Real Data, Real Classrooms…MS, HS, CO		Integrating Technology into Science-Based STEM with the 5E…LE, MS		
Governor's	Yeah, Buoy! (Buoyancy Demos)…LE, MS, HS	Hands-On With Virtual Nuclear Research…MS, HS		Stop Creating Lesson Plans: Start Creating Learning Experiences…EE, LE, MS, HS	
Banquet 1	Creating 3D Learning: Modeling, Argumentation and Explanation …EE, LE, MS, HS, CO	Aerial Exploration of Environmental Study Sites…MS, HS	Creating System Thinkers - Transforming Student Illustrations…EE, LE, MS, HS, CO	AP Computer Science Principles ...MS, HS …	
Banquet 2	Supporting Early Literacy Development and the Michigan Science Standards...EE, LE	The Coaching Connection: Supporting Best Practice Science Instruction…EE, LE, MS, HS		Promoting Classroom Discussions with Talk Moves…MS, HS	
Banquet 3	How to See What Your Students are Thinking: Student Modeling and the NGSS…EE, LE, MS, HS		What did they say? Student Discourse and the NGSS…EE, LE, MS, HS		
Banquet 4	Phenomenal Unit Plan…HS	Weaving Stories Throughout Your Biology Course…MS, HS, CO	Protein Synthesis and Mutations with Magnetic Beads…HS		
Banquet 5	Health in Our Hands: Using Online Simulations to Explain Phenomena…MS	Health in Our Hands: A Free Life Science Middle School Curriculum…MS	Phenomenal Tools for MSS Chemistry and Physics Instruction and Assessment…HS		
Banquet 6	Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades 3-5		Let's Debate…HS	"Ready Set Go" STEM…EE, LE, MS	
Banquet 7	A Mi-STAR Lesson: Patterns and Cause & Effect…MS		A Mi-STAR Lesson: Comparing Engineering Solutions with a Decision Matrix…MS		
Banquet 8	Building a Summer Science Field course…HS	Merging High School Geology with NGSS…HS, CO	Electromagnetic Spectrum & Radioactivity…MS, HS, CO	A Teacher Friendly Version of the Stratigraphic Column of Michigan…MS, HS, CO	

= Vendor = Keynote = MI M/S CENTER NETWORK STRAND = ELEMENTARY STRAND
= MSELA STRAND = CREATE FOR STEM STRAND = MCSS STRAND

Schedule Your Day - Friday LANSING CENTER

h	1:00 PM	2:00 PM	3:00 PM	4:00 PM
	Family Engineering & Design Thinking Night…EE	Effectively Engaging Youth in the Process of Science…EE, LE, MS, HS, CO		Teaching NGSS with S.M.A.R.T Lessons…EE
	Teaching Science: The Next Generation…EE, LE, MS, HS	Student Drivers - Driving Question Boards Empower Students to Figure…EE, LE, MS, HS	Making It Real... Cheap!!...LE, MS	Water Quality: Developing Citizen Scientists…MS
	Moving from Learning Read and Write to Reading and Writing to Learn…MS	Project-Based Inquiry Science™ (PBIS): Creating…MS	Video Storylines in the Science Classroom…LE, MS, HS	ECHO: Distance Learning at the MiSci…EE, LE
	Photosynthesis and Respiration Shuffle…HS		Cell Differentiation and Gene Expression…HS	
	3 Dimensional Learning in Middle School Modeling Instruction…MS	Bat Conservation in Your Classroom	Phenomenon-First Examples in the Classroom…MS, HS	Doing, Thinking, Understanding: Science Performance Assessments…LE, MS, HS
	Partnering with the Michigan Nature Association…HS	Teaching with the Big Ideas in Mind…MS		Spandex of Gravity - Modeling the Very Fabric of Space and Time!...MS
	Sensory Activities for Early Learners: Lessons You Can Use Tomorrow!...EE	Thematic Science Fairs - Using Scientific Inquiry…EE, LE, MS	Microbes Ate My Underwear!...LE, MS, HS	Solar Panels and Pool Covers: Revving UP Biology…HS
	Michigan Predator Prey Project…LE, MS, HS, CO	Salmon in YOUR Classroom…LE, MS, HS	Invaders in Your Classroom: Resource Kits to Teach About Aquatic Invasives…LE, MS, HS	Ignite Your Classroom With Digital Storytelling (Featuring GoPro Cameras)…LE. MS, HS, CO
	Integrating Chromebooks with Vernier Technology…LE, MS, HS	Making Science Real with Problem Based Learing... EE, LE, MS	One Crime Scene; 100 Students! Oh my!...LE, MS, HS, CO	Science and Engineering Practices in the NGSS…EE, LE
	May the Force Be With You…MS, HS		What Does That Graph Show Me?... MS, HS	Physical Science Phenomena for Middle School…MS
	Taking Flight with Children's Literature…EE, LE			
	District Science Leader Round-table: High School Course Sequence Sharing…HS	Curriculum Review for 3-Dimensions…EE, LE, MS, HS	Tools for Thinking About Assessment For The New MSS - MSELA…MS, HS	
	Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom…EE, LE, MS, HS			Community Connection Activities in Biology Classrooms…HS
	Mathematizing Biodiversity: Using Species Accumlation Curves to Measure Biodiversity…MS, HS, CO		Boatload of Biology…MS, HS	
	Health in Our Hands: Using the Driving Question Board to Explain Phenomena…MS	Making Sense of Phenomena by Using a Free Online Modeling Tool…MS, HS		Focus on Figuring Out – Grade 4 (Multiple Literacies in Project-Based Learning)
	Curriculum Connections - ELA & Science in Elementary…EE	Successful STEM Techniques in Elementary Classrooms…EE, LE	Get Students Asking THEIR OWN Questions….EE, LE	Zero to STEM in 60 minutes!...EE
	A Mi-STAR Lesson: Got a Problem? Yo, I'll Solve It!...MS		Make Your K-5 Science Phenomenal! An Introduction to…EE, LE	A New Formula? PASCO + Curriculum = PASCO Education...
	Aquaponics in the Classroom…MS, HS	Teaching Students about the Brain: How I've Learned to View Neurodiversity…HS	IBN-Drawing and Writing to Learn Science…LE, MS, HS	Medicines and Me-Developing a New Flu Prevention Drug…MS, HS

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

Schedule Your Day - Friday RADISSON HOTEL

	8:00 AM	9:00 AM	10:00 AM	11:00 AM	lunch
Captial 1	Earth System Science Resources to Use on Monday!...EE, LE, MS, HS		Secondary Teachers of Science as Agents of Change…HS, CO	#gettingsciencedone -- Citizen Science…LE, MS, HS	
Capital 2	Teaching Science When You Don't Know Diddly-Squat…EE, LE, MS	Seeing is Believing: Physics Demonstrations to Energize Your Classroom…MS, HS		**The Voice of the Teacher - For Students, For Science, For Our Futures**	
Capital 3	MEECS - Ecosystems and Biodiversity…LE, MS				
Capital 4	Updates from the Michigan Department of Education and the DTMB…EE, LE, MS, HS	Three-Dimensional Assessment Writing Workshop…EE, LE, MS, HS		Chemistry Phenomena to Kick Start Your Units…HS	
Michigan 1	IB Meets the NGSS…HS	Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades K-2…EE		Accountable Talk in the Science Classroom…EE, LE, MS	
Michigan 2	"Our Teaching Experiences:" Learning to Recognize our Students' Expertise…MS	Online Formative Assessment Tools in Science…EE, LE, MS, HS	Easy Tech Tools to Facilitate Discussion/ Reflection…MS, HS	Invade Your Parks and Back Again!... LE, MS, HS	
Michigan 3	How to Start an AP Environmental Science Course (and Love It Too!)…HS	Inquiry-based Introduction to Gel Electrophoresis…MS, HS		Launching an Elementary STEM Program…EE, LE	
Regency 1	Using Our National Parks to Blend Curriculum…EE, LE, MS, HS	Phenomena on the Cheap…EE, LE	Grab their Attention with Gizmos!...MS	STEM Connecting Schools and Businesses…EE, LE, MS, HS	
Recengy 2	Schoolyard BioBlitz: Connecting Citizen Science to the Classroom…EE, LE, MS		A Science Teacher in a Math Classroom…HS	You've Got This - Teach More Discipline Less!...EE, LE, MS, HS, CO	

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= MSELA STRAND = CREATE FOR STEM STRAND = MCSS STRAND

Schedule Your Day - Friday RADISSON HOTEL

	1:00 PM	2:00 PM	3:00 PM	4:00 PM
	Healthy Grading: A Moral Imperative…MS, HS, CO	Inexpensive Hands On Chemistry Activities That Help Students Make Connections…HS		
	Engage Students to Think, Communicate, and Act Like Scientists!...EE, LE, MS, HS		Productive Talk: How to Get Students to Share…EE, LE, MS, HS	Michigan Environmental Public Health Tracking - A Tool You Can Use!...MS, HS, CO
	MEECS - Energy Resources…LE, MS			
	Wait, What? There's a New Science Assessment?!?...EE, LE, MS HS	Setting the Stage for Doing Science in Chemistry…HS	Elemental Fictions: Storytelling and Narratives in Introductory Science…MS, HS, CO	Great Demos on a Small Budget…MS, HS, CO
	Learning Labs at the Detroit Zoo…EE		No Time for Science? Learn How to Integrate Reading and Writing Using the Cereal City Science Units…EE, LE	
	Middle School Share-a-thon…MS	Cultivating Classroom Culture for New(er) Teachers…MS, HS	Flipping with Ease…MS, HS	Bring Michigan Science Standards to Life Using Place-based Education…EE, LE, MS, HS
	Lloyd's Toolbox of Engineering Ideas & Activities…LE, MS, HS, CO		RC Cars, Sensors, and Coding… Oh My!...LE, MS, HS	
	Find the Fund$ for STEM…EE, LE, MS, HS	K-8 Teachers as Agents of Change: NGSS and the Environmental…EE, LE, MS	Let's Debate!...EE, LE, MS, HS	Teaching with Technology…EE, LE
	Summer isn't Just for Suntans. It is for Research too!...MS, HS, CO	Transition from one Dimensional GLCE's to Three Dimensional NGSS…LE, MS, HS	WALLS: Water, Air, Land, Lifeand Space…EE, LE, MS, HS, CO	Using 3D Learning Strategies to Improve Standardized Assessment…MS, HS

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

Schedule Your Day - Saturday LANSING CENTER

	8:00 AM	9:00 AM	10:00 AM	11:00 AM
101	Fake News in Science…LE, MS, HS	Science Songs, Simple Stuff and Sliquids… EE, LE, MS HS	Cementing Their Learning - Making it Stick!... EE, LE, MS	Penny Ante Science: Act Science…EE, LE, MS
102	NGSS Puzzles and Mysteries: Using Phenomena…EE, LE, MS, HS, CO	Building Solid Storylines…LE, MS, HS	Journaling in Science using Evidence Notebooks…LE, MS, HS, CO	Conservation and You!...
103	Incorporating STEM into the Classroom…HS	Structuring Discussion to Be Equitable and Rigorous…MS		Project-Based Inquiry Sc Creating…MS
104	Waves…MS		Modeling the Introduction of a New Species: NGSS Ecology…MS	
201	Turning Science Fiction Into...	3-2-1 Blast Off!	STEM Cells on Station…MS, HS	STEAM: If We Can Do It, Y
202	Floating Trains: Phenomena, 3-D Instruction, and Amplify Science for Grades K-5…EE, LE, MS		Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance…LE, MS, HS, CO	
203	Making Nasty Problems Fun!...HS	Slow down to go fast? How Modeling Can Increase…HS	Engaging All Learners in Meaningful Scientific Conversations…LE, MS	Let's Have a Ball: Incorpo Activities in Science…LE
204	NGSS Unit Creation & Assessment…MS	Implementing NGSS 3D Learning with NASA/GLOBE…EE, LE, MS, HS	Citizen Scientists Needed! Students Collecting Data…MS, HS	Exponential inquiry- me
205	The Triple E's of Climate Change: Environmental…MS, HS, CO	1 Class Period+ 1 Model System + 2 Cellular …MS, HS, CO	Classroom Gardens and the NGSS…EE, LE	3 Dimensional Learning Alive!...MS
Governor's	Newton's 2nd Law of Motion Activity, NGSS…MS		Cars That Can't Crash - Fact or Fiction… MS, HS	Reflections from adding
Banquet 1	Creating Professional Learning Communities…EE, LE, MS, HS, CO	Creating a space for the Crosscutting Concepts…EE, LE, MS, HS, CO	Beyond CER: Explanation and Argument - Distinctions…EE, LE, MS, HS, CO	KLEWS: Organizing Scien Literacy…EE, LE
Banquet 2	Cheap Easy Demonstration Usable by Most…LE, MS, HS	PlayFlu: Using Wearable Technology and Kinesthetic Teaching to Engage Kids in Modeling Scientific Phenomena…EE, LE, MS, HS		Building Your NGSS Tool and Crosscutting Concep
Banquet 3	Getting them Talking Constructively…MS	Using Phenomena in Biology to Give Context and Purpose…HS	Man's Real BFF 2.0…MS, HS, CO	
Banquet 4	Biology Practices That Drive Thinking Forward…HS	Teaching About Climate Change in Biology…HS	Using a Driving Question Board to Figure out Phenomena…MS. HS	Investigating Ecological Re Biointeractive Resrources…
Banquet 5	Make any Classroom a Masterpiece	Focus on Figuring Out – Grade 3 … LE	Interactions: A Free Three-dimensional Science…HS	Using Three-Dimensiona
Banquet 6	"It's Just too Hard to Explain!" - Making Sense of Phenomena by Developing and Using Models in the Elementary Classroom…EE, LE		Supporting Student Science Talk in Kindergarten…EE	Tools for Teaching Eleme
Banquet 7	Mi-STAR Up and Running in Your School… MS	Mi-STAR Professional Learning Session I: Introducing the Challenge…MS		Mi-STAR Professional Lea
Banquet 8	Mysteries of Magnetism - THEMIS & MMS… HS	Rock with Your Students!...EE, LE, MS	Natural Learning…EE, LE, MS	Elementary Inquiry and S EE, LE

= Vendor = Keynote = MI M/S CENTER NETWORK STRAND = ELEMENTARY STRAND
= MSELA STRAND = CREATE FOR STEM STRAND = MCSS STRAND

Schedule Your Day - Saturday LANSING CENTER

	12:00 PM	1:00 PM	2:00 PM
ivities in General Science, Earth Science, Life Science, and Physical		Turning Chemistry Labs into STEM Labs…HS	Productive Talk in the Science Class…EE, LE, MS
MS, HS		Learning by doing: Practical Applications Online…MS, HS	
ience™ (PBIS):	Making STEM a Reality with Real Data…MS, HS	Dark & Light: Nature Writing & Observation…HS	
	Weather and Climate…MS		Challenge Your Students to Make a Dozen Classroom Motors…MS, HS, CO
You Can Do It!...EE, LE, MS		Online Resources for the Science Classroom… EE, LE, MS, HS	
		Kepler Made Me Do It…MS, HS	Questioning Our World- An Introduction to Plate Tectonics…MS
rating Movement , MS	Writing in Science…HS	Influence of Research Experiences on Science teacher…CO	Genetics Lessons You Can Use Tomorrow!...MS, HS
rging math and biotech to amplify learning…HS, CO		Forensics for Free…MS, HS	Blended Science Teaching for the Modern Kid… LE, MS
with Bring Science	Bringing Mindfulness to the Science Classroom…EE, LE, MS	Living Coral Reef in the Classroom…EE, LE, MS, HS	
phenomenon…HS	Teaching Physics with ROV's…MS, HS		Ideas for Ecosystems in the Elementary Classroom…EE, LE
ce Ideas & Building	Deriving the Law of Conservation of Matter through Student Models…HS	Making Use of Student Thinking…HS	Five Phenomena to Get you Started in NGSS… MS, HS
box: Strategies for Implementing the Science and Engineering Practices pts in a Student Led Classroom		Using Children's Literature to Guide Science Inquiry K-5…EE, LE	Vernal Pool Patrol: Citizen Science and Place-Based Education…MS, HS
	From Traditional Teaching to 3-D Learning: How to Breathe…HS	Evo-Ed Cases: Connecting Biology Across the Curriculum…HS, CO	Holistic Instruction (Biology Focus)…HS
lationships Using HHMI ..MS, HS, CO	Implementing NGSS into Biology/ Acc Bio…HS	Opioids, Flu, Zoonoses, Obesity: Oh My!...MS, HS	"Starting From Scratch"…MS, HS
l Rubrics in Formative Assessments to Figure out Phenomena…MS		The Lecture Is Dead: Using Alternative Classroom…	
ntary Science…EE, LE		Fusing Art in Science from an Elementary Art Room…EE, LE	Circuit Bugs…LE, MS
rning Session II: Real World Science Investigations…MS		Mi-STAR Professional Learning Session III: Addressing 21st Century Challenges…MS	
STEM Extravaganza…	STEM is About More than Rockets and Robots…LE, MS	How Much and How Often…MS, HS	Do Bees Get a Bad Rap?...LE

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

Schedule Your Day - Saturday RADISSON HOTEL

	8:00 AM	9:00 AM	10:00 AM	
Captial 1	Energy and the NGSS…LE, MS, HS, CO			
Capital 2	IDK Whutt 2 Say: Teen Dialogue in the Classroom…MS, HS		LITERARY SCIENCE: The Integration of ELA and Science… MS, HS	
Capital 3	MEECS - Water Quality…LE, MS			
Capital 4	Claims, Evidence and Reasoning (CER) in an AP Chemistry Classroom…HS	Teaching Chemistry to Middle School Students…MS		
Michigan 1	Oh Deer! Populations, Models, and Technology…LE, MS, HS	Scientific Argumentation: How to Reason Like a Scientist…HS	How Dense Are My Students?..MS	
Michigan 2	Michigan Chemistry Teachers Meeting… HS	Biological and Health Students' Perception About Academic Integrity… MS, HS, CO	Dig Deeper! Ways to Get More Meaningful Reflection and Talk…MS	
Michigan 3	Activities for the Anthropocene…HS	We've got Gall, do you?...MS, HS, CO	From Storybook STEM to Beyond…LE, MS	
Regency 1	Muffins for MSTA Members…EE, LE, MS, HS, CO	Classification Can Be Fun…MS, HS, CO	Everything I Needed to Know About Assessment I Learned in Marching Band…LE, MS, HS	
Recengy 2	Integrating Environmental Data Analysis into your Classroom: Climate Change and Michigan's Cherries…HS		Integrate Scientific Modeling, Climate Change, and Forest Ecology Climate Change and Michigan Forests…MS	

= Vendor = Keynote = MI M/S CENTER NETWORK STRAND = ELEMENTARY STRAND
= MSELA STRAND = CREATE FOR STEM STRAND = MCSS STRAND

Schedule Your Day - Saturday RADISSON HOTEL

	11:00 AM	12:00 PM	1:00 PM	2:00 PM
	Scaffolding 3-Dimensional Science Using (free) Carbon TIME Units…MS, HS	STEAMing Up Our Science Programs…EE. LE, MS, HS, CO	Diggin' Outdoor Education…EE, LE	
	Exploring Biology through Dissection with Flinn Scientific…HS		City Critters: Connecting Science and Empathy…EE, LE	NGSS Yourself…EE, LE
		Claim-Evidence-Reasoning: The Value of Scientific Explanations in STEM…LE, MS, HS		Justify Your Energy-Based Claims…LE, MS, HS, CO
	Safer Chemistry: STEM Connection and Green Chemistry Replacement Labs…MS, HS		Chemistry of International Cuisine…HS	AP Chem Labs with Minimal Prep… HS, CO
	MI-STAR From a Teachers Perspective..., MS	Cookbook Conversions…HS		
	TATTS MSS: Tips and Tricks to Survive MSS…MS, HS	GRACE Project Update…HS	Discrepant Events Abound…EE, LE, MS, HS, CO	
	Modeling and Experimental Design Using Isopods…EE, LE, MS, HS	Using Texts to Engage Students in Three-Dimensional Science…MS, HS	Digital Microscopy for $40…MS, HS, CO	Assessing with Share Posters…LE, MS, HS
	How to Develop an Instructional Storyline…EE, LE, MS, HS		"Mr. Mastie, I Can Still Remember When We...."…EE, LE, MS, HS, CO	Cosmetic Experiments for Grades 8-12…MS, HS, CO
y into your Middle School Classroom:		National Geographic Educator Certification Workshop… EE, LE, MS, HS	Reflecting on Learning with Google Drive…MS, HS	

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

Lansing Center Rooms:

Meeting Room 101
Meeting Room 102
Meeting Room 103
Meeting Room 104
Meeting Room 201
Meeting Room 202
Meeting Room 203
Meeting Room 204
Meeting Room 205

Governor
Banquet 1
Banquet 2
Banquet 3
Banquet 4
Banquet 5
Banquet 6
Banquet 7
Banquet 8

Radisson Rooms:

Captial 1
Capital 2
Capital 3
Capital 4
Michigan 1
Michigan 2
Michigan 3
Regency 1
Recengy 2



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Friday, March 2, 2018

Michigan Science Teacher's Association

2018 Awards Program

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

MSTA will be honoring:

Dan Wolz Water Grant Winner – Holly Hereau – Thurston High School, Redford

Teacher of Promise – Nathan Hatt, Ann Arbor Schools

Middle School Science Teacher of the Year – Jean Buller, Walled Lake Schools

High School Science Teacher of the Year – Anne Jeannette LaSovage, Southfield Public Schools

College Science Teacher of the Year – Dr. Brian P. DeJong, Central Michigan University

Administrator of the Year – Heidi Mercer, Lake Orion Community Schools

Informal Science Educator – Tracy D'Augustino, MSU Extension, Alcona

Distinguished Service Award – Elizabeth R. Larwa

The George G. Mallinson Award – Deborah Peek- Brown

2018 MSTA Awards Committee

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

Session Descriptions

Friday, March 2, 2018

8:00 am - 8:45 am

"Our Teaching Experiences:" Learning to Recognize our Students' Expertise with an NGSS-aligned Middle Grades Engineering Curriculum

Christina Restrepo Nazar, Michigan State University; Marcos David Gonzalez-Flores, Michigan State University; Selena Bliesener, Sheridan Rd. STEM; Angela Calabrese Barton, Michigan State University; Kathleen Schenkel, Michigan State University

Primary Subject: **GS**
Interest Level: **MS**
Location: *Michigan 2*

A hands-on presentation focused on researcher's and local teachers' experiences using an engineering unit aimed to support all learners in the NGSS engineering practices of defining problems and designing solutions.

An Administrators Guide to the New Michigan Science \Standards Through The Lens of Phenomenal Science (curriculum) & 3DSPA (assessment)

Matthew Samocki, Central Michigan Science, Mathematics, Technology Center; Darcy McMahon, Central Michigan Science, Mathematics, Technology Center; Jennel Martin-Powell, Central Michigan Science, Mathematics, Technology Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Meeting Room 201*

This presentation will include information regarding the shift to the new Michigan Science Standards including curriculum, assessment, instructional strategies, and applications for teacher observations.

Building a Summer Science Field Course

Chris Bolhuis, Hudsonville High School; Dario Lirio, Hudsonville High School

Primary Subject: **BI, ES, EN**
Interest Level: **HS**
Location: *Banquet 8*

Hudsonville offers an elective field course for incoming seniors in geology and biology. 26 students and 2 teachers travel to the Western U.S. visiting and camping in many of our National Parks.

Creating 3D Learning: Modeling, Argumentation and Explanation in your Classroom through NGSX Study Groups!

James Emmerling, Genesee Area Math/Science Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Banquet 1*

Come learn more about NGSX and why it is important for you and your colleagues as a way to learn how to bring the Michigan Science Standards to your classroom!

Earth System Science Resources to Use on Monday! Free from NOAA to You!

June Teisan,National Oceanic and Atmospheric Administration

Primary Subject: **ES**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 1*

The National Oceanic and Atmospheric Administration offers a wide array of free educational resources for K-12 teachers. Data analysis activities, climate science materials, elementary earth science lessons, weather activities...NOAA has what you need for rich, robust science. Find out more...plus free posters and books while they last!

Health in Our Hands: Using Online Simulations to Explain Phenomena

Idit Adler, CREATE for STEM Institute/ Michigan State Universtiy; Darlene McClendon, Eisenhower Elementary/Flint Community Schools; Renee Bayer, CREATE for STEM Institute/ Michigan State University

Primary Subject: **GS, BI**
Interest Level: **MS**
Location: *Banquet 5*

Experience free, online, classroom-ready simulations to engage students in scientific practices to explain a phenomenon. We will demonstrate how to use a structured, guided, open framework to scaffold student investigation.

How to Start an AP Environmental Science Course (and Love it Too!)

Karina White, Jenison High School; Chris Groenhout, Grandville High School

Primary Subject: **EN**
Interest Level: **HS**
Location: *Michigan 3*

This presentation will cover the basics of starting an AP environmental science course from scratch. We will collaborate together and come away with a plan to start new or improve existing courses.

IB meets the NGSS

Colin Killmer, Portage Northern High School; Michelle Mason, Portage Northern High School; Kathy Mirakovits, Portage Northern High School; Donna Hertel, Portage Northern High School

Primary Subject: **BI, CH, PH**
Interest Level: **HS**
Location: *Michigan 1*

Join us as we look at ways to include NGSS-style instruction and the SEPs into the upper-level IB courses.

Session Descriptions

Incorporating STEM into the Classroom

Gary Curts, Activate Learning

Primary Subject: **GS**
Interest Level: **HS**
Location: *Meeting Room 103*

Bringing STEM into the classroom by involving students in engineering design to solve a real-world problem gives students the opportunity to apply CCCs and DCIs as well as demonstrate NGSS SEPs. .

Making Grades More Meaningful

Brian Langley, Novi High School

Primary Subject: **GS**
Interest Level: **MS,HS**
Location: *Meeting Room 204*

Learn about one teacher's quest for more meaningful grading practices, gaining strategies immediately transferable to your classroom. Perfect for those seeking field-tested alternatives to common grading procedures.

Phenomenal Unit Plan

Patti Richardson, Forest Hills Central High School; Kristy Butler, Forest Hills Central High School

Primary Subject: **GS, BI**
Interest Level: **HS**
Location: *Banquet 4*

Hear how we have used phenomena to start our unit and are guiding students to ask questions to build the storyline of a unit. Students are keeping track of the questions they create and evidence they gain to generate a working model of the concept being taught in a template. We will go through one unit to show our process. Handouts and access to files will be shared.

Science Talk

Kathleen Schutter, Delta Education; Roxane Dupuis, Delta Education; Katherine Armstrong, Delta Education

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 101*

Students experience science but also productive talk to make sense of what they have learned. Experience a middle school lesson that includes strategies and resources to use in classrooms tomorrow.

Supporting Early Literacy Development and the Michigan Science Standards

Wendi Vogel, Kent Intermediate School District

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 2*

Using the Early Literacy Documents from the Michigan Department of Education, participants will experience a model science lesson and look for evidence on how science supports early literacy.

Teaching about Floods Using Extreme Weather Events

Nickolaas Vlietstra, Grand Valley State University; Steve Mattox, Grand Valley State University

Interest Level: **MS, HS, Coll**
Location: *Meeting Room 202*

Extremely intense rainfall in Langley, Arkansas in 2010 resulted in 20 deaths. Using classroom ready materials we examine the details of the flood and compare to potential events in Michigan.

Teaching Science When You Don't Know Diddly-Squat

Tracy D'Augustino, Michigan State Univeristy Extension

Primary Subject: **IN**
Interest Level: **K-2, 3-5, MS**
Location: *Capitol 2*

What is the answer? Who cares? You don't need all the answers to teach science. You simply need an inquisitive mind and a willingness to investigate. It's all about the questions!

The Lake Michigan Food Web: What Did the Lampreys Do?

William Hodges, Holt High School/MAEOE

Primary Subject: **BI**
Interest Level: **MS,HS**
Location: *Meeting Room 203*

Hands-on activity creating the original Lake Michigan Food Web and an analysis of the effect of the Sea Lamprey and subsequent DNR interventions.

Updates from the Michigan Department of Education and the DTMB

Megan Schrauben, DTMB; Rashell Bowerman, MDE; Jill Griffin, MDE; Ruth Anne Hodges, MDE; TJ Smolek, Michigan Department of Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 4*

Do you have questions about teacher certification and changes to the highly qualified rules? Curious about the M-STEP? Are you wondering what opportunities for grant funding are available? If so, this session is for you. Unable to join us for this timeslot and have burning questions? Come find us at our booth in the exhibit hall!

Session Key:

Primary Subject Levels:
AS – Assessment/Curriculum
CH – Chemistry
ES – Earth Science
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■ Featured Session

8:00 am - 8:45 am continued

Using Our National Parks to Blend Curriculum

Gabe Knowles, Whitehall District Schools; Noelle Knowles, Grand Valley State University

Primary Subject: **GS, IN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 1*

Do you struggle with creating engaging place-based education opportunities for your students? Join us as we share with you how we designed PbE experiences with our National Parks.

Yeah, Buoy! (Buoyancy Demos)

Jonathan Paddock, Clarkston Jr. High School

Primary Subject: **PH**
Interest Level: **3-5, MS, HS**
Location: *Governor*

Presenter will share a variety of tried and true demos/activities that engage students and help them build a functional understanding of buoyancy.

8:00 am - 9:45 am

A Mi-STAR Lesson: Patterns and Cause & Effect

Jean Buller, Walled Lake Community Schools; John Gregg, Walled Lake Community Schools

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Banquet 7*

Participate in fun, three-dimensional activities you can use to introduce your students to Patterns and Cause & Effect! Experience how students can use these CCC's to investigate phenomena. Lesson plans provided.

Claims, Evidence, and Reasoning in Action

Marjorie Frank, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 102*

Join HMH author, Marjorie Frank, as she leads us through a learning experience that breathes life into science literacy skills using the CER method.

Digital Data Nuggets - Real Research, Real Data, Real Classrooms

Marcia Angle, Kellogg Biological Station/Michigan State University ; Elizabeth Schultheis, Kellogg Biological Station/ Michigan State University; Melissa Kjelvik, Kellogg Biological Station/Michigan State University

Primary Subject: **GS, EN**
Interest Level: **MS, HS, Coll**
Location: *Meeting Room 205*

Students struggling with data? Digital Data Nuggets are free NGSS-aligned resources that help students ask their own questions, explore digital platforms, and utilize reliable sources of LTER data. Hands-on demonstration.

How to See What Your Students are Thinking: Student Modeling and the NGSS

Samantha Johnson, Next Gen Science Innovations; Jim Clark, Next Gen Science Innovations

Primary Subject: **GS**
Interest Level: **K-2,3-5,MS,HS**
Location: *Banquet 3*

In this workshop, participants will engage in many activities designed to make student thinking visible through modeling, and other strategies. Science and Engineering Practice Two asks students to design and use models that are explanatory and predictive. This workshop will provide resources for participants to shift their classroom practice from students using models, to students engaging in the practice of modeling. Participants will also learn how to use student models and other visible thinking artifacts as part of assessing student understanding. All participants will leave with goody bags and activities that can be used in class the following day.

Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades 3-5

Darcy McMahon, Central Michigan Science Mathematics Technology Center; Jennel Martin-Powell, Central Michigan Science Mathematics Technology Center; Matthew Samocki, Central Michigan Science Mathematics Technology Center

Primary Subject: **GS**
Interest Level: **3-5**
Location: *Banquet 6*

Investigate the instructional strategies embedded in this comprehensive FREE elementary science curriculum aligned to MSS. Teachers will leave empowered to implement several strategies from revised 3-5 units with students.

Mastering the Chemical Formula

Bill Cline, LAB-AIDS

Primary Subject: **CH**
Interest Level: **HS**
Location: *Meeting Room 104*

If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for intuitive lessons for all students to master the formula.

Session Descriptions

Schoolyard BioBlitz: Connecting Citizen Science to the Classroom

Gabrielle Likavec, Michigan Geographic Alliance; Lisa Marie Tobin, University Center Gaylord

Primary Subject: **BI, IS, EN**
Interest Level: **K-2, 3-5, MS**
Location: *Regency 2*

Engaging students in hands-on learning with meaningful connections to the classroom is a proven way to reach students. In this session we will look at how to plan a Bio-Blitz which fits your school and look at lessons which bridge the gap between field and classroom.

8:00 am - 11:45 am

MEECS - Ecosystems and Biodiversity

Jessica Wagenmaker, MEECS

Primary Subject: **BI, EN, IN, ES**
Interest Level: **3-5, MS**
Location: *Capitol 3*

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

9:00 am - 9:45 am

Aerial Exploration of Environmental Study Sites, Using Kites, Cameras and Other Sensors

David Bydlowski, Wayne RESA; Andy Henry, Wayne RESA; Jeff Bouwman, Shumate Middle School

Primary Subject: **ES**
Interest Level: **MS,HS**
Location: *Banquet 1*

Take a look at your environmental study site from 150 meters above ground level. STEM presentation from NASA's AREN Project and the GLOBE Program.

Becoming a Certified Environmental Educator

Cindy Fitzwilliams-Heck, Ferris State University & Michigan Alliance for Environmental and Outdoor Education

Primary Subject: **IN, EN**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Meeting Room 203*

Discover the requirements for earning an environmental educator certification (EEC) through the Michigan Alliance for Environmental and Outdoor Education (MAEOE). The EEC closely follows state standards and national guidelines (www.maeoe.com).

Health in Our Hands: A Free Life Science Middle School Curriculum

Idit Adler, CREATE for STEM Institute/ Michigan State Universtiy; Renee Bayer, CREATE for STEM Institute/ Michigan State Universtiy; Darlene McClendon, Eisenhower Elementary/Flint Community Schools

Primary Subject: **GS, BI**
Interest Level: **MS**
Location: *Banquet 5*

"What Controls My Health?" is a free, classroom-ready curriculum about gene-environment interactions using diabetes as the phenomena. Here's an overview of this NGSS-aligned, project-based learning unit accessible online.

Incorporating Science Practices into STEM Classrooms: Design and Assessment

Dr. Danny Caballero, Michigan State University

Primary Subject: **GS**
Interest Level: **K-2,3-5,MS,HS,Coll**
Location: *Meeting Room 201*

Learning science is not just learning facts and equations; it is learning how to do the work of science. Learning science is about learning how science is done, what tools and processes are used, and how scientists go about their work. Scientists design experiments, collect and analyze data, and build mathematical and computer models of phenomenon. They work on teams - discussing processes and procedures, collectively deciding on the best course of action, and reviewing their missteps and mistakes. By and large, university STEM classrooms have not always instructed students in these approaches to doing science - termed science practices. At Michigan State University, we have designed introductory and advanced physics courses that incorporate these science practices into the instruction. In this talk, I will present how these courses have been designed and the ways in which we assess students in these courses. Additionally, I will address issues of growth and sustainability.

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Primary Subject Levels:
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Interest Levels:
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MS – Middle Level
HS – High School
CO – College

■ Featured Session

Session Descriptions

9:00 am - 9:45 am continued

Making Sense of Science Through Notebooks

Kathleen Schutter, Delta Education; Roxanne Dupuis, Delta Education; Katherine Armstrong, Delta Education

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 101*

Students (and Conference Participants) use notebooks, as all scientists do, to make sense of their learning. Receive strategies and resources that can be used in classrooms tomorrow.

Merging High School Geology with NGSS

Steve Mattox, Grand Valley State University; Ashley Meyer, Hamilton High School; Chris Bolhuis, Hudsonville High School; Claire Sobolak, Grosse Pointe South High School; Brad Stevens, Zeeland High School

Primary Subject: **ES, EN**
Interest Level: **HS, Coll**
Location: *Banquet 8*

High school geology classes need to align with NGSS. We will share course models and resources and discuss ways to match SEPs, CCCs, and DCIs with classroom and fieldtrip content.

Online Formative Assessment Tools in Science

Catherine Hamilton, Adlai Stevenson Elementary School; Ranya Croitori, McIntyre Elementary

Primary Subject: **GS, TE**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Michigan 2*

Learn to use a quick and easy online formative assessments tool in order to gauge the pulse of the class.

Phenomena on the Cheap

Patti Picard, Tawheed Center of Detroit School

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Regency 1*

Budget constricted or non-existent? Is Dollar Tree your second home? Here are some cheap and easy phenomena to get your kids thinking and to keep your pockets happy.

Using Wildlife CSI to Teach Claim, Evidence, Reasoning

Becky Durling, Williamston Community Schools; Jon Gray, Lake Orion Community Schools

Primary Subject: **GS, EN**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 204*

Crime Scene Investigation is a great way to teach Claim, Evidence, Reasoning writing. Learn how to incorporate wildlife crime scenes taught at the Academy of Natural Resources into your curriculum.

Weaving Stories Throughout Your Biology Course Using HHMI Biointeractive Resources

Mark Eberhard, St. Clair High School

Primary Subject: **BI, EN**
Interest Level: **MS, HS, Coll**
Location: *Banquet 4*

Experience how HHMI Biointeractive short films and activities provide engaging stories to weave throughout your life science courses. Stories facilitate students making connections across multiple units. Numerous examples shared!

9:00 am - 10:45 am

Hands-On with Virtual Nuclear Research

Zachary Constan, Michigan State University; Rich Lund, St. Johns High School

Primary Subject: **PH, IS**
Interest Level: **MS, HS**
Location: *Governor*

With the digital game "Isotopolis" and dedicated lesson plans, you can introduce your students to the world of rare isotopes (and world-class research at MSU)!

Inquiry-Based Introduction to Gel Electrophoresis

Mindy Lee-Olsen, MiniOne Systems; Richard Chan, MiniOne Systems

Primary Subject: **BI, IN**
Interest Level: **MS, HS**
Location: *Michigan 3*

Participate in a hands-on electrophoresis lab to teach key principles in alignment with NGSS. MiniOne Electrophoresis System can be used over an entire school year or scaffolded over multiple grade levels.

Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades K-2

Jennel Martin-Powell, Central Michigan Science Mathematics Technology Center; Darcy McMahon, Central Michigan Science Mathematics Technology Center; Matthew Samocki, Central Michigan Science Mathematics Technology Center

Primary Subject: **GS**
Interest Level: **K-2**
Location: *Michigan 1*

Investigate the instructional strategies embedded in this comprehensive FREE elementary science curriculum aligned to MSS. Teachers will leave empowered to implement several strategies from revised K-2 units with students.

Session Descriptions

Science Talks

Noreen Habana, Bad Axe High School

Primary Subject: **GS, PH, ES**
Interest Level: **MS, HS**
Location: *Meeting Room 202*

Promote science talks among your students in a class and between classes. Bring out the misconceptions and help your students learn to have an academic discourse with one another.

Seeing is Believing: Physics Demonstrations to Energize Your Classroom

Don Pata, Grosse Pointe North High School

Primary Subject: **PH**
Interest Level: **MS,HS**
Location: *Capitol 2*

What are the best demos for your classroom? In this new workshop, we have selected the most effective combination of demonstrations to help you illustrate a wide variety of physics concepts, including Newton's laws of force and motion, light, sound, and color science.

Structuring Discussion to Be Equitable and Rigorous

Diane Wright, Activate Learning

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 103*

Per NGSS, learning is a social endeavor supported by collaborative and communicative norms, which requires teachers to examine and support K–12 students' ways of articulating, making sense of, and evaluating each other's ideas.

The Coaching Connection: Supporting Best Practice Science Instruction

Mary Burke, Kalamazoo Regional Education Service Agency

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Banquet 2*

To support the vision of quality Science instruction, a coaching structure is essential. Engage in how to structure a coaching plan that outlines the critical skills necessary for Science instruction. In this session participants will walk through the coaching process from setting focused instructional goals, identifying skills necessary for implementation, to providing support and feedback to teachers in their classrooms. This type of coaching structure is designed to assist teachers in the successful implementation of instructional strategies that align with the Michigan Science Standards and NGSS.

Three-Dimensional Assessment Writing Workshop

TJ Smolek, Michigan Department of Education

Primary Subject: **GS, AS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 4*

The new Michigan Science Standards challenge our current assessment thinking and processes. Join this session to experience part of the process used to create the new M-STEP science assessment. Participants will learn about assessment design processes, task features, and methods for eliciting three-dimensional thinking from students. Examples of classroom tasks will be shared and analyzed to stretch our understanding of three-dimensional assessment.

10:00 am - 10:45 am

A Science Teacher in a Math Classroom

Sarah Murphy, Dr. Benjamin Carson High School

Primary Subject: **GS**
Interest Level: **HS**
Location: *Regency 2*

Hear students say something like, "This is supposed to be math, not science"? Discover some of the ways to integrate science and math to create a more robust experience.

Creating System Thinkers - Transforming Student Illustrations into Scientific Models

Jessica Ashley, Oakland Schools; Michael Gallagher, Oakland Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Banquet 1*

Explore how to transform simple student illustrations into scientific models that can test ideas and make predictions about systems. Support and resources for model development included!

Easy Tech Tools to Facilitate Discussion/Reflection

Alaina Sharp, Jackson County ISD; Dan Spencer, Western High School

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Michigan 2*

Sometimes getting our students to engage in productive scientific discussion or reflection can be difficult. We'll talk about easy-to-use tech tools that give your students voice while helping them think like scientists.

Session Key:

Primary Subject Levels:
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■ Featured Session

10:00 am - 10:45 am continued

Electromagnetic Spectrum & Radioactivity

Kevin Dehne, Delta College/MESTA

Primary Subject: **PH, ES**
Interest Level: **MS, HS, Coll**
Location: *Banquet 8*

The Electromagnetic spectrum will come alive with illustrations to help your students better understand this part of our universe. The ultra-violet and gamma ray parts will be highlighted with examples and demonstrations.

Grab their Attention with Gizmos!

Diana Markley, Stevenson Middle School; Julie Parks, Stevenson Middle School

Primary Subject: **TE, IN**
Interest Level: **MS**
Location: *Regency 1*

Gizmos are a sure-fire student engagement strategy. Students perform virtual experiments, analyze data and take ownership of their own learning. We want to share our success after almost three years of using this amazing program!

It's Phenomenal!

Kathleen Schutter, Delta Education; Roxane Dupuis, Delta Education; Katherine Armstrong, Delta Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Meeting Room 101*

One definition of phenomena is "a fact or event of scientific interest susceptible to scientific description and explanation". Experience phenomenal events through a long-standing research-based program. Resources included.

Let's Debate

Yvonne Coogan, Garden City High School; Jane Culp, Garden City High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Banquet 6*

Looking for a way to get students involved in every day issues? Have them debate the issue. Learn how to have your students debate relevant science topics.

Observe, Investigate and Enjoy! A Tour of Free, NGSS Aligned, Classroom Activities

Natalie Elkins, Dept. of Natural Resources

Primary Subject: **BI, EN**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 204*

The Association of Fish and Wildlife Agencies worked with curriculum coordinators, teachers and biologists to create a hands-on suite of free, online activity guides to focus on field investigations and observation skills. Explore a few with the DNR's Education Specialist.

Secondary Teachers of Science as Agents of Change: An NGSS Approach to Understanding the Environmental Impacts of Everyday Decisions

Joyce Parker, Michigan State University; Jane Rice, Michigan State University

Primary Subject: **GS, IN, EN**
Interest Level: **HS, Coll**
Location: *Capitol 1*

Our choices of consumer goods, clothes, food, appliances, modes of transportation all impact the environment. We will take a 3-dimensional, multidisciplinary approach to understanding these impacts and making informed decisions.

Super Protection from Superbugs: the Fight Against Antibiotic Resistance

Elaine Bailey, Michigan Antibiotic Resistance Reduction Coalition; Katelin Anderson, Munson Medical Center

Primary Subject: **BI**
Interest Level: **MS**
Location: *Meeting Room 201*

Antibiotic resistance is a public health crisis requiring everyone to be better "stewards" of antibiotics. Learn about a NEW, FREE program/lesson plan designed to teach middle school students about antibiotic resistance, how to prevent infection and the right way to use antibiotics. Fun and engaging activities are integrated to reinforce the concepts. Come talk to us about having a "MARR Ambassador" visit your classroom!

Virtual Field Trips with Google Expeditions

Ann Pearson, Houghton Mifflin Harcourt

Primary Subject: **GS, IS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Meeting Room 102*

Come experience virtual reality science field trips and learn how to use them to effectively instruct and enhance three-dimensional learning in this hands-on workshop.

10:00 am - 11:45 am

A Mi-STAR Lesson: Comparing Engineering Solutions with a Decision Matrix

Tony Matthys, Michigan Technological University; Stephanie Tubman, Michigan Tech / Mi-STAR

Primary Subject: **GS**
Interest Level: **MS**
Location: *Banquet 7*

Try out a simple tool that you can use to introduce your students to engineering! Learn how students use this tool to compare solutions. Aligns with MS-ETS1-2. Lesson plans provided.

Integrating Technology into Science-Based STEM with the 5E

Karen Kudla, Oxford Community School; Ken Wester, STEMscopes

Primary Subject: **ES, TE**
Interest Level: **3-5, MS**
Location: *Meeting Room 205*

Balancing hands-on with digital investigations is an integral part of observing phenomenon, gathering evidence, and justifying conclusions. Join us to see this balancing act work toward student achievement gains.

One in a Million

Bill Cline, LAB-AIDS

Primary Subject: **CH**
Interest Level: **HS**
Location: *Meeting Room 104*

Walk away with some effective ways to teach the structure of an atom. Using the Lab-Master, user friendly spectrophotometer, explore how light interacts with dyes. Good foundation lab for NGSS HS-PS4-4.

Phenomenal Tools for MSS Chemistry and Physics Instruction and Assessment

Israel Touitou, Michigan State University/Create for STEM; Deborah Peek-Brown, Michigan State Create for STEM; Cameron Cochran, Washtenaw International high School

Primary Subject: **CH, PH, AS**
Interest Level: **HS**
Location: *Banquet 5*

Experience MSS-aligned Chemistry and Physics units designed to increase student engagement. Explore samples of curriculum materials featuring: investigating real world phenomena, free interactive modeling tool, and MSS aligned assessment items.

Protein Synthesis and Mutations with Magnetic Beads

Heather Peterson, Holt High School; William Hodges, Holt High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Banquet 4*

Holt HS Biology case study approach will be shared with a detailed activity with magnetic beads where students create protein sequences with and without mutations as part of a Sickle Cell Anemia baby case study.

What Did They Say? Student Discourse and the NGSS

Samantha Johnson, Next Gen Science Innovations; Jim Clark, Next Gen Science Innovations

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Banquet 3*

In this workshop, participants will engage in multiple strategies designed to illicit rigorous academic conversations in class. Students need discourse skills and strategies in order to construct explanations and argue from evidence. The ability to communicate effectively supports all of the other the science and engineering practices. Participants will leave with strategies they can implement in their classroom the next day.

11:00 am - 11:45 am

"Ready Set Go" STEM

Connie Eisenhart, Guardian Angels Catholic School; Cassandra Cayce, Cornerstone

Primary Subject: **TE**
Interest Level: **K-2, 3-5, MS**
Location: *Banquet 6*

This session is "Hands On Coding Skills." During this session, we will work with Coding and Robot Mouse. We will learn step-by-step about building mazes, collaborating, creating, and coding the robot with problem solving. NGSS Content Standard, A Content Standard B Content Standard E Technology Standards 9 Engineering Design 11 Apply the design process.

#gettingsciencedone - Citizen Science

David Bydlowski, Wayne RESA; Andy Henry, Wayne RESA; Jeff Bouwman, Shumate Middle School

Primary Subject: **ES, IN, IS, EN**
Interest Level: **3-5, MS, HS**
Location: *Capitol 1*

It is all about getting science done with students. Use CoCoRaHS and the GLOBE Observer app as a starting point for students collecting data on precipitation, clouds, mosquitoes and more.

A Focus on Modeling in the Phenomenon-Based Classroom

Diane Wright, Activate Learning

Primary Subject: **PH**
Interest Level: **MS**
Location: *Meeting Room 103*

As one of the scientific practices embedded in the NGSS, developing and using models allow our students to imagine the unseen, make predictions, ask questions and develop further investigations.

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■ Featured Session

11:00 am - 11:45 am continued

A Long Walk to Water - A Cross-Curricular Unit

Shawn Knaack, Quincy Middle School

Primary Subject: **ES**
Interest Level: **MS**
Location: *Meeting Room 202*

Join us to learn about a cross-curricular unit based on the book "A Long Walk to Water." The science is focused around weather and water in Michigan and South Sudan. We will talk about the connections in language arts and social studies.

A Teacher Friendly Version of the Stratigraphic Column of Michigan

Steve Mattox, Grand Valley State University; Conner Frymier, Grand Valley State University

Primary Subject: **ES**
Interest Level: **MS, HS, Coll**
Location: *Banquet 8*

We will share a classroom-ready rock column of Michigan and ways to connect to the geology, fossils, tectonics, and geologic history of the state.

Accountable Talk in the Science Classroom

Amanda Iocoangeli, Custer Elementary School/ Monroe Public Schools; Vanya Steel, Arborwood Elementary School/ Monroe Public Schools; Danielle Jozwiak, Custer Elementary School/ Monroe Public Schools; Carlie Rzepa, Monroe Middle School/ Monroe Public Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Michigan 1*

Ever feel like your classroom is a scene from Ferris Bueller's Day Off... "Anyone, Anyone?" Come explore strategies to increase higher order thinking and student engagement through student led discourse.

AP Computer Science Principles (Grades 10-12) and Computer Science Discoveries (Grades 6-9)

Kathy Surd, Mason-Lake Oceana Mathematics and Science Center

Primary Subject: **TE**
Interest Level: **MS, HS**
Location: *Banquet 1*

AP Computer Science and Discoveries can open the door to the AP CS for all students. Come learn about this opportunity you can bring to your school by becoming an AP CS teacher.

Chemistry Phenomena to Kick Start Your Units

Kristy Lee, Grosse Pointe North High School; Jaimie Hainer, Grosse Pointe North High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Capitol 4*

Have you been searching for a hook or anchor to provide your students with a common experience prior to starting a new unit? This presentation is for you.

Forestry and Forest Ecology for Elementary and Middle School

Michael LeValley, Isabella Conservation District

Primary Subject: **BI, IS, EN**
Interest Level: **3-5, MS**
Location: *Meeting Room 203*

Turn a local forest into an outdoor classroom with forestry/forest ecology techniques such as diameter measurement, mapping, forest density estimation, biomass estimation, canopy cover measurement, and more.

Invade Your Parks and Back Again!

Christine Kelly, Allendale Middle School

Primary Subject: **IN, EN**
Interest Level: **3-5, MS, HS**
Location: *Michigan 2*

How do you get your students outside, meet NGSS head on, plan an interdisciplinary unit and partner with your parks? Here are some fantastic and fun solutions with lesson plans!

Launching an Elementary STEM Program

Kim Stilwell, NSTA - National Science Teachers Association

Primary Subject: **GS, IN**
Interest Level: **K-2, 3-5**
Location: *Michigan 3*

Need to building an elementary STEM program or enhancing your current program? Success stories will be shared on how Picture-Perfect Science resources can be the foundation to a successful program.

Lesson Planning with NGSS: The 5E Instructional Model

Ann Pearson, Houghton Mifflin Harcourt; Kelly Short, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 102*

SEPs, DCIs, CCCs…Oh My! How do you even begin to write lessons using the NGSS?! Come get some help using the 5E Instructional Model.

Promoting Classroom Discussions with Talk Moves

Minna Turrell, St Clair RESA

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Banquet 2*

How do you get students engaged in a lesson and doing all the heavy lifting? Talk Moves will improve your classroom culture, student engagement, and student learning.

Science Talk

Kathleen Schutter, Delta Education; Roxane Dupuis, Delta Education; Katherine Armstrong, Delta Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Meeting Room 101*

"Doing science" is a first step, but making sense of science is just as important. Experience science lessons that include productive talk. Teaching strategies, online resources and more included.

STEM Connecting Schools and Businesses

Rick Mushing, Kent ISD; Ebiri Nkugba, Kent ISD

Primary Subject: **IN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 1*

Teach the Michigan Science Standards using STEM principles in collaboration with area business partners to prepare our students for their future.

Stop Creating Lesson Plans: Start Creating Learning Experiences

Randy Schregardus, Van Andel Education Institute

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Governors*

Engage your students to think and act like scientists. Come willing to transform everyday lesson plans into memorable, inquiry-based learning experiences. Leave with strategies and tools to make it happen.

The Voice of the Teacher - For Students, For Science, For Our Futures - KEYNOTE

Christine Anne Royce, Ed.D., Shippensburg University, MSTA President Elect

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Capitol 2*

As we look toward our future, there is no doubt that we as teachers have a very strong role in shaping what is to come for our students. The challenge before us lies with the multitude of stakeholders who voice their thoughts on what our students need in order to be successful which then impacts our daily classrooms. "Don't Make Me Use My Teacher's Voice" is a phrase that many a teacher has used in both seriousness, as well as, lightheartedness in their career. However, "using OUR teacher's voice" is exactly what is needed when we talk with the same stakeholders about the importance of scientific literacy, utilizing three-dimensional teaching in our classrooms, and the impact that STEM fields will have on future employment opportunities. Examples of being advocates for our students, for science, and for our futures will be highlighted as we consider how we deliver the message through tenacity, leadership, and collaboration.

What The Heck Happened?!?!

Ted Beyer, Educational Innovations

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 201*

Discrepant events always seize students' attention, and at Educational Innovations we have some real jaw droppers. If you can make them say "Wow!" the next thing they will ask is "why?" Come join us as we explore some of our favorite student confusers. Door prizes and freebies!

What's in the Woods?

Kevin Frailey, Michigan DNR

Primary Subject: **BI, EN**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Meeting Room 204*

Bears, cougars, wolves? Come get the latest information, population estimates and management techniques involving Michigan wildlife. Up-to-date, science-based information that will resonate with your students.

You've Got This - Teach More, Discipline Less!

Jennifer Gottlieb, formerly with Grand Blanc HS, now independent

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Regency 2*

Specific, proven strategies all teachers of any grade level can use TOMORROW to effectively reduce discipline issues and increase student engagement. Proven to keep students in class and reduce disruptions to create a positive environment to learn. Also, they will increase students' feelings of belonging as a valued member of class. Materials and books available to attendees. Teachers will regain lost time spent on misbehavior.

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■ Featured Session

1:00 pm - 1:45 pm

3 Dimensional Learning in Middle School Modeling Instruction

Scott Stokes, Bemis Jr. High; Nell Bielecki, Anderson Middle School; Andrea Williams, Orchard Lake Middle School; George Nelson, Lundahl Middle School

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 201*

What does middle school modeling instruction look like with 3 Dimensional learning and discourse?

Aquaponics in the Classroom

Jeremy Hyler, Fulton Schools; Jeremy Winsor, Fulton Schools

Primary Subject: **BI, ES, EN**
Interest Level: **MS, HS**
Location: *Banquet 8*

Discover how aquaponics can drive a practical understanding of biological and environmental science concepts. Give your students the opportunity to design, engineer, construct and manage either simplistic or complex systems with minimal expense (possibly with materials you already have around your classroom).

Curriculum Connections - ELA & Science in Elementary

Amy Quinn, Gretchko Elementary

Primary Subject: **GS**
Interest Level: **K-2**
Location: *Banquet 6*

Are you looking for ways to connect your Science with ELA standards? In this presentation you will see K-5 classroom examples of how you can deepen learning through cross curricular connections.

District Science Leader Round-Table: High School Course Sequence Sharing

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

Primary Subject: **GS**
Interest Level: **HS**
Location: *Banquet 2*

Share your district's thinking and hear what other districts are doing.

Family Engineering & Design Thinking Night

Diana Matthews, Detroit Country Day School; Lisa Morgan, Detroit Country Day School

Primary Subject: **GS**
Interest Level: **K-2**
Location: *Meeting Room 101*

Engaging students and families with dynamic, hands-on activities appropriate for 3 year olds up to 10 year olds. Materials are readily available, inexpensive and easy to set up. Use in your classroom or create a fun evening for the whole school.

Find the Fund$ for STEM

June Teisan,National Oceanic and Atmospheric Administration

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 1*

Champagne dreams for your classroom but stuck with a Mt. Dew budget? Learn tips and tricks for successful grant writing to build the STEM programs you know will impact your students.

Health in Our Hands: Using the Driving Question Board to Explain Phenomena

Renee Bayer, CREATE for STEM Institute/ Michigan State Universtiy; Idit Adler, CREATE for STEM Institute at Michigan State University; Darlene McClendon, Eisenhower Elementary/Flint Community Schools

Primary Subject: **GS, BI**
Interest Level: **MS**
Location: *Banquet 5*

Experience the Driving Question Board, a classroom tool that serves as an organizer for students' thinking as they explain phenomena. We will use Type-2 diabetes to demonstrate use in class.

Healthy Grading: A Moral Imperative

Don Pata, Grosse Pointe North High School

Primary Subject: **GS, AS**
Interest Level: **MS, HS, Coll**
Location: *Capitol 1*

If you're dissatisfied with your current grading procedures and looking to make your grades more meaningful, this session is for you.

Integrating Chromebooks with Vernier Technology

Patti Smith, Vernier Software & Technology

Primary Subject: **GS, TE**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 205*

In this hands-on workshop, you will use Chromebooks with various Vernier sensors to investigate biology, chemistry, and physics concepts.

Michigan Predator Prey Project

Kevin Frailey, Michigan DNR

Primary Subject: **BI, EN**
Interest Level: **3-5, MS, HS, Coll**
Location: *Meeting Room 204*

One of North America's largest research studies on the impacts of predators on prey populations is going on in Michigan! Learn about the study and find out how to use some of the data in your science classes.

Session Descriptions

Middle School Share-A-Thon

Susan Tate, Whitehall Middle School

Primary Subject: **GS**
Interest Level: **MS**
Location: *Michigan 2*

Calling all middle school teachers! This engaging session will offer lessons, activities, games, and freebies designed for middle school classrooms by those in the trenches.

Moving from Learning to Read and Write to Reading and Writing to Learn: Literacy Strategies in the Science Classroom

Diane Wright, Activate Learning

Primary Subject: **ES**
Interest Level: **MS**
Location: *Meeting Room 103*

Experience a lesson from Investigating and Questioning our World through Science and Technology (IQWST®) that draws on the most recent research on literacy learning in the context of science.

Partnering with the Michigan Nature Association in a Place Based Education Opportunity

Aaron Wesche, Addison High School; Rachel Maranto, Michigan Nature Association

Primary Subject: **ES, EN**
Interest Level: **HS**
Location: *Meeting Room 202*

Information on how Addison High School has been partnering with the Michigan Nature Association to educate and offer hands on experience in the protection of their community sanctuary.

Sensory Activities for Early Learners: Lessons You Can Use Tomorrow!

Becky Durling, Williamston Community Schools; Natalie Elkins, Michigan Department of Natural Resources

Primary Subject: **EN**
Interest Level: **K-2**
Location: *Meeting Room 203*

Do you need a lesson for your elementary class to use tomorrow? Are you searching for a way to get your students outside exploring nature? Then this is the session for you!

Summer Isn't Just for Suntans. It is for Research too!

Marty Buehler, Hastings High School; Connie High, Delton Kellogg High School

Primary Subject: **GS**
Interest Level: **MS, HS, Coll**
Location: *Regency 2*

Find out ways to involve your students in summer research opportunities. Help them expand their potential now and for their futures. Furthermore, connect their experiences to your classroom in the fall!

Teaching Science: The Next Generation

Todd Koenig, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 102*

Phenomena, Engineering and Science Practices, OH, MY!! How do you even start? Take this opportunity to learn more about the NGSS and take home new classroom activities to use.

Wait, What? There's a New Science Assessment?!?

TJ Smolek, Michigan Department of Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 4*

Learn how to navigate the uncharted waters of the new M-STEP science assessment. TJ will provide information about the assessment implementation timeline, structure of the assessments, blueprints, and answer questions regarding the state science assessment.

1:00 pm - 2:45 pm

A Mi-STAR Lesson: Got a Problem? Yo, I'll Solve It!

Monica Wyrwicz, Rochester Public Schools; Lisa Ogiemwonyi, Rochester Public Schools

Primary Subject: **GS**
Interest Level: **MS**
Location: *Banquet 7*

Participate in a design competition that uncovers the importance of well-defined criteria and constraints to having a successful solution. Aligns with MS-ETS1-1. 3D Classroom-tested lesson plan provided.

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1:00 pm - 2:45 pm continued

Engage Students to Think, Communicate, and Act Like Scientists!

Jan Huff, Van Andel Education Institute; Randy Schregardus, Van Andel Education Institute

Primary Subject: **GS, AS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 2*

Through hands-on investigations, discover the role of science talk and journaling that supports the rigors of the Michigan Science Standards. Leave with lessons and strategies you can use right away!

Learning Labs at the Detroit Zoo

Claire Lannoye-Hall, Detroit Zoological Society; Akilah Franklin, Detroit Zoological Society

Primary Subject: **GS, IN**
Interest Level: **K-2**
Location: *Michigan 1*

Discover how the Detroit Zoo can bring learning to life through hands-on, inquiry-based experiences that meet state science standards.

Lloyd's Toolbox of Engineering Ideas & Activities

Lloyd Hilger, Hanover Horton Schools

Primary Subject: **GS, TE**
Interest Level: **3-5, MS, HS, Coll**
Location: *Michigan 3*

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

Mathematizing Biodiversity: Using Species Accumulation Curves to Measure Biodiversity

William Hodges, Holt High School; Heather Peterson, Holt High School

Primary Subject: **BI**
Interest Level: **MS, HS, Coll**
Location: *Banquet 4*

Actually perform a simulation of the lab that takes students outside to collect insect data to make a species accumulation curve to measure the biodiversity of a habitat.

May the Force Be With You

Dale Freeland, Portage Central High School

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

You'll be moved by these engaging force and motion demos. These classroom-ready activities include the Stunt Car Lab (inspired by the movie Speed), the famous Monkey-Hunter "problem." the vertical versus horizontal acceleration demonstration, a simple way to prove "g" is always the same, and subjecting an unsuspecting teacher to a ride on the Human Dynamic Cart.

Photosynthesis and Respiration Shuffle

Bill Cline, LAB-AIDS; Shannon Mareski, Grand Blanc High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Meeting Room 104*

Address your students' misconceptions about photosynthesis and cellular respiration. Using a computer simulation, a hands-on activity, and notebooking and discussion strategies, extend student thinking all from LAB-AIDS SGI Biology Program.

Taking Flight with Children's Literature - KEYNOTE

Christine Anne Royce, Ed.D., Shippensburg University, NSTA President Elect; Dr. Steve Rich, University of West Virginia

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 1*

Regardless if science is taught in a classroom, at home, or outdoors, in a formal or informal setting; a trade book can be a source of inspiration, curiosity or information for children. A good story can serve as a catalyst for future questions, ideas, and learning opportunities. With that in mind, teachers can capitalize on the use of trade books by maximizing instructional time and allowing trade books to serve as a bridge between many different skill and content areas. Join us as we examine strategies, engage in activities, share trade books, and provide examples of varying ways to integrate science content with children's trade books. Throughout the session, we will connect some featured and favorite trade books to certain literacy strategies in order to help students learn science content.

1:00 pm - 3:45 pm

Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom

Samantha Johnson, Next Gen Science Innovations; Jim Clark, Next Gen Science Innovations

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Banquet 3*

The NGSS requires teachers to design activities that make all standards accessible for all students. Participants will engage with a variety of tasks that have multiple entry points, challenge and engage all learners, as well as foster meaningful group collaboration. We will take a deep dive into climate change, highlighting the crosswalk between earth and space sciences and other disciplines. A variety of global change phenomena will be used to engage participants in a three-dimensional lesson. While the Understanding Global Change (UGC) curriculum, developed by scientists at UC Berkeley, will drive the lesson, the main focus will be on equitable teaching practices that create opportunities for all students to learn. Even with a well-thought out and perfectly executed lesson, it is still a tremendous challenge to engage all students. This workshop will provide strategies to both design and implement authentic tasks to help address that challenge.

Session Descriptions

1:00 pm - 4:45 pm

MEECS - Energy Resources

Jessica Wagenmaker, MEECS

Primary Subject: **GS, EN, ES**
Interest Level: **3-5, MS**
Location: *Capitol 3*

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

2:00 pm - 2:45 pm

Bat Conservation in Your Classroom

Aja Marcato, Organization for Bat Conservation

Primary Subject: **GS, BI**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 201*

Discover the roles bats play in global ecosystems. Meet live bats and understand how environmental changes impact bat populations and learn how to protect them.

Cultivating Classroom Culture for New(er) Teachers

Rebecca Murawski, Grosse Pointe North High School; Elizabeth Michaels, Grosse Pointe North High School

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Michigan 2*

The culture we create in our classrooms helps shape student growth. Explore methods to develop your classroom culture in a way that encourages students' academic, social and behavioral growth.

Curriculum Review for 3-Dimensions

Richard Bacolor, Wayne RESA; Wendi Vogel, MSELA

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Banquet 2*

How can districts, buildings, or departments plan and carry out investigations to evaluate 3-dimensionally aligned curricula? We will describe the process Wayne County teachers used to produce data for analysis.

K-8 Teachers as Agents of Change: NGSS and the Environmental Impacts of Using Natural Resources

Jane Rice, Michigan State University; Laura Markham, Michigan State University

Primary Subject: **IN, EN**
Interest Level: **K-2, 3-5, MS**
Location: *Regency 1*

Earth's spheres provide us with resources we need - water, air, food, fuels, minerals. Our use of resources impacts Earth. Using NGSS's three dimensions we'll explore how to minimize these impacts.

Making Science Real with Problem Based Learning

Chuck McMillan, Pearson; Paul Meyers, Pearson

Primary Subject: **GS**
Interest Level: **K-2,3-5,MS**
Location: *Meeting Room 205*

Science is about more than just content and vocabulary. Science is about using creativity, communication, and collaboration to solve problems. This workshop will engage teachers in hands-on activities to show how bringing problem based learning into the science classroom leads to more engaged students, more meaningful learning, and better outcomes.

Project-Based Inquiry Science™ (PBIS): Creating "Coherence and Science Storylines" for Middle School

Mary Starr, Activate Learning

Primary Subject: **IN**
Interest Level: **MS**
Location: *Meeting Room 103*

STEM learning requires integration! Powerful questions and coherent storylines help solve the integration challenge.

Salmon in YOUR Classroom

Tracy Page, Michigan Department of Natural Resources

Primary Subject: **GS, BI, CH, IN, EN**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 204*

Learn about the MI DNR's acclaimed "Salmon in the Classroom" program. Attendees will learn all about the program, curriculum connections, fun sample activities and more information about how to join the program.

Setting the Stage for Doing Science in Chemistry

Colin Costello, Hartland High School; Kate Hagerman, Hartland High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Capitol 4*

We discuss ways in which we set the stage in our chemistry classes during week one for students to experience the expectations of an NGSS chemistry class.

Session Key:

Primary Subject Levels:

AS – Assessment/Curriculum
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■ Featured Session

2:00 pm - 2:45 pm continued

Student Drivers - Driving Question Boards Empower Students to Figure Out What They Really Need to Know and How They Will Get There

Holly Hereau, Thurston High School; Wayne Wright, Thurston High School

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 102*

DQBs within storylines enable students to see that they can and will answer questions that matter to them. Students are authentically engaged in discussions and investigations while answering these questions.

Successful STEM Techniques in Elementary Classrooms

Michele Bielby, Dieck Elementary; Kelly Swales, Dieck Elementary, Swartz Creek Community Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

A 4th grade lesson on energy that demonstrates scientific thinking and reflection of phenomena, while using student centered scientific discussion and application of concepts in the elementary STEM classroom.

Teaching Students About the Brain: How I've Learned to View Neurodiversity

Laura Panek, The Roeper School

Primary Subject: **GS, BI**
Interest Level: **HS**
Location: *Banquet 8*

Through a student centered course on neuroscience I have come to view learning differences and neurodiversity in a more positive light that empowers students. This session will present information on some of the less discussed advantages of learning differences while sharing the format and goals of the course. Mental health and wellness educational topics will also be included along with how the course has helped to destigmatize seeking mental health care amongst students.

Thematic Science Fairs - Using Scientific Inquiry to Increase Environmental Literacy

Bridget Booth, St. Thomas Aquinas School / MAEOE

Primary Subject: **GS, EN**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 203*

A thematic science fair offers students an authentic opportunity to engage in the process of science and real-world problem solving. Learn how to plan an event that emphasizes scientific inquiry and increases environmental literacy of your school community.

Transition from One Dimensional GLCE's to Three Dimensional NGSS

Andrew Frisch, Farwell High School; Duncan Gervin, Farwell High School

Primary Subject: **GS, BI, CH, PH**
Interest Level: **3-5, MS, HS**
Location: *Regency 2*

Having been taught and then teaching in one style of pedagogy, we are confident and comfortable. Now, the rules have changed! The new system not only dictates what students must know, but in addition, it also includes the skills they must posses. Not only are they new expectations, but there is more to the NGSS. This presentation is a "how to" transition your science teaching from traditional lesson plans into NGSS lesson planning.

2:00 pm - 3:45 pm

Effectively Engaging Youth in The Process of Science

Tracy D'Augustino, Michigan State Univeristy Extension; Norm Lownds, MSU Extension

Primary Subject: **IN**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Meeting Room 101*

Tips, tricks and activities designed with the research based best practices to help formal and informal science educators more effectively engage youth in the process of science.

Inexpensive Hands On Chemistry Activities That Help Students Make Connections

Deanna Cullen, Whitehall High School - Retired

Primary Subject: **CH**
Interest Level: **HS**
Location: *Capitol 1*

Chemistry teachers can practice several hands on activities. Student and teacher documents outline common misconceptions while supporting reflection and discourse to deepen conceptual understanding of the topics.

Making Sense of Phenomena by Using a Free Online Modeling Tool

Tom Bielik, CREATE for STEM Institute at Michigan State University; Consuelo Morales, CREATE for STEM Institute at Michigan State University; Li Ke, CREATE for STEM Institute at Michigan State University

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Banquet 5*

In this workshop we will present a free online modeling tool designed to engage secondary students in building and using scientific models to make sense of phenomena.

Session Descriptions

Teaching with the Big Ideas in Mind

Kristin Kiebler-Green, Western Middle School; Joe Showerman, Western Middle School

Primary Subject: **ES, EN**
Interest Level: **MS**
Location: *Meeting Room 202*

Join us for an interactive session on using the Big Ideas in Earth Science to drive your science lessons. There will be hands-on activities and materials that can be used immediately in the classroom.

3:00 pm - 3:45 pm

Boatload of Biology

Kristy Butler, Forest Hills Central High ; Patti Richardson, Forest Hills Central High School

Primary Subject: **BI**
Interest Level: **MS, HS**
Location: *Banquet 4*

Join us as we share a boatload of biology activities, lessons and labs that you can use in your classroom tomorrow. Inquiry focused and NGSS aligned. Handouts and resources given!

Elemental Fictions: Storytelling and Narratives in Introductory Science

Mark Benvenuto, University of Detroit Mercy; Prasad Venugopal, University of Detroit Mercy

Primary Subject: **CH, PH**
Interest Level: **MS, HS, Coll**
Location: *Capitol 4*

We present student responses in two introductory science classes when they were assigned socio-historical narratives from a chemical element's perspective. The session will make connections to current science standards.

Explore Hands-On Science for Elementary Students at Impressions 5

Toni Daymon, Impressions 5; Micaela Balzer, Impressions 5

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Impressions 5*

Join us at Impression 5 Science Center for an interactive workshop that allows us to explore hands-on science for younger elementary students. Engage in the lessons learned from a program Impression 5 delivers, the Big Science Lesson, that are customer built by teachers and the staff of Impression 5, integrating and weaving NGSS standards and generating an inquiry-based lesson. Receive lesson examples used to engage learners in engineering principles at the science center. After the workshop, teachers are encouraged to stay and explore the science center. Impression 5 is located down Museum Drive, a 3-minute walk from the Lansing Center. To locate Impression 5 please look for the Dreamer Sculpture right outside the Lansing Center and walk down Museum Drive, please enter via the city-side entrance and check in at admissions.

Flipping with Ease

Adam Alster, Renaissance High School - Detroit Public Schools Community District ; Cynthia Bridges, Renaissance High School - Detroit Public Schools Community District

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Michigan 2*

Bring your computers and learn to flip lessons with ease. From the novice with technology to the pro, learn how two teachers learned to flip their lessons for maximum student achievement. Leave with strategies that can be implemented in your classroom immediately.

Get Students Asking THEIR OWN Questions

Katie Stevenson, Fisher Elementary School

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

Need ideas to get students to ask their own questions, develop inquiry skills, and improve dialogue? Walk away with strategies that can be used with any grade and content area.

IBN-Drawing and Writing to Learn Science

Lisa Weise, Holt Public Schools

Primary Subject: **GS, BI, AS**
Interest Level: **3-5, MS, HS**
Location: *Banquet 8*

Using Interactive Notebooks can help students be mindful of how their learning progresses throughout the year. Notebooks are a wonderful tool for constructing experiments, drawing diagrams, recording data, reflecting on learning.

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■ Featured Session

3:00 pm - 3:45 pm continued

Invaders in Your Classroom: Resource Kits to Teach About Aquatic Invasions

Tracy Page, Michigan Department of Natural Resources

Primary Subject: **BI, IN, IS, EN**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 204*

Asian Carp...Red Swamp Crayfish...Snakehead - just some of the aquatic invasive species that your students might hear about. Join the DNR's Aquatic Education Coordinator to gain fun activities and a resource kit to use in discussions with your students about these important topics.

Let's Debate!

Kathy Agee, GVSU Regional Math and Science Center

Primary Subject: **GS, IN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 1*

How do we get our students to have productive discussions? By examining socio-scientific topics (like antibiotics and offshore drilling), students can develop functional scientific literacy while engaging in science content.

Make Your K-5 Science Phenomenal! An Introduction to Phenomenal Science Units

Darcy McMahon, Central Michigan Science Mathematics Technology Center; Matthew Samocki, Central Michigan Science Mathematics Technology Center; Jennel Martin-Powell, Central Michigan Science Mathematics Technology Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 7*

Come discover this revised comprehensive science curriculum for K-5, written by teachers for teachers. Units are aligned to MSS and available for free. Opportunities for involvement will be shared.

Making It Real... Cheap!!

Darrick Gregory, STARBASE- Battle Creek; Jodi Heaney, Parchment Middle School; Julie Hahn, Parchment Middle School

Primary Subject: **GS**
Interest Level: **3-5, MS**
Location: *Meeting Room 102*

This session will include a variety of quick and engaging phenomena that can be done for little or no cost. Online resources with interactive simulations, short videos, and activities will also be included.

Microbes Ate My Underwear!

Misty Klotz, Kellogg Biological Station ; Heather Kittredge, Kellogg Biological Station

Primary Subject: **BI, EN**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 203*

Is the soil in your schoolyard healthy? A field of fertile soil contains more microorganisms than all the humans living on Earth! Uncover the mystery of soil organisms and see what happens when we bury undies to learn about the secrets of soil biodiversity. In this session, we will review a lesson plan and activity where 100% cotton underwear is buried in the soil and after a few weeks the underwear is recovered to determine the microbial activity in the soil. The more the underwear is decomposed over the course of the experiment, the more active the soil microbial community. This lesson plan and activity not only introduce the importance of soil microbiota, but also cover the importance of soil health in feeding a growing world population. If you are looking for an exciting way to get students outside and excited about soil, this activity is captivating, fun and can be modified for all ages. And of course anything that involves underwear is going to be a hit!

One Crime Scene; 100 Students! Oh my!

Kathy Mirakovits, Portage Northern High School

Primary Subject: **GS**
Interest Level: **3-5, MS, HS, Coll**
Location: *Meeting Room 205*

Setting up a mock crime scene can be daunting. Learn tips and pitfalls to avoid so that your students can have the opportunity to practice forensic techniques, be challenged, and have fun.

Phenomenon-First Examples in the Classroom

Carl Wozniak, Northern Michigan University

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Meeting Room 201*

This session explores simple demonstrations and puzzling phenomena that increase student engagement and lead them to want to discover deeper understanding. Sometimes, it's just in how you ask the question.

Productive Talk: How to Get Students to Share Their Thinking Through Scientific Discussions

Katie MacDonell, Galesburg-Augusta Community Schools; Kelly MacDonell, Vicksburg Community Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Capitol 2*

Two teachers share their experiences incorporating productive talk into K-12 science classrooms to help you navigate through your first year of implementation. Tips, tricks, pitfalls, samples, cross-curricular applications, and more.

RC Cars, Sensors, and Coding… Oh My!

Alexandra Wagner, Central Michigan University; Allison Abram, Central Michigan University

Primary Subject: **GS, TE, IN**
Interest Level: **3-5, MS, HS**
Location: *Michigan 3*

Presenters will share their experience of working side-by-side with engineers at Central Michigan University to incorporate the NGSS in schools using remote controlled cars, block coding, sensors, and microcontrollers.

Tools for Thinking About Assessment For The New MSS - MSELA

Sarah Coleman, MAISD

Primary Subject: **AS**
Interest Level: **MS, HS**
Location: *Banquet 2*

What does three dimensional assessment mean? Join us to consider and evaluate different assessment questions to determine if they are one, two or three dimensional

Video Storylines in the Science Classroom

Josh Nichols, Heritage

Primary Subject: **GS**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 103*

Get your students to show their science literacy by becoming video storytellers of their learning using key terms from the Science Standards.

WALLS: Water, Air, Land, Life and Space

David Mastie, Ann Arbor Public Schools (retired)

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Regency 2*

Together we will experience hands-on activities from the five spheres of my WALLS model and explore their applications to physics, chemistry, and other STEM content areas.

What Does That Graph Show Me?

Dale Freeland, Portage Central High School

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

What are the four most frequent relationships examined in the Physical Sciences? This session will present teaching tools to help students understand direct, inverse, exponential and inverse square relationships in the Physical Sciences. Activities in which students measure quantities and graph data points will be used. The students then choose the graph type, list a generic equation and then develop an equation specific for the graphed relationship will be illustrated. These basic graph skills will be useful in all high school science classes.

3:00 pm - 4:45 pm

Cell Differentiation and Gene Expression

Bill Cline, LAB-AIDS; Shannon Mareski, Grand Blanc High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Meeting Room 104*

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and explain how it is connected to genetic engineering.

No Time for Science? Learn How to Integrate Reading and Writing Using the Cereal City Science Units

Steve Barry, Cereal City Science by Battle Creek Area Mathematics and Science Center ; Nancy Karre, Cereal City Science by Battle Creek Area Mathematics and Science Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Michigan 1*

CCS selects science text that aligns with ELA and literacy in Science. Text and Student Journal writing provide opportunities for students to explore science while learning to read and write in content.

4:00 pm - 4:45 pm

A New Formula? PASCO + Curriculum = PASCO education (ALL in one STEM solution for Chemistry and Physics)

Julie Thomas, PASCO scientific

Primary Subject: **CH, PH, IN**
Interest Level: **HS**
Location: *Banquet 7*

PASCO scientific is now a provider of curriculum and equipment for Physics and Chemistry. Not only does this complete STEM solution meet ALL Michigan Science Standards, it includes a complete print and digital curriculum with PASCO equipment for the price of most textbooks! Attend this session and receive free access codes for both solutions for the remainder of the school year.

Bring Michigan Science Standards to Life Using Place-based Education

Amanda Syers, Grand Valley State University; Kym Pawelka, Grand Valley State University

Primary Subject: **EN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Michigan 2*

Use place-based education to model Michigan Science Standard concepts to explore driving questions surrounding community endeavors and provide techniques for involving students in other environmental restoration efforts.

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■ Featured Session

4:00 pm - 4:45 pm continued

Community Connection Activities in Biology Classrooms

Craig Kohn, Michigan State University

Primary Subject: **BI, EN**
Interest Level: **HS**
Location: *Banquet 3*

In this workshop, we will explore activities developed at MSU to help students make connections between what they are learning in the classroom and what is happening in the real world.

Doing, Thinking, Understanding: Science Performance Assessments

Matthew Samocki, Central Michigan Science Mathematics Technology Center; Darcy McMahon, Central Michigan Science Mathematics Technology Center; Jennel Martin-Powell, Central Michigan Science Mathematics Technology Center

Primary Subject: **AS**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 201*

Three Dimensional Science Performance Assessment (3DSPA) project's FREE science performance tasks aligned to MSS are now available. Discover results and findings, how to access the tasks, and professional learning opportunities.

ECHO: Distance Learning at the MiSci

Jeanane Charara, Michigan Science Center

Primary Subject: **GS, IS**
Interest Level: **K-2, 3-5**
Location: *Meeting Room 103*

Bring fun and engaging science lessons into your classroom from the Michigan Science Center with just the click of a link via video conferencing.

Focus on Figuring Out – Grade 4 (Multiple Literacies in Project-Based Learning)

Sam Severance, CREATE for STEM at MSU; Deborah Peek-Brown, CREATE for STEM at MSU; Susan Codere, CREATE for STEM at MSU; Joseph Krajcik, CREATE for STEM at MSU

Primary Subject: **AS**
Interest Level: **3-5**
Location: *Banquet 5*

Participants will explore classroom resources that support student use of science and engineering practices, literacy and mathematics, collaboration and discourse as they figure out phenomena aligned to Grade 4 MSS(NGSS).

Great Demos on a Small Budget

Mark Sheler, Sandusky Jr/Sr High School

Primary Subject: **GS, CH, PH**
Interest Level: **MS, HS, Coll**
Location: *Capitol 4*

Tired of costly demonstrations and lab materials? This veteran teacher will show you how to knock the socks off your students without breaking the bank. Demos you can afford, phenomena you'll want to demonstrate and everything is affordable!

Ignite Your Classroom With Digital Storytelling (Featuring GoPro Cameras).

Josh Nichols, Stockbridge Community Schools

Primary Subject: **IN**
Interest Level: **3-5, MS, HS, Coll**
Location: *Meeting Room 204*

Accelerate learning and provide a window into the classroom . Participants will leave with a deeper understanding of the process as well as a 45-second narrated video that you created.

Medicines and Me-Developing a New Flu Prevention Drug

Cynthia Duncan, Father Gabriel Richard High School; Samantha Cree, Lawrence Jr/Sr High School

Primary Subject: **BI, CH**
Interest Level: **MS, HS**
Location: *Banquet 8*

I will present an activity designed by Life Science Learning Center at Rochester University. They will be providing all of the materials for the participants. The lesson is a lab activity that explores the processes involved in developing and testing a new flu prevention drug. I have also included a "Claim, Evidence, Reasoning" component for the lesson.

Michigan Environmental Public Health Tracking - A Tool You Can Use!

Jill Maras, Michigan Department of Health and Human Services; Sydney Ogden, Michigan Department of Health and Human Services

Primary Subject: **EN**
Interest Level: **MS, HS, Coll**
Location: *Capitol 2*

MiTracking shows you how to learn about connections between health and the environment by easily accessing its data portal and running data queries. The presentation will provide background information about the Tracking Program and a demonstration of the interactive data portal.

NGSS and Gardens - A Perfect Partnership

Jody Harrington, E.L. Johnson Nature Center

Primary Subject: **BI, EN**
Interest Level: **K-2, 3-5**
Location: *Michigan 3*

CANCELED

Gardens are a perfect vehicle to accomplishing many NGSS Standards. Take your class outdoors and use the best EE Activities from Wet/Wild, PLT, and AIMS to coordinate learning in Gardens with NGSS. Performance objectives are listed by elementary grade level and activity.

Session Descriptions

Physical Science Phenomena for Middle School

Michelle Mason, Portage Northern High School; Kathy Mirakovits, Portage Northern High School

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

Middle school appropriate phenomena ideas for teaching Physical Science!

Science and Engineering Practices in the NGSS

Matt Moorman, TCI

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Meeting Room 205*

Join TCI and participate in an engaging Bring Science Alive! investigation that has your elementary students developing solutions and making sense of the natural and designed world. Participants will experience this lesson from the student perspective as they carry out investigations, build models, and learn skills to analyze and interpret data, develop solutions, and communicate their methods just like professional scientists and engineers!

Solar Panels and Pool Covers: Revving UP Biology

Amy Weesies, Hart High School, Hart Public Schools

Primary Subject: **BI**
Interest Level: **HS**
Location: *Meeting Room 203*

Its time that biology gets is fair share of attention for how it can impact STEM. Come see fun ideas that help bring engineering to biology and help bring NGSS phenomenon to the biology classroom.

Spandex of Gravity - Modeling the Very Fabric of Space and Time!

Christine Brillhart, Midland Public Schools; Christie Gayheart, Midland Public Schools; Mark Hackbarth, Midland Public Schools

Primary Subject: **ES, IN**
Interest Level: **MS**
Location: *Meeting Room 202*

This activity engages students by using a model to better understand and explain the concept of gravity, how gravity acts on objects in the universe and affects their motion.

Teaching NGSS with S.M.A.R.T Lessons

Julie Leach, List Elementary Frankenmuth; Tosha Miller, List Elementary Frankenmuth

Primary Subject: **TE, IN**
Interest Level: **K-2**
Location: *Meeting Room 101*

Our presentations will cover SMART (Science, Math, Art, Reading, Technology) lessons which incorporates hands on learning through problem based explorations into the Next Gen Science Standards. You will leave this session inspired and energized... ready to teach lessons in your classroom!

Teaching with Technology

Michelle Campbell, Carsonville-Port Sanilac

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Regency 1*

Get your students engaged in lessons by using a range of technology. This session will focus on Sphero balls, VR, hex-bots, the Qball, and digital Breakout EDU. This will be a hands on session.

Using 3D Learning Strategies to Improve Standardized Assessment

Karen Kudla, Oxford Community Schools

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Regency 2*

Learn how 3 dimensional classroom activities can be used to improve student performance on standardized assessments such as the new MI Science M-Step.

Water Quality: Developing Citizen Scientists

Jackie Murray, Clinton Community Schools

Primary Subject: **GS, ES, IS, EN**
Interest Level: **MS**
Location: *Meeting Room 102*

Students become citizen scientists each year when we conduct water quality testing in our local river. Results are communicated to our area, and we upload our data to an international database.

Zero to STEM in 60 minutes!

Crystal Brown, Gibraltar School District

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

Whether you're teaching STEM as a special or trying to enhance your K-5 classroom with more STEM experiences, join us to find lessons and strategies for incorporating practices and the elements of STEM in your early elementary classroom. The Science and Engineering Practices should be the backbone of STEM education at all levels. Learn how to teach the SEP to even our youngest learners.

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■ Featured Session

Session Descriptions

Saturday, March 3, 2018

8:00 am - 8:45 am

Activities for the Anthropocene

Holly Schaeffer, Lansing Community College

Primary Subject: **BI, EN**
Interest Level: **HS**
Location: *Michigan 3*

Combine history and environmental science in this hands-on session exploring how humans have shaped the earth and atmosphere since the Industrial Revolution.

Biology Practices That Drive Thinking Forward

Rebecca Brewer, Troy High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Banquet 4*

Explore the use of interactive biology manipulatives and engaging kits that get students figuring out biological concepts, while enjoying learning. Emphasis will be on "designed to discover" high school activities.

Cheap Easy Demonstration Usable by Most

Andrew Frisch, Farwell Area School

Primary Subject: **BI, CH, PH, IN**
Interest Level: **3-5, MS, HS**
Location: *Banquet 2*

A variety of simple cheap and universal demonstrations with explanations, will be provided. These demonstrations could easily be modified for most grade levels and various science disciplines. These demonstrations will be focused on phenomena.

Claims, Evidence and Reasoning (CER) in an AP Chemistry Classroom

Alice Putti, Jenison High School; Jamie Benigna, Roeper School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Capitol 4*

CER can help students to develop logical arguments that showcase their thinking. Learn how to use CER to improve student reasoning and FRQ scores. Tested activities/questions will be provided.

Creating Professional Learning Communities Around 3D Formative Assessment

Mary Starr, Michigan Math and Science Centers Network

Primary Subject: **GS, AS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Banquet 1*

Join us as we work through some examples of formative assessment and one way to bring formative assessment feedback loops to your classroom.

Fake News in Science

Steven Tezak, STARBASE Alpena

Primary Subject: **GS, CH**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 101*

Kids "learn" all sorts of things on social media and YouTube. From the more subtle pranks to ones that can cause harm, we need to be able to supply the tools they can use to identify when something is unsafe.

Getting Them Talking Constructively

Mari Maltby, Carson City Crystal

Primary Subject: **BI, IN**
Interest Level: **MS**
Location: *Banquet 3*

Students like conversation. Let's get them talking! Tips are given during this workshop that will support you as you get your students to engage in scientific argument (without interruption).

Incorporating STEM into the Classroom

Gary Curts, Activate Learning

Primary Subject: **GS**
Interest Level: **HS**
Location: *Meeting Room 103*

Bringing STEM into the classroom by involving students in engineering design to solve a real-world problem gives students the opportunity to apply CCCs and DCIs as well as demonstrate NGSS SEPs.

Make Any Classroom a Makerspace

Chuck McMillan, Pearson; Paul Meyers, Pearson

Primary Subject: **GS**
Interest Level: **K-2,3-5,MS**
Location: *Banquet 5*

Makerspaces are everywhere, from television to your public library. You can make your classroom into a makerspace without a lot of equipment or cost. All you need is the right attitude and the willingness to promote innovative thinking in your students. Come try it out for yourself in this fun hands-on workshop!

Making Nasty Problems Fun!

Mike Sinclair, Kalamazoo Area Math & Science Center

Primary Subject: **GS, PH**
Interest Level: **HS**
Location: *Meeting Room 203*

Creating interesting and enjoyable problems can enhance the learning experience for students. Here's how I approach crafting innovative and entertaining exercises.

Michigan Chemistry Teachers Meeting

Mary McMaster, Allen Park High School; Michelle Mason, Portage Northern HS

Primary Subject: **CH**
Interest Level: **HS**
Location: *Michigan 2*

Session Descriptions

The MCTA is interested in creating opportunities for teachers to connect beyond the MSTA conference. Join us as we discuss the needs of chemistry teachers in Michigan.

Mi-STAR Up and Running in Your School

Doug Oppliger, Michigan Tech / Mi-STAR; Stephanie Tubman, Michigan Tech / Mi-STAR

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Banquet 7*

Find out about Mi-STAR's professional learning program and gaining access to the available Mi-STAR Units. Learn about Mi-STAR's NGSS alignment and unit structure and the plans for creating more units.

Muffins for MSTA Members

Robby Cramer, MSTA

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Regency 1*

General Membership Meeting at 8:00 Saturday morning

Mysteries of Magnetism - THEMIS & MMS

Cris DeWolf, Chippewa Hills High School/MESTA; Lisa DeWolf, Chippewa Hills High School

Primary Subject: **PH, ES**
Interest Level: **HS**
Location: *Banquet 8*

Are electricity and magnetism related? Can I prove Earth has a magnetic field – without a compass? Does magnetism protect life on Earth? Learn more with activities from THEMIS.

NGSS Puzzles and Mysteries: Using Phenomena in the Classroom

Ann Pearson, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Meeting Room 102*

Phenomena help you build coherent storylines, pique student interest and get kids thinking like scientists and solving problems like engineers. Come learn how in this session!

NGSS Unit Creation & Assessment

Brenda Lantinga, Battle Creek Public Schools

Primary Subject: **ES**
Interest Level: **MS**
Location: *Meeting Room 204*

Lear about learner centered, middle school units for the Next Generation Science Standards, including lessons, mind maps, learning summaries and assessments.

Oh Deer! Populations, Models, and Technology

Rob Keys, Cornerstone University; Benjamin VanDyke, Cornerstone University

Primary Subject: **BI, EN**
Interest Level: **3-5, MS, HS**
Location: *Michigan 1*

Investigate how populations of deer change on a hypothetical island, then apply this to an actual urban park and then use picture data to analyze actual deer populations. Related MSS Performance Expectations: MS-LS2-1, MS-LS2-4, MS-LS2-5, HS-LS2-1,Science and Engineering Practices: Developing and Using Models, Analyzing and Interpreting Data, Constructing Explanations and Designing Solutions, Using Mathematical and Computational Thinking, Crosscutting Concepts: Cause and Effect; Stability and Change; Scale, Proportion and Quantity Handouts; access to data set will be provided.

The Triple E's of Climate Change: Environmental Change, Epidemiology & ELISA Testing!

Tamica Stubbs, Bio-Rad Laboratories

Primary Subject: **BI, IS, EN**
Interest Level: **MS, HS, Coll**
Location: *Meeting Room 205*

Transform your students' thinking around assessing climate change using biotechnological techniques. Via an ELISA simulation, participants will learn to detect and correlate *V. vulnificus* rising epidemiology with increased global temperatures

Session Key:

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■ Featured Session

Session Descriptions

8:00 am - 8:45 am continued

Turning Science Fiction Into Science Facts: A Compelling Project Based Approach Using New STEM Investigative Techniques

Will Wharton, Backyard Brains; Greg Gage, Backyard Brains

Primary Subject: **GS, BI**
Interest Level: **MS, HS**
Location: *Meeting Room 201*

Cyborgs! Human Mind Control! Sounds like Sci Fi? Think again! It's actual science being done in research labs around the world, and now you can do it in your classroom. Come explore the body's hidden electrical network that lives just below our skin and skulls: our nervous system. This workshop will be a hands-on demonstration of open-source neuroscience tools which are appropriate for amateurs and for use in middle/high school educational programs. We will focus on experiments that explore the neuroscience field of "electrophysiology" and will provide some background on neurons and brain function. We will highlight how to think using first principles and will highlight basic "DIY" tools to explore neurophysiology, functional electrical stimulation, micro-stimulation effect on animal behavior, neuropharmacology, even neuroprosthesis and optogenetics! Don't worry... all these will be explained in easy-to-follow experiments.

8:00 am - 9:45 am

"It's Just too Hard to Explain!" - Making Sense of Phenomena by Developing and Using Models in the Elementary Classroom

Steve Barry, Cereal City Science by Battle Creek Area Mathematics and Science Center ; Nancy Karre, Cereal City Science by Battle Creek Area Mathematics and Science Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

Modeling plays a critical role in developing a scientific explanation of a real world phenomenon. We will use an example to show what the modeling practice looks like in the classroom.

Floating Trains: Phenomena, 3-D Instruction, and Amplify Science for Grades K-5

Bill Badders, Amplify Education & The Lawrence Hall of Science

Primary Subject: **ES, IN**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 202*

Experience how students investigate maglev trains while figuring out principles of forces and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for Grades K-5, engaging with this new K-8 NGSS designed curriculum from the Lawrence Hall of Science.

idk Whut 2 Say: Teen Dialogue in The Classroom

Rebecca Heckman, Inland Lakes Schools

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Capitol 2*

Classroom discussions are a perfect place to develop students' ability to use textual evidence alongside social skills. Using brain research, we will engage in discourse on strategies which strengthen students' discussion skills. This is not a sit and get lesson.

Integrating Environmental Data Analysis into your Classroom: Climate Change and Michigan's Cherries

Isabella Garramone, University of Michigan; Katie Torkelson-Regan, University of Michigan

Primary Subject: **EN**
Interest Level: **HS**
Location: *Regency 2*

An interactive overview of Climate Change and the Future of Michigan Cherries. This free 4-lesson unit which allows high school students to predict how a shifting climate impacts Michigan's cherries using scientific modeling and plant phenology. We will complete a selection of the unit's activities together, including an outdoor portion (weather permitting).

Newton's 2nd Law of Motion Activity, NGSS

Brad Parsons, Central Michigan University

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

Engineering balloon powered vehicles to introduce Newton's 2nd Law of Motion.

Waves

Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS

Primary Subject: **PH**
Interest Level: **MS**
Location: *Meeting Room 104*

Waves transmit energy and information. Join us for an activity from the SEPUP Waves unit for the middle grades, newly updated for NGSS. Interactions of light will be explored.

8:00 am - 10:45 am

Energy and the NGSS

Don Pata, Grosse Pointe North High Schools; Laura Ritter, Troy High School

Primary Subject: **BI, CH, PH, ES, IN, EN**
Interest Level: **3-5, MS, HS, Coll**
Location: *Capitol 1*

This 3 hour workshop will give participants some practice using NGSS techniques in learning the ways in which energy is treated by the NGSS.

Session Descriptions

8:00 am - 11:45 am

MEECS - Water Quality

Joan Chadde, MEECS

Primary Subject: **GS, EN, ES**
Interest Level: **3-5, MS**
Location: *Capitol 3*

Discover the essential role that water plays in Michigan's economy and 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.

9:00 am - 9:45 am

1 Class Period + 1 Model System + 2 Cellular Processes = Success 4 Students!

Tamica Stubbs, Bio-Rad Laboratories

Primary Subject: **BI, IN, IS, EN**
Interest Level: **MS, HS, Coll**
Location: *Meeting Room 205*

Learn how encapsulated algae can be used to investigate photosynthesis and cellular respiration within one period using one CO^2 colorimetric tracking solution. Bring inquiry alive!

3-2-1 Blast Off!

Diane Correnty, Educational Innovations

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 201*

Get a burst of energy! Join Educational Innovations in this exposition of things that go bump in the day! This hands-on workshop is perfect for any elementary or middle school teacher teaching energy or Newton's Laws. Lessons, prizes & freebies!

Biological and Health Students' Perception About Academic Integrity

Jorge Joel Reyes-Mendez, Metropolitan University - Xochimilco Campus; Samuel Coronel-Nuñez, Metropolitan University - Xochimilco Campus; Rafael Diaz-Garcia, Metropolitan University - Xochimilco Campus

Primary Subject: **GS, AS**
Interest Level: **MS, HS, Coll**
Location: *Michigan 2*

Students' perception of academic integrity is that they have never been educated about the importance of the subject. We concur on the need to train teachers to create awareness and good practices.

Building Solid Storylines

Ann Pearson, Houghton Mifflin Harcourt; Kelly Short, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **3-5, MS, HS**
Location: *Meeting Room 102*

How do you weave student questions, phenomena, and science practices into a coherent storyline covering multiple lessons? Come get some guidance, ideas and resources!

Classification Can Be Fun

Lu Anne Clark, Lansing Community College

Primary Subject: **BI, CH, ES**
Interest Level: **MS, HS, Coll**
Location: *Regency 1*

Hands on activities designed to walk through classification techniques and the pluses and minuses of different types of classification. Both physical and biological science related. Cheap materials involved.

Creating a Space for the Crosscutting Concepts: From Questions to Explanations to Assessments

Mary Starr, Michigan Math and Science Centers Network

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Banquet 1*

The crosscutting concepts encourage students to think through ideas using distinct lenses. In this session, we will explore what the CCCs are and how they can and should be incorporated in questions, explanations and assessment.

Focus on Figuring Out – Grade 3 (Multiple Literacies in Project-Based Learning)

Kellie Finnie, CREATE for STEM at MSU; Deborah Peek-Brown, CREATE for STEM at MSU; Susan Codere, CREATE for STEM at MSU; Joseph Krajcik, CREATE for STEM at MSU

Primary Subject: **GS, IN, AS**
Interest Level: **3-5**
Location: *Banquet 5*

Participants will explore classroom resources that support student use of science and engineering practices, literacy and mathematics, collaboration and discourse as they figure out phenomena aligned to Grade 3 MSS(NGSS).

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■ Featured Session

Session Descriptions

9:00 am - 9:45 am continued

Implementing NGSS 3D Learning with NASA/GLOBE Earth System Learning Progressions

Janet Struble, The University of Toledo/GLOBE Mission EARTH

Primary Subject: **ES**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 204*

Interact with three-dimensional learning experiences for Earth Science: Atmosphere which incorporate GLOBE Program investigations, data collection, and NASA resources in a series of K-12 learning progressions. Handouts.

Rock with Your Students!

Maria Gonzalez, Holy Family School

Primary Subject: **ES**
Interest Level: **K-2, 3-5, MS**
Location: *Banquet 8*

Wondering how to get students excited about seemingly unexciting lumps of matter? This session includes, attention-getting, easy to use zingers and how to easily get resources for your labs.

Science Songs, Simple Stuff and Sliquids

Kevin Koch, Kalamazoo Public Schools

Primary Subject: **GS, ES**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 101*

Add some fun to your lessons. Using songs about science (or student created songs), easy, inexpensive demos or quick activities and unique vocabulary to help your students enjoy science more. Sharing session will be included.

Scientific Argumentation: How To Reason Like a Scientist

Samantha Lichtenwald, Bay-Arenac Community High School; Samuel Langhorne, Bay-Arenac Community High School

Primary Subject: **GS**
Interest Level: **HS**
Location: *Michigan 1*

How to facilitate scientific discourse in your classroom; encouraging students to make sense of science concepts and phenomenon by connecting to their own life experiences and prior knowledge.

Slow Down To Go Fast? How Modeling Can Increase Student Engagement Through Storytelling

Sandra Erwin, Harper Creek High School; Mason Converse, Harper Creek High School

Primary Subject: **CH, PH**
Interest Level: **HS**
Location: *Meeting Room 203*

Participants will explore how using student generated models increases depth of content understanding and student engagement through storytelling in high school science classes.

Teaching About Climate Change in Biology

Wendy Johnson, Kentwood Public Schools; Christie Morrison Thomas, Michigan State University

Primary Subject: **BI, ES**
Interest Level: **HS**
Location: *Banquet 4*

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

Using Phenomena in Biology to Give Context and Purpose for Learning

Courtney Lutz, Grand Ledge High School; Katherine Rydzinski, Grand Ledge High School/MSU

Primary Subject: **BI**
Interest Level: **HS**
Location: *Banquet 3*

How the phenomena of maintaining homeostasis of blood glucose can drive students to discover connections between negative feedback loops, cellular respiration, photosynthesis, protein synthesis, membrane transport and organelle cooperation.

We've Got Gall, Do You?

Steve Vree, Cedar Springs High School; Eddie Johns, Cedar Springs High School

Primary Subject: **BI, EN**
Interest Level: **MS, HS, Coll**
Location: *Michigan 3*

Addresses NGSS HS-LS2-6 What are Galls? Why are they a good food web model? Identify larvae and safely remove larvae. Use talk moves with class discussion to promote student thinking.

9:00 am - 10:45 am

Mi-STAR Professional Learning Session I: Introducing the Challenge

Emily Gochis, Michigan Technological University; Megan Coonan, Saginaw ISD; Stephanie Tubman, Michigan Tech / Mi-STAR

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Banquet 7*

Experience how 21st century issues and student questioning can drive three-dimensional units. Introductory lessons are designed to activate and expose thinking while motivating students to address real-world challenges. Handouts Provided. (Attendance at all three in this series can qualify as Mi STAR Day One Training)

PlayFlu: Using Wearable Technology and Kinesthetic Teaching to Engage Kids in Modeling Scientific Phenomena

Nirit Glazer, PlayFlu; Yariv Glazer, PlayFlu

Primary Subject: **GS, BI, CH, TE, IN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Banquet 2*

PlayFlu is a FREE outreach program that travels to schools and is aligned with the NGSS. The program integrates tag-style games with lesson plans to engage students in modeling scientific phenomena.

Structuring Discussion to Be Equitable and Rigorous

Diane Wright, Activate Learning

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 103*

Per NGSS, learning is a social endeavor supported by collaborative and communicative norms, which requires teachers to examine and support K–12 students' ways of articulating, making sense of, and evaluating each other's ideas.

Teaching Chemistry to Middle School Students

Kathleen O'Connor, Madison Carver Academy

Primary Subject: **CH, PH**
Interest Level: **MS**
Location: *Capitol 4*

Middle school students and the study of chemistry are a magical mix! In this workshop, we will practice inquiry based lab activities that will spark your students' interest and imagination. Each participant will receive a flash drive containing lesson plans from the chemical education foundation.

10:00 am - 10:45 am

Beyond CER: Explanation and Argument - Distinctions & Implications for Instruction

Amy Deller-Antieau, Ann Arbor Public Schools; Darcy McMahon, Central Michigan Science Mathematics Technology Center

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Banquet 1*

Join us for conversation around complexities surrounding two powerful practices for student sense-making: Argument and Explanation. Participants will engage in activity, dialogue and consider practical tools while they explore distinctions.

Cars That Can't Crash - Fact or Fiction

Mark Davids, Retired Teacher; Dave Acton, The-Transformation-Network

Primary Subject: **PH, TE, IN**
Interest Level: **MS, HS**
Location: *Governor*

Engage and inspire the next generation of scientists and engineers with our innovative materials and activities. This STEM unit will explore how technology is transforming transportation.

Cementing Their Learning - Making it Stick!

Chris Blackstock, Delta Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 101*

This session will demonstrate how to use science notebooks to help cement new learning and connect prior knowledge so students at any ability level can succeed.

Citizen Scientists Needed! Students Collecting Data for the GLOBE Urban Heat Island Effect Campaign

Janet Struble, The University of Toledo/GLOBE Mission EARTH; David Bydlowski, Wayne RESA

Primary Subject: **ES, IN**
Interest Level: **MS, HS**
Location: *Meeting Room 204*

Dr. Czajkowski , lead scientist for this campaign, needs your students to collect surface temperature data and upload the data to the GLOBE. Start your training with the following GLOBE Protocols: Clouds and Surface and Air Temperature today. Handouts and Raffle.

Dig Deeper! Ways to Get More Meaningful Reflection and Talk

Jaime Ratliff, Lapeer Community Schools; Patrick Lothrop, Lapeer Community Schools

Primary Subject: **GS**
Interest Level: **MS**
Location: *Michigan 2*

Learn some easy to implement strategies that will help you get your students demonstrating deeper thinking. Take away handouts and other goodies that will help you (and students) track progress along the way.

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■ Featured Session

10:00 am - 10:45 am continued

Engaging All Learners in Meaningful Scientific Conversations

Heather Damick, Plainwell Middle School

Primary Subject: **GS**
Interest Level: **3-5, MS**
Location: *Meeting Room 203*

Struggling to engage all students in scientific discussions? Wishing more voices were heard during class? If so, join me as we explore strategies addressing these challenges through the use of science seminars, establishing a foundation of respect, and technology. My goal is to leave you with strategies that you can use Monday morning!

Everything I Needed to Know About Assessment I Learned in Marching Band

Taylor Funk, Cedar Springs Public Schools

Primary Subject: **GS, AS**
Interest Level: **3-5, MS, HS**
Location: *Regency 1*

I noticed strong parallels between best practice assessment methods and my father's successful band program. I've highlighted these to help you ignite learning in your setting by making student performance the driving force in your instructional decisions. Opportunities to reflect on application to your unique setting.

From Storybook STEM to Beyond

Amanda Iocoangeli, Custer Elementary School/ Monroe Public Schools; Danielle Jozwiak, Custer Elementary School / Monroe Public Schools

Primary Subject: **GS**
Interest Level: **3-5, MS**
Location: *Michigan 3*

Are you looking to boost student engagement? Do your students struggle with the "Why" behind their learning? Come explore strategies that increase curiosity and accountability in your classroom using STEM.

Classroom Gardens and the NGSS

Maureen Klein, Bennie Elementary, Allen Park Public Schools

Primary Subject: **BI**
Interest Level: **K-2,3-5**
Location: *Meeting Room 205*

Outdoor gardening is a perfect gateway to real world science in your elementary classroom. Come learn how one school uses our outdoor spaces to explore the world of gardening and the rich opportunities it offers for integrated science, language and mathematics.

How Dense Are My Students?

Brian Welch, Fremont Middle School; Samantha Kempf, Fremont Middle School

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Michigan 1*

A fun, inexpensive method of measuring the density of students by dunking them in a 55 gallon bucket of water.

Interactions: A Free Three-dimensional Science Curriculum for 9th Grade Physical Science

Angela Kolonich, CREATE for STEM Institute

Primary Subject: **CH, PH, IN**
Interest Level: **HS**
Location: *Banquet 5*

Explore how the emergent properties of atoms and molecules provide a foundation for explaining various scientific and everyday phenomena. Using the Interactions materials, students observe phenomena, engage in hands-on activities, and use online simulations to construct scientific explanations and build explanatory models. Participants will engage in activities and discussions that support the three-dimensional approach of the Interactions curriculum.

Journaling in Science Using Evidence Notebooks

Todd Koenig, Houghton Mifflin Harcourt

Primary Subject: **GS**
Interest Level: **3-5, MS, HS, Coll**
Location: *Meeting Room 102*

Develop students into true observers, thinkers, and scientists using strategies from a veteran science teacher. Come learn how to deepen student learning and connection to content while improving writing skills!

LITERARY SCIENCE: The Integration of ELA and Science at the Secondary Level to Promote Scientific Literacy

Hannah Homrich, Central Michigan University

Primary Subject: **IN**
Interest Level: **MS, HS**
Location: *Capitol 2*

This study explores the ways in which educational techniques typically used in Humanities settings can be modified and applied to promote active literacy within science subjects at the Secondary level.

Natural Learning

Amy Greene, Detroit Zoological Society/ Belle Isle Nature Center

Primary Subject: **EN**
Interest Level: **K-2, 3-5, MS**
Location: *Banquet 8*

Take it outside! Outdoor learning cultivates opportunities to engage in inquiry, develops students' scientific practices and integrates crosscutting concepts - and it doesn't have to be complicated to be effective.

Session Descriptions

STEM Cells on Station

Peter Lawrie, Orion's Quest; Tom Drummond, Orion's Quest

Primary Subject: **BI, CH, PH, TE, ES**
Interest Level: **MS, HS**
Location: *Meeting Room 201*

Learn how your students can actively partner with ISS researchers to understand how stem cells and stem cell derived heart cells age and grow in microgravity to find treatments for heart disease, stroke, and potentially other regenerative medicine technologies.

Supporting Student Science Talk in Kindergarten

Kirsten Edwards, Michigan State University; Amelia Gotwals, Michigan State University; Tanya Wright, Michigan State University

Primary Subject: **GS**
Interest Level: **K-2**
Location: *Banquet 6*

Kindergarten students are able to make sense of phenomena when given opportunities. Learn how to support student discourse in all parts of a science lesson.

Using a Driving Question Board to Figure out Phenomena

Wendy Johnson, Kentwood Public Schools

Primary Subject: **GS, BI**
Interest Level: **MS, HS**
Location: *Banquet 4*

I will share pictures, videos, and activities from multiple units of my biology class to illustrate how a driving question board can be used daily to support students in explaining phenomena.

10:00 am - 11:45 am

Integrate Scientific Modeling, Climate Change, and Forest Ecology into Your Middle School Classroom: Climate Change and Michigan Forests

Isabella Garramone, University of Michigan

Primary Subject: **EN, BI**
Interest Level: **MS**
Location: *Regency 2*

An interactive overview of Climate Change and Michigan Forests. This free 9-lesson unit introduces middle school students to plant growth and climate change concepts, current forest ecology research methods, and how climate change can impact forests.

Man's Real BFF 2.0

Cheryl Hach, Kalamazoo Area Math &Science Center; Robby Cramer, MSTA

Primary Subject: **BI**
Interest Level: **MS, HS, Coll**
Location: *Banquet 3*

This session will highlight free web-based activities, developed under NIH collaboration, on the use of dogs as model organisms for the study of classical and molecular genetics/genomics, evolution, and disease.

Modeling the Introduction of a New Species: NGSS Ecology

Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS

Primary Subject: **BI**
Interest Level: **MS**
Location: *Meeting Room 104*

New Species in an Ecosystem? This card-sort activity models the introduction of a new species with special attention to the effect on existing predators and producers.

Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance

Mark Francek, Central Michigan University

Primary Subject: **GS, ES, IN, EN, AS**
Interest Level: **3-5, MS, HS, Coll**
Location: *Meeting Room 202*

You need some teaching tips that you can implement right away. Receive a whirlwind tour of strategies improving classroom community, accountability, and content relevance. Handouts

11:00 am - 11:45 am

3 Dimensional Learning with Bring Science Alive!

Matt Moorman, TCI

Primary Subject: **GS**
Interest Level: **MS**
Location: *Meeting Room 205*

Join TCI and participate in 3 dimensional learning with the Bring Science Alive! program. Participants will experience a lesson from the student perspective as they carry out investigations, build models, and learn skills to analyze and interpret data, develop solutions, and communicate their methods just like professional scientists and engineers!

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Session Descriptions

11:00 am - 11:45 am continued

Elementary Inquiry and STEM Extravaganza

Betty Crowder, Oakland University

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 8*

Excite and engage your students with some new STEM and Inquiry lessons developed by Oakland University pre-service teachers. You'll leave this hands-on session with a wealth of new ideas and resources.

How to Develop an Instructional Storyline

Joe Austin, Waterford School District; Rochelle Rubin, Oakland Schools ISD

Primary Subject: **GS, AS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 1*

A process for moving from Performance Expectation standards to instruction and assessment will be shared. It will include how to develop a storyline and strategies for supporting and assessing conceptual development of targeted standards.

Investigating Ecological Relationships Using HHMI Biointeractive Resrources

Mark Eberhard, St. Clair High School

Primary Subject: **BI, EN**
Interest Level: **MS, HS, Coll**
Location: *Banquet 4*

Participants will work with resources from HHMI Biointeractive to explore key ecological relationships. Integrating science practices, these NEW resources investigate niche partitioning using metabarcoding techniques. All resources are 100% FREE!

KLEWS: Organizing Science Ideas & Building Literacy

Richard Bacolor, Wayne RESA; Mary Starr, Michigan Math and Science Centers Network

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 1*

We will offer K-8 teachers a tool to plan and carry out lessons aligned to the MSS that build toward science and literacy practices.

Let's Have a Ball: Incorporating Movement Activities in Science

Patti Picard, Tawheed Center of Detroit School

Primary Subject: **GS**
Interest Level: **3-5, MS**
Location: *Meeting Room 203*

Learn how to use whole body movement and balls to model science systems in earth, life, and physical science. Students are guaranteed to have a ball.

Mi-STAR From A Teacher Perspective

Dawn Kahler, Kalamazoo Public Schools; Yonee Bryant-Kuiphoff, Linden Grove Middle School, Kalamazoo Public Schools

Primary Subject: **GS**
Interest Level: **MS**
Location: *Michigan 1*

Explore the Mi-STAR units from the perspective of 2 teachers who have written, piloted, and are facilitators for the program. Let us help you increase your comfort level.

Modeling and Experimental Design Using Isopods

Jennifer Beck, Perry High School

Primary Subject: **BI, EN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Michigan 3*

Using a modeling approach, teach students experimental design using isopods. Kindergarten to AP, these crustaceans are low maintenance and adaptable to many different studies, from behavior to environmental preference.

Project-Based Inquiry Science™ (PBIS): Creating "Coherence and Science Storylines" for Middle School

Mary Starr, Activate Learning

Primary Subject: **IN**
Interest Level: **MS**
Location: *Meeting Room 103*

STEM learning requires integration! Powerful questions and coherent storylines help solve the integration challenge.

Reflections From Adding Phenomena

Kristin Mayer, East Kentwood High School

Primary Subject: **BI, PH**
Interest Level: **HS**
Location: *Governor*

I will share the phenomena used in my chemistry and physics classes this year; including how I used the phenomena and reflections about what worked and what I would change.

Scaffolding 3-Dimensional Science Using (free) Carbon TIME Units

Christie Morrison Thomas, Michigan State University

Primary Subject: **BI, ES**
Interest Level: **MS, HS**
Location: *Capitol 1*

Learning complex tasks (engaging in 3-dimensional NGSS learning) requires scaffolding. Connect with Carbon TIME's 6 phenomena-centered MS/HS units and use our toolkits to scaffold your students' reasoning and reflecting.

Session Descriptions

TATTS MSS: Tips and Tricks to Survive MSS

April Holman, Central Montcalm High School

Primary Subject: **GS, BI**
Interest Level: **MS, HS**
Location: *Michigan 2*

The transition to the Michigan Science Standards takes a shift in thinking, both for teachers and students. This session will offer some ways to help manage that change.

Tools for Teaching Elementary Science

Marie Woodman, Morse Elementary, Troy Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

Making Science Work in the Elementary Classroom! Using KLEWS and Investigation Notebooks to promote student thinking and ownership of new standards. Shifting to NGSS in a manageable way!

11:00 am - 12:45 pm

Building Your NGSS Toolbox: Strategies for Implementing the Science and Engineering Practices and Crosscutting Concepts in a Student Led Classroom

Leigh Ann Roehm, Saline Middle School

Primary Subject: **GS**
Interest Level: **MS**
Location: *Banquet 2*

Learn how the power of reflection and student ownership transformed a middle school classroom. Walk away with strategies for implementing the NGSS that can be applied in any lesson, regardless of topic or grade level.

Mi-STAR Professional Learning Session II: Real World Science Investigations

Emily Gochis, Michigan Technological University/ Mi-STAR; Megan Coonan, Saginaw ISD; Stephanie Tubman, Michigan Tech / Mi-STAR

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Banquet 7*

Experience a hands-on lesson that engages students to investigate scientific phenomena and address real-world community problems. Use a comprehensive instructional model designed for three-dimensional learning. Handouts Provided. (Attendance at all three in this series can qualify as Mi STAR Day One Training)

Conservation and You!

Claire Lannoye-Hall, Detroit Zoological Society; Sandy Ling, Detroit Zoological Society

Primary Subject: **IS, EN**
Interest Level: **MS, HS**
Location: *Meeting Room 102*

Discover how conservation work the Detroit Zoo is doing locally and internationally can become a part of your classroom; empowering youth to make a difference while meeting state science standards.

Exploring Biology through Dissection with Flinn Scientific

Matt Anderson, Flinn Scientific, Inc.

Primary Subject: **BI**
Interest Level: **HS,Coll**
Location: *Capitol 2*

Participants will have the opportunity to dissect several organisms from Flinn's new line of preserved specimens. Help students identify similarities and differences within the animal kingdom. www.flinnsci.com

Exponential Inquiry - Merging Math and Biotech to Amplify Learning

Mindy Lee-Olsen, MiniOne Systems; Richard Chan, MiniOne Systems

Primary Subject: **BI, IN**
Interest Level: **HS, Coll**
Location: *Meeting Room 204*

Learn to combine PCR DNA amplification and mathematical modeling in this hands-on lab. You get to learn how our step-by-step scaffolding approach will make modeling PCR with math less daunting.

Session Key:

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■ Featured Session

11:00 am - 12:45 pm continued

Penny Ante Science: Activities in General Science, Earth Science, Life Science, and Physical Science

Mitchell Klett, Northern Michigan University

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 101*

Penny Ante Science shows hands-on science activities that use very inexpensive household materials. These activities are designed to be open ended; with the answers to the questions based on the data collected rather than a set of facts to be memorized.

Safer Chemistry: STEM Connection and Green Chemistry Replacement Labs

Jon Baek, Honey Creek Community School; Erika Fatura, Pentwater High School; Jennifer Sherburn, Hesperia High School

Primary Subject: **CH**
Interest Level: **MS, HS**
Location: *Capitol 4*

What if we could grow our own packaging? How does the surface chemistry of shark scales prevent bacteria growth? Can we manufacture fabrics without using harmful chemicals in the process? Interested in teaching core chemistry concepts with safer materials? Come learn how at this workshop!

STEAM: If We Can Do It, You Can Do It!

Natalie D'Amico, Saline Area Schools ; Stephanie D'Huyvetter, St. Thomas Aquinas School

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 201*

Do you want to implement STEAM but don't know where to start? Look no further! Participants will engage in hands-on activities & be provided with access to helpful resources at the session.

Using Three-Dimensional Rubrics in Formative Assessments to Figure out Phenomena

Phyllis Haugabook Pennock, CREATE for STEM/Michigan State University; Samuel Severance, CREATE for STEM/Michigan State University; Joseph Krajcik, CREATE for STEM/Michigan State University

Primary Subject: **BI, CH, AS**
Interest Level: **MS**
Location: *Banquet 5*

Use three-dimensional rubrics to guide students into figuring out phenomena in the life and physical sciences! This session will include assessment and rubric examples on a technology platform. Handouts provided!

12:00 pm - 12:45 pm

STEM is About More Than Rockets and Robots

Thom OBrien, Explore Learning

Primary Subject: **CH, PH, TE**
Interest Level: **3-5, MS**
Location: *Banquet 8*

Science –Complex science into your classroom? Technology – How to use all this technology? Engineering – Can we make engineering ENGAGING? Mathematics – All connects with math! Engage your students with GIZMOS!

Bringing Mindfulness to the Science Classroom

Amy Williams, Grand Blanc West Middle School

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 205*

A beginner's approach to introducing mindfulness to your students. Hear how you can integrate mindfulness to improve your students' abilities to observe, question, & collaborate.

Deriving the Law of Conservation of Matter through Student Models

Anne LaSovage, Southfield Public Schools

Primary Subject: **CH**
Interest Level: **HS**
Location: *Banquet 1*

Experience NGSS-rich postlab activities for the burning magesium lab. See how students can use data, models and engaged discourse to determine that their product is MgO and that mass is conserved.

From Traditional Teaching to 3-D Learning: How to Breathe New Life into A Biology Curriculum

Michelle Vanhala, Tecumseh High School; Paula Gentile, Tecumseh High School

Primary Subject: **GS, BI**
Interest Level: **HS**
Location: *Banquet 3*

This session overviews a model for transitioning from traditional science courses to those that foster 3-D learning using NGSS-aligned curricula (including resources from CarbonTIME and Next Generation Science Storylines).

GRACE Project Update

Russell Columbus, Monroe Public Schools

Primary Subject: **TE**
Interest Level: **HS**
Location: *Michigan 2*

Learn how you can become involved with GRACE project, which has already provided GIS training to hundreds of Michigan teachers and thousands of Michigan students.

Session Descriptions

Implementing NGSS into Biology/ Acc Bio

Greg Cooper, John Glenn High School

Primary Subject: **BI**
Interest Level: **HS**
Location: *Banquet 4*

Our team has implemented a new aligned curriculum using the NGSS standards and a cart of Chrome Books to incorporate as many aligned TED Talks, You Tube videos to connect with students.

Making STEM a Reality with Real Data

Robert Ause, Greenhills School

Primary Subject: **IN**
Interest Level: **MS, HS**
Location: *Meeting Room 103*

Data on solar power, wind power and weather help us integrate the four STEM strands. Learn how you too can use these data to enhance your STEM curriculum.

National Geographic Educator Certification Workshop

Susan Tate, Whitehall Middle School

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Regency 2*

Do you believe in the power of science, exploration, education, and storytelling to change the world? Learn about the benefits and the process of becoming a National Geographic Certified Educator.

STEAMing Up Our Science Programs

Lloyd Hilger, Hanover Horton Schools

Primary Subject: **GS, TE**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Capitol 1*

During the last few years I have been teaching STEAM for students from young 5's, kindergarten through high school, I will be sharing insights and activities that I have gained from these opportunities. We will also be doing a 3rd grade activity in which we will making complete circuits with LED lights and drawings.

Teaching Physics with ROV's

Kyle Ondersma, Ionia Public Schools

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

I would like to share a project based learning activity that uses remotely operated submersible vehicles (ROV's) to teach students content from a physics class or physical science course. This is based on the SeaPerch project and uses materials from that program.Teaching physics offers exceptional oportunites to give the students a feel for science through the application of princples learned in course content with hands on activities. For me the second half of a physic course presented significant challenges with getting students interested with electricity and magentism. As a result I desperately sought a task that I could use to tie the course togather. That was when I was introduced to the SeaPerch project. The SeaPerch project is an initiative that focused on increasing the number of young people that pursue a field related to Science, Technology, Engineering, and Science.

Using Texts to Engage Students in Three-Dimensional Science

Kirsten Edwards, Michigan State University

Primary Subject: **BI, EN**
Interest Level: **MS, HS**
Location: *Michigan 3*

Find out how to use readings to support student engagement in science practices and student understanding of the nature of science. Free Carbon TIME readings to use with your students.

Writing in Science

Rachel Rysdyk, Ludington High School

Primary Subject: **GS**
Interest Level: **HS**
Location: *Meeting Room 203*

Ten lessons that help a student develop the skills to write a paper in the science classroom. Lesson plans and student resources will be provided via Google Drive.

12:00 pm - 1:45 pm

Claim-Evidence-Reasoning: The Value of Scientific Explanations in STEM

Karen Kudla, Oxford Community Schools ; Ken Wester, STEMscopes

Primary Subject: **GS, IN, AS**
Interest Level: **3-5, MS, HS**
Location: *Capitol 3*

CER is a way for students to explain observed phenomenon by connecting data to science knowledge. Change how lab investigations are conducted by making them meaningful for students.

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■ Featured Session

Session Descriptions

12:00 pm - 1:45 pm continued

Cookbook Conversions

Nancy Lareau, U of M Flint; Courtney Ruggles, University of Michigan Flint; Madeline Wohlfeil, University of Michigan-Flint; Daniela Goetz, University of Michigan-Flint; Katherine Eaton, University of Michigan-Flint

Primary Subject: **IN**
Interest Level: **HS**
Location: *Michigan 1*

Using NGSS practices to transform high school science cookbook lessons into student centered inquiry.

Weather and Climate

Bill Cline, LAB-AIDS; Lisa Kelp, LAB-AIDS

Primary Subject: **ES**
Interest Level: **MS**
Location: *Meeting Room 104*

Participants examine a climate map along with photos and descriptions of different climates. They identify their local climate as well as the climate for three different regions based on the climate graphs.

1:00 pm - 1:45 pm

"Mr. Mastie, I Can Still Remember When We...."

David Mastie, Ann Arbor Public Schools (retired)

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Regency 1*

These are often the first words I hear upon meeting students from years ago. Today I will share some of these activities with you. Each is simple, inexpensive, and powerful.

Chemistry of International Cuisine

Scott Milam, Plymouth High School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Capitol 4*

I will be sharing my experience cooking various international dishes with my students' families and then modifying recipes to explore a chemistry topic.

City Critters: Connecting Science and Empathy

Lisa Forzley, Detroit Zoological Society

Primary Subject: **IS, BI**
Interest Level: **K-2, 3-5**
Location: *Capitol 2*

The Detroit Zoological Society integrates science and empathy in City Critters, a program designed to teach about animals while simultaneously fostering reverence. Discover how to incorporate these connections in your curriculum.

Digital Microscopy for $40

Robert Myers, West Ottawa High School

Primary Subject: **BI, TE, EN, AS**
Interest Level: **MS, HS, Coll**
Location: *Michigan 3*

Use of cheap easily obtained USB microscopes that can be attached to any standard microscope, allowing digital capturing of images by any USB capable device (including chromebooks). Allows students to capture image and do annotations to show that they can identify cellular features. Video can also be captured.

Evo-Ed Cases: Connecting Biology Across the Curriculum

Alexa Warwick, Michigan State University; Clinton Bartholomew, Jackson Preparatory & Early College

Primary Subject: **BI**
Interest Level: **HS, Coll**
Location: *Banquet 3*

Evo-Ed cases track the evolution of traits from the molecular to population level. This session introduces the cases and an example implementation of case-based, spiral curriculum for 9th grade biology.

Forensics for Free

Caitlin Johnson, Romulus Community Schools; Kyle Jenks, Dearborn High School

Primary Subject: **GS**
Interest Level: **MS, HS**
Location: *Meeting Room 204*

We will be presenting how easy it is to find free or cheap activities for your forensics class, and how easily you can integrate forensics in a variety of other science courses!

Fusing Art in Science from an Elementary Art Room

Angie Herek, Williamston Community Schools

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Banquet 6*

Come and see how one elementary Art teacher has fused together the Science standards with the world of visual arts to help students reinforce science concepts and ideas.

How Much and How Often

Samantha Cree, Lawrence Jr./Sr. High School; Cynthia Duncan, Father Gabriel Richard High School

Primary Subject: **BI, CH**
Interest Level: **MS, HS**
Location: *Banquet 8*

Students test different dosing devices to determine which is most accurate for measuring liquid medicine. They also use a model to illustrate the effects of taking medicine more frequently than recommended.

Session Descriptions

Influence of Research Experiences on Science Teacher Knowledge and Practice

Amy Lark, Michigan Technological University; Abbi Halkola, Michigan Technological University

Primary Subject: **GS**
Interest Level: **Coll**
Location: *Meeting Room 203*

We share insights from our study of Michigan science teachers on how their experiences with scientific research have influenced their thinking about the nature and practices of science and their teaching practice.

Kepler Made Me Do It

John Dumar, Lutheran North High School

Primary Subject: **PH, ES**
Interest Level: **MS, HS**
Location: *Meeting Room 202*

Collecting data from 450 million miles away, how cool is that?! Come learn how your students can verify Kepler's third law of planetary motion using simple astronomy equipment.

Learning by Doing: Practical Applications Online

Samantha du Preez, EVERFI

Primary Subject: **TE, IN**
Interest Level: **MS, HS**
Location: *Meeting Room 102*

Learn how to bring STEM concepts to life for 4-12 grade students through EVERFI's online, interactive modules, available at no cost to educators thanks to public and private sponsorships.

Living Coral Reef in the Classroom

Kirbay Preuss, Preuss Pets

Primary Subject: **BI, CH, EN**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 205*

Explore science through a reef aquarium! Open the door to learning concepts such as symbiotic relationships, ocean acidification, biodiversity, taxonomy, and water chemistry, all the while fostering a desire to protect the natural world.

Make a Mini-Motor, Mini-Generator and A Speaker

Timothy Hall, Francis Reh Academy

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

CANCELED

Guests will make a mini-motor using magnets, magnet wire, paperclip and 1.5v Battery. They will then use the magnet wire to create electrical current using magnets and multi-meter. Lastly, they will make a speaker out of cardboard, a styrofoam-plate and magnet wire.

Making Use of Student Thinking

Mark Olson, Oakland University

Primary Subject: **GS, BI**
Interest Level: **HS**
Location: *Banquet 1*

Strategies for effectively using student thinking to inform science instruction will be shared. The presenters, student-teachers from Oakland University, will share mini-cases from their teaching that illustrate effective teaching practices.

Online Resources for the Science Classroom

Christine Schneider, Library of Michigan/MDE

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS**
Location: *Meeting Room 201*

Did you know you have FREE access to over $3 million worth of online subscription databases? We will explore what science resources are available from the Michigan eLibrary (MeL.org) and how to access them.

Opioids, Flu, Zoonoses, Obesity: Oh My!

Richard Blauvelt, Harper Woods High School

Primary Subject: **GS, BI**
Interest Level: **MS, HS**
Location: *Banquet 4*

Join a CDC Science Ambassador fellow to find out how this program can benefit you. Learn about available lesson plans that teach epidemiology to secondary students and how you can become a CDC Science Ambassador.

Reflecting on Learning with Google Drive

Danielle Aguilar, Lee M Thurston High School

Primary Subject: **GS, TE**
Interest Level: **MS, HS**
Location: *Regency 2*

A fresh take on how to use technology to elicit student reflection. You will leave with classroom- tested templates that engage students in reflection (without taking an entire class period)!

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■ Featured Session

Session Descriptions

1:00 pm - 1:45 pm continued

The Lecture Is Dead: Using Alternative Classroom Models to Enhance Student Learning

Vanessa Logan, Avondale High School

Primary Subject: **GS**
Interest Level: **MS, HS, Coll**
Location: *Banquet 5*

This interactive presentation focuses on how science teachers can use flipped learning, choice based learning and flexible seating to enhance the education experience of their students. Attendees will learn about how teachers can create these classrooms to improve differentiation, use of class time and interest of students.

Turning Chemistry Labs into STEM Labs

Robert Ause, Greenhills School

Primary Subject: **CH**
Interest Level: **HS**
Location: *Meeting Room 101*

Traditional chemistry labs can be turned into "STEM" labs. When students design their own set-up, statistically analyze their data and retry revised procedures, chem labs become STEM labs.

Using Children's Literature to Guide Science Inquiry K-5

Kim Stilwell, NSTA - National Science Teachers Association

Primary Subject: **GS, IN**
Interest Level: **K-2, 3-5**
Location: *Banquet 2*

Need ideas to connect literacy and science? Join us to explore how resources such as Picture-Perfect Science can help engage elementary teachers and students in STEM and reading.

1:00 pm - 2:45 pm

Dark & Light: Nature Writing & Observation

Brandon Groff, Greenhills School; Monica Lewis, Greenhills School

Primary Subject: **BI, EN**
Interest Level: **HS**
Location: *Meeting Room 103*

In an ongoing effort for interdisciplinary learning, we designed a class project that would sharpen students' abilities to observe the natural world and strengthen technical and creative writing skills.

Diggin' Outdoor Education

Nancy Berg, Clarkston Family Farm; Chelsea O'Brien, Clarkston Family Farm

Primary Subject: **ES, EN**
Interest Level: **K-2, 3-5**
Location: *Capitol 1*

Hands -on outdoor environmental ecological experiences, lesson plans, and explorations used at the Clarkston Family Farm, an educational non-profit organization in Clarkston Michigan will be shared with science teachers K- 5 .

Discrepant Events Abound

Rachel Badanowski, Wayne State University

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS, HS, Coll**
Location: *Michigan 2*

Discrepant events can involve students in the processes of science, particularly discussion. Resources will be supplied.

Mi-STAR Professional Learning Session III: Addressing 21st Century Challenges

Emily Gochis, Michigan Technological University / Mi-STAR; Megan Coonan, Saginaw ISD; Stephanie Tubman, Michigan Tech / Mi-STAR

Primary Subject: **GS, IN**
Interest Level: **MS**
Location: *Banquet 7*

Participate in activities from a middle school integrated STEM unit to learn how students use science and engineering to model and address 21st century topics. Handouts Provided. (Attendance at all three in this series can qualify as Mi STAR Day One Training)

2:00 pm - 2:45 pm

"Starting From Scratch"

Katelyn Rozema, Lee M. Thurston High School

Primary Subject: **GS, BI**
Interest Level: **MS, HS**
Location: *Banquet 4*

What do you do when you can't find an appropriate curriculum for your course? Learn how to use Case Studies and the New Standards to create your own curriculum! We have all read the new Next Generation Standards. We are familiar with the engineering practices and content. But now what? What if you cannot find an appropriate curriculum for your course and students? Case studies allow teachers to create relevant and challenging story-lines and phenomena for students to investigate. Teachers will learn how to use Case Studies to create their own Next Generation curriculum within this session Attendees will receive both digital and paper copies of resources to: Case Studies by Subject Area, Unpacking The Standards Templates, Curriculum Planning Templates, Tips for Structuring Pacing and Planning with Curriculum, Tips for Creating Assessments, and Assessment Rubrics.

AP Chem Labs with Minimal Prep

Jamie Benigna, The Roeper School; Alice Putti, Jenison High School

Primary Subject: **CH**
Interest Level: **HS, Coll**
Location: *Capitol 4*

This session will focus on labs aligned to the AP Chemistry Curriculum with easy setups, including management tips for both prescribed and guided-inquiry approaches. Lab handouts will be supplied.

Session Descriptions

Assessing with Share Posters

Carrie Hoffman, Certified Elem/MS Teacher

Primary Subject: **GS, AS**
Interest Level: **3-5, MS, HS**
Location: *Michigan 3*

Share posters are concrete examples of abstract ideas, in visual form. Experience making one, and learn how it enhances a higher-thinking, differentiated, student-focused classroom!

Blended Science Teaching for the Modern Kid

Maria Gonzalez, Holy Family School

Primary Subject: **ES, TE, IN**
Interest Level: **3-5, MS**
Location: *Meeting Room 204*

Looking to blend teacher/student friendly technology without losing the hands-on aspects for NGSS? Come try out some classroom tested, student-approved tools you can meld into your own great lessons.

Challenge Your Students to Make a Dozen Classroom Motors

Michael Suckley, MCC

Primary Subject: **GS, PH, IN**
Interest Level: **MS, HS, Coll**
Location: *Meeting Room 104*

Fundamental concepts of magnetic and electromagnetic fields and their interaction will be demonstrated and applied to building twelve different classroom motors. The first twenty-five participants will receive a teaching unit including materials, step by step instructions, explanations of each motors operation and hands-on experience building them.

Circuit Bugs

Jennifer Edwards, Ronald Brown Academy, DPSCD; Cindy Hill, Ronald Brown Academy, DPSCD

Primary Subject: **PH**
Interest Level: **3-5, MS**
Location: *Banquet 6*

Make circuits fun with bug creations! Use your knowledge of electricity to create your own "circuit bug" with light-up eyes.

Cosmetic Experiments for Grades 8-12

Larry Kolopajlo, Eastern Michigan University

Primary Subject: **CH, IN**
Interest Level: **MS, HS, Coll**
Location: *Regency 1*

A former cosmetics chemist describes experiments to prepare, lotions, hand and face creams, lipstick, blush, lip balm, shampoo, and perfume. The experiments are suitable for middle or high school chemistry students.

Do Bees Get a Bad Rap?

Polly Cheney, Author Sip, Pick, and Pack...How Pollinators Help Plants Make Seeds

Primary Subject: **EN**
Interest Level: **3-5**
Location: *Banquet 8*

A rhyme to help Junior Master Gardeners learn about seed formation morphed into a book "Sip, Pick and Pack…How Pollinators Help Plants Make Seeds" and native and non-native pollinators stole the show.

Five Phenomenon to Get you Started in NGSS

Andrew Frisch, Farwell High School; Duncan Gervin, Farwell High School

Primary Subject: **GS, BI, CH, PH**
Interest Level: **MS, HS**
Location: *Banquet 1*

Phenomenon is a new concept to the Science teaching pedagogy and it is the driving force for lesson plan design. What are phenomenon and how do they get incorporated into lesson planning? There will be (at least) five specific phenomena provided from various science topics and expatiation of how the phenomena lead a lesson and ultimately the lesson planning.

Genetics Lessons You Can Use Tomorrow!

Karen Garland, Holy Family Catholic School

Primary Subject: **BI**
Interest Level: **MS, HS**
Location: *Meeting Room 203*

Make the topic of DNA and Mendelian genetics engaging and memorable with these middle school classroom-tested songs and activities that will activate the creativity of your students. Please be prepared to share your successful ideas as well.

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■ Featured Session

Session Descriptions

2:00 pm - 2:45 pm continued

Hollistic Instruction (Biology Focus)

Lyndi Wolfinger, Homer H.S.

Primary Subject: **GS**
Interest Level: **HS**
Location: *Banquet 3*

Learning to integrate the important steps of building your classroom community while simultaneously delivering curriculum can be difficult. This ongoing approach will help to build relationships that will enhance learning.

Ideas for Ecosystems in the Elementary Classroom

Nicole Jakubowski, Detroit Country Day School ; Marlenn Maicki, Detroit Country Day School; Meghan Kurleto, Detroit Country Day School

Primary Subject: **GS**
Interest Level: **K-2, 3-5**
Location: *Governor*

Invigorate your student's study of ecosystems with a variety of activities. STEAM activities, research project ideas, simulation games, NSTA recommended trade books, and hands-on activities that you can use tomorrow.

Justify Your Energy-Based Claims

James Gell, Plymouth High School; Nicole Murawski, Royal Oak High School

Primary Subject: **GS**
Interest Level: **3-5, MS, HS, Coll**
Location: *Capitol 3*

Having students justify their claims provides immediate feedback that can produce the change that is learning. We will focus on the interdisciplinary topic of energy to develop examples.

NGSS Yourself

Walter Charuba, Grosse Pointe Public Schools

Primary Subject: **GS, ES**
Interest Level: **3-5, MS**
Location: *Capitol 2*

Tweak old lessons to the 3D NGSS format. There will be five transformed astronomy lessons examples from my curriculum to be handed out at the workshop.

Productive Talk in the Science Class

Chris Blackstock, Delta Education

Primary Subject: **GS**
Interest Level: **K-2, 3-5, MS**
Location: *Meeting Room 101*

Go through an activity to see how creating a culture of productive talk can really promote higher level thinking as well as support student respect and positive interactions.

Questioning Our World- An introduction to Plate Tectonics

Lynette Wehner, Plymouth-Canton Community Schools

Primary Subject: **ES**
Interest Level: **MS**
Location: *Meeting Room 202*

Put students in the driver's seat in this introductory lesson on plate tectonics. Using colorful geological maps, students work together to ask questions and form ideas about what they observe.

Vernal Pool Patrol: Citizen Science and Place-Based Education to Promote Science Learning and Stewardship

Yu Man Lee, Michigan Natural Features Inventory; Daria Hyde, Michigan Natural Features Inventory; Phyllis Higman, Michigan Natural Features Inventory; Peter Badra, Michigan Natural Features Inventory; ,
Primary Subject: **BI, EN**
Interest Level: **MS, HS**
Location: *Banquet 2*

The Vernal Pool Patrol is a citizen science- and place-based program for educators and students to get involved with monitoring and conservation of vernal pools in Michigan.

Speaker Index

Speaker Index

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MICHIGAN Science CENTER

DISTANCE LEARNING

What is ECHO?

Visit the Michigan Science Center and engage in hands-on learning without leaving your classroom! Our new ECHO program allows groups to interact and engage with educators while participating in three dimensional, NGSS-aligned lessons.

ECHO
MiSci's DISTANCE LEARNING PROGRAM

Virtual visits include:

- 45-minute interactive program
- Hands-on materials shipped to your school or library
- Complimentary tech check prior to program

To reserve a program for your students, contact our Distance Learning Coordinatorat 313.577.8400, ext. 433 or by emailing outreach@Mi-Sci.org.

Virtual Visit Topics

3rd grade:
Know Where it Grows - Environmental conditions, such as weather, determine where and when plants can grow. We can design solutions to reduce the impacts of weather-related hazards on plants grown for food in a community garden.

4th grade:
Burn Boss Training - Engineers use controlled fires for ecological reasons, including restoring diverse habitats for specially adapted plants and animals. Work together to develop a solution for a habitat to protect an endangered animal or plant.

5th grade:
Journey Without a Map - Stars can be used for navigation because they have predictable patterns and unique properties. Investigate our sun and design a navigation strategy to get to your destination!

FIND MORE INFO BY VISITING US ONLINE AT MI-SCI.ORG/ECHO

OR CALL 313.577.8400, EXT 433

MI.Science.Center mi_sci mi_sci

The Michigan Science Center is a 501(c)(3) Nonprofit organization.

Interest Levels

All Levels

"Mr. Mastie, I Can Still Remember When We...."
Becoming a Certified Environmental Educator
Beyond CER: Explanation and Argument - Distinctions & Implications for Instruction
Creating 3D Learning: Modeling, Argumentation and Explanation in your Classroom Through NGSX Study Groups!
Creating a Space for the Crosscutting Concepts: From Questions to Explanations to Assessments
Creating Professional Learning Communities Around 3D Formative Assessment
Creating System Thinkers - Transforming Student Illustrations into Scientific Models
Discrepant Events Abound
Effectively Engaging Youth in the Process of Science
Incorporating Science Practices into STEM Classrooms: Design and Assessment
Muffins for MSTA Members
NGSS Puzzles and Mysteries: Using Phenomena in the Classroom
STEAMing Up Our Science Programs
The Voice of the Teacher - For Students, For Science, For Our Futures
Virtual Field Trips with Google Expeditions
WALLS: Water, Air, Land, Life and Space
What's in the Woods?
You've Got This - Teach More Discipline Less!

Early Elementary

"Ready Set Go" STEM
"It's Just too Hard to Explain!" - Making Sense of Phenomena by Developing and Using Models in the Elementary Classroom
3-2-1 Blast Off!
Accountable Talk in the Science Classroom
An Administrators Guide to the New Michigan Science Standards through the Lens of Phenomenal Science (curriculum) & 3DSPA (assessment)
Bat Conservation in Your Classroom
Bring Michigan Science Standards to Life Using Place-Based Education
Bringing Mindfulness to the Science Classroom
Cementing Their Learning - Making it Stick!
City Critters: Connecting Science and Empathy
Claims, Evidence, and Reasoning in Action
Classroom Gardens and the NGSS
Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom
Curriculum Connections - ELA & Science in Elementary
Curriculum Review for 3-Dimensions
Diggin' Outdoor Education
Earth System Science Resources to Use on Monday! Free from NOAA to You!
ECHO: Distance Learning at the MiSci
Elementary Inquiry and STEM Extravaganza
Engage Students to Think, Communicate, and Act Like Scientists!
Explore Hands-On Science for Elementary Students at Impressions 5
Family Engineering & Design Thinking Night
Find the Fund$ for STEM
Floating Trains: Phenomena, 3-D Instruction, and Amplify Science for Grades K-5
Fusing Art in Science from an Elementary Art Room
Get Students Asking THEIR OWN Questions
How to Develop an Instructional Storyline
How to See What Your Students are Thinking: Student Modeling and the NGSS
Ideas for Ecosystems in the Elementary Classroom
Implementing NGSS 3D Learning with NASA/GLOBE Earth System Learning Progressions
It's Phenomenal!
K-8 Teachers as Agents of Change: NGSS and the Environmental Impacts of Using Natural Resources
KLEWS: Organizing Science Ideas & Building Literacy
Launching an Elementary STEM Program
Learning Labs at the Detroit Zoo
Lesson Planning with NGSS: The 5E Instructional Model
Let's Debate!
Living Coral Reef in the Classroom
Make Any Classroom a Makerspace
Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades K-2
Make Your K-5 Science Phenomenal! An Introduction to Phenomenal Science Units
Making Science Real with Problem Based Learning
Modeling and Experimental Design Using Isopods
National Geographic Educator Certification Workshop
Natural Learning
NGSS and Gardens - A Perfect Partnership
No Time for Science? Learn How to Integrate Reading and Writing Using the Cereal City Science Units
Online Formative Assessment Tools in Science
Online Resources for the Science Classroom
Penny Ante Science: Activities in General Science, Earth Science, Life Science, and Physical Science
Phenomena on the Cheap
PlayFlu: Using Wearable Technology and Kinesthetic Teaching to Engage Kids in Modeling Scientific Phenomena
Productive Talk in the Science Class
Productive Talk: How to Get Students to Share Their Thinking through Scientific Discussions
Rock with Your Students!
Schoolyard BioBlitz: Connecting Citizen Science to the Classroom
Science and Engineering Practices in the NGSS
Science Songs, Simple Stuff and Sliquids
Science Talk
Sensory Activities for Early Learners: Lessons You Can Use Tomorrow!
STEAM: If We Can Do It, You Can Do It!
STEM Connecting Schools and Businesses
Stop Creating Lesson Plans: Start Creating Learning Experiences
Student Drivers - Driving Question Boards Empower Students to Figure Out What They Really Need to Know and How They Will Get There
Successful STEM Techniques in Elementary Classrooms
Supporting Early Literacy Development and the Michigan Science Standards
Supporting Student Science Talk in Kindergarten
Taking Flight with Children's Literature
Teaching NGSS with S.M.A.R.T Lessons
Teaching Science When You Don't Know Diddly-Squat
Teaching Science: The Next Generation
Teaching with Technology
The Coaching Connection: Supporting Best Practice Science Instruction
Thematic Science Fairs - Using Scientific Inquiry to Increase Environmental Literacy
Three-Dimensional Assessment Writing Workshop
Tools for Teaching Elementary Science
Updates from the Michigan Department of Education and the DTMB
Using Children's Literature to Guide Science Inquiry K-5
Using Our National Parks to Blend Curriculum
Wait, What? There's a New Science Assessment?!?
What Did They Say? Student Discourse and the NGSS
What The Heck Happened?!?!
Zero to STEM in 60 minutes!

Later Elementary

"Ready Set Go" STEM
#gettingsciencedone -- Citizen Science
"It's Just Too Hard to Explain!" - Making Sense of Phenomena by Developing and Using Models in the Elementary Classroom.
3-2-1 Blast Off!
Accountable Talk in the Science Classroom

Interest Levels

Later Elementary continued

An Administrators Guide to the New Michigan Science Standards through the lens of Phenomenal Science (curriculum) & 3DSPA (assessment)
Assessing with Share Posters
Bat Conservation in Your Classroom
Blended Science Teaching for the Modern Kid
Bring Michigan Science Standards to Life Using Place-based Education
Bringing Mindfulness to the Science Classroom
Building Solid Storylines
Cementing Their Learning - Making it Stick!
Cheap Easy Demonstration Usable by Most
Circuit Bugs
City Critters: Connecting Science and Empathy
Claim-Evidence-Reasoning: The Value of Scientific Explanations in STEM
Claims, Evidence, and Reasoning in Action
Classroom Gardens and the NGSS
Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom
Curriculum Review for 3-Dimensions
Diggin' Outdoor Education
Do Bees Get a Bad Rap?
Doing, Thinking, Understanding: Science Performance Assessments
Earth System Science Resources to Use on Monday! Free from NOAA to You!
ECHO: Distance Learning at the MiSci
Elementary Inquiry and STEM Extravaganza
Energy and the NGSS
Engage Students to Think, Communicate, and Act Like Scientists!
Engaging All Learners in Meaningful Scientific Conversations
Everything I Needed to Know About Assessment I Learned in Marching Band
Explore Hands-On Science for Elementary Students at Impressions 5
Fake News in Science
Find the Fund$ for STEM
Floating Trains: Phenomena, 3-D Instruction, and Amplify Science for Grades K-5
Focus on Figuring Out – Grade 3 (Multiple Literacies in Project-Based Learning)
Focus on Figuring Out – Grade 4 (Multiple Literacies in Project-Based Learning)
Forestry and Forest Ecology for Elementary and Middle School
From Storybook STEM to Beyond
Fusing Art in Science from an Elementary Art Room
Get Students Asking THEIR OWN Questions
How to Develop an Instructional Storyline
How to See What Your Students are Thinking: Student Modeling and the NGSS
IBN-Drawing and Writing to Learn Science
Ideas for Ecosystems in the Elementary Classroom
Ignite Your Classroom With Digital Storytelling (Featuring GoPro Cameras)
Implementing NGSS 3D Learning with NASA/GLOBE Earth System Learning Progressions
Integrating Chromebook with Vernier Technology
Integrating Technology into Science-Based STEM with the 5E
Invade Your Parks and Back Again!
Invaders in Your Classroom: Resource Kits to Teach About Aquatic Invasives
It's Phenomenal!
Journaling in Science using Evidence Notebooks
Justify Your Energy-Based Claims
K-8 Teachers as Agents of Change: NGSS and the Environmental Impacts of Using Natural Resources
KLEWS: Organizing Science Ideas & Building Literacy
Launching an Elementary STEM Program
Lesson Planning with NGSS: The 5E Instructional Model
Let's Debate!
Let's Have a Ball: Incorporating Movement Activities in Science
Living Coral Reef in the Classroom
Lloyd's Toolbox of Engineering Ideas & Activities
Make Any Classroom a Makerspace
Make Your Elementary Science Phenomenal! Understanding Phenomenal Science Instructional Strategies in Grades 3-5
Make Your K-5 Science Phenomenal! An Introduction to Phenomenal Science Units
Making It Real... Cheap!!
Making Science Real with Problem Based Learning
MEECS - Ecosystems and Biodiversity
MEECS - Energy Resources
MEECS - Water Quality
Michigan Predator Prey Project
Microbes Ate My Underwear!
Modeling and Experimental Design Using Isopods
Mythology and Science
National Geographic Educator Certification Workshop
Natural Learning
NGSS and Gardens - A Perfect Partnership
NGSS Yourself
No Time for Science? Learn How to Integrate Reading and Writing Using the Cereal City Science Units
Observe, Investigate and Enjoy! A Tour of Free, NGSS Aligned, Classroom Activities
Oh Deer! Populations, Models, and Technology
One Crime Scene; 100 Students! Oh my!
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RC Cars, Sensors, and Coding… Oh My!
Rock with Your Students!
Salmon in YOUR Classroom
Schoolyard BioBlitz: Connecting Citizen Science to the Classroom
Science and Engineering Practices in the NGSS
Science Songs, Simple Stuff and Sliquids
Science Talk
STEAM: If We Can Do It, You Can Do It!
STEM Connecting Schools and Businesses
STEM is about more than Rockets and Robots
Stop Creating Lesson Plans: Start Creating Learning Experiences
Student Drivers - Driving Question Boards Empower Students to Figure Out What They Really Need to Know and How They Will Get There
Successful STEM Techniques in Elementary Classrooms
Supporting Early Literacy Development and the Michigan Science Standards
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Three-Dimensional Assessment Writing Workshop
Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance
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Updates From the Michigan Department of Education and the DTMB
Using Children's Literature to Guide Science Inquiry K-5
Using Our National Parks to Blend Curriculum
Using Wildlife CSI to Teach Claim, Evidence, Reasoning
Video Storylines in the Science Classroom
Wait, What? There's a New Science Assessment?!?
What did they say? Student Discourse and the NGSS
What The Heck Happened?!?!
Yeah, Buoy! (Buoyancy Demos)

Interest Levels

Middle School

"Ready Set Go" STEM
"Starting From Scratch"
#gettingsciencedone - Citizen Science
"Our Teaching Experiences:" Learning to Recognize our Students' Expertise with an NGSS-aligned Middle Grades Engineering Curriculum
1 Class Period+ 1 Model System + 2 Cellular Processes= Success 4 Students!
3 Dimensional Learning in Middle School Modeling Instruction
3 Dimensional Learning with Bring Science Alive!
3-2-1 Blast Off!
A Focus on Modeling in the Phenomenon-Based Classroom
A Long Walk to Water - A Cross-Curricular Unit
A Mi-STAR Lesson: Comparing Engineering Solutions with a Decision Matrix
A Mi-STAR Lesson: Got a Problem? Yo, I'll Solve It!
A Mi-STAR Lesson: Patterns and Cause & Effect
A Teacher Friendly Version of the Stratigraphic Column of Michigan
Accountable Talk in the Science Classroom
Aerial Exploration of Environmental Study Sites, Using Kites, Cameras and Other Sensors
AP Computer Science Principles (Grades 10-12) and Computer Science Discoveries (Grades 6-9)
Aquaponics in the Classroom
Assessing with Share Posters
Bat Conservation in Your Classroom
Biological and Health Student's Perception About Academic Integrity
Blended Science Teaching for the Modern Kid
Boatload of Biology
Bring Michigan Science Standards to Life Using Place-based Education
Bringing Mindfulness to the Science Classroom
Building Solid Storylines
Building Your NGSS Toolbox: Strategies for Implementing the Science and Engineering Practices and Crosscutting Concepts in a Student Led Classroom
Cars That Can't Crash - Fact or Fiction
Cementing Their Learning - Making it Stick!
Challenge Your Students to Make a Dozen Classroom Motors
Cheap Easy Demonstration Usable by Most
Circuit Bugs
Citizen Scientists Needed! Students Collecting Data for the GLOBE Urban Heat Island Effect Campaign
Claim-Evidence-Reasoning: The Value of Scientific Explanations in STEM
Claims, Evidence, and Reasoning in Action
Classification Can Be Fun
Conservation and You!
Cosmetic Experiments for Grades 8-12
Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom.
Cultivating Classroom Culture for New(er) Teachers
Curriculum Review for 3-Dimensions
Dig Deeper! Ways to Get More Meaningful Reflection and Talk
Digital Data Nuggets - Real Research, Real Data, Real Classrooms
Digital Microscopy for $40
Doing, Thinking, Understanding: Science Performance Assessments
Earth System Science Resources to Use on Monday! Free from NOAA to You!
Easy Tech Tools to Facilitate Discussion/Reflection
Electromagnetic Spectrum & Radioactivity
Elemental Fictions: Storytelling and Narratives in Introductory Science
Energy and the NGSS
Engage Students to Think, Communicate, and Act Like Scientists!
Engaging All Learners in Meaningful Scientific Conversations
Everything I Needed to Know About Assessment I Learned in Marching Band
Fake News in Science
Find the Fund$ for STEM
Five Phenomenon to Get You Started in NGSS
Flipping with Ease
Floating Trains: Phenomena, 3-D Instruction, and Amplify Science for Grades K-5
Forensics for Free
Forestry and Forest Ecology for Elementary and Middle School
From Storybook STEM to Beyond
Genetics Lessons You Can Use Tomorrow!
Getting them Talking Constructively
Grab their Attention with Gizmos!
Great Demos on a Small Budget
Hands-on With Virtual Nuclear Research
Health in Our Hands: A free Life Science Middle School Curriculum
Health in Our Hands: Using Online Simulations to Explain Phenomena
Health in Our Hands: Using the Driving Question Board to Explain Phenomena
Healthy Grading: A Moral Imperative
How Dense are My Students?
How Much and How Often
How to Develop an Instructional Storyline
How to See What Your Students are Thinking: Student Modeling and the NGSS
IBN-Drawing and Writing to Learn Science
idk whut 2 say: Teen Dialogue in the Classroom
Ignite Your Classroom With Digital Storytelling (Featuring GoPro Cameras).
Implementing NGSS 3D Learning with NASA/GLOBE Earth System Learning Progressions
Inquiry-Based Introduction to Gel Electrophoresis
Integrate Scientific Modeling, Climate Change, and Forest Ecology into your Middle School Classroom: Climate Change and Michigan Forests
Integrating Chromebook with Vernier Technology
Integrating Technology into Science-Based STEM with the 5E
Invade Your Parks and Back Again!
Invaders in Your Classroom: Resource Kits to Teach About Aquatic Invasives
Investigating Ecological Relationships Using HHMI Biointeractive Resrources
Journaling in Science using Evidence Notebooks
Justify Your Energy-Based Claims
K-8 Teachers as Agents of Change: NGSS and the Environmental Impacts of Using Natural Resources
Kepler Made Me Do It
Learning by Doing: Practical Applications Online
Lesson Planning with NGSS: The 5E Instructional Model
Let's Debate!
Let's Have a Ball: Incorporating Movement Activities in Science
LITERARY SCIENCE: The Integration of ELA and Science at the Secondary Level to Promote Scientific Literacy
Living Coral Reef in the Classroom
Lloyd's Toolbox of Engineering Ideas & Activities
Make a Mini-Motor, Mini-Generator and A Speaker
Make Any Classroom a Makerspace
Making Grades More Meaningful
Making It Real... Cheap!!
Making Science Real with Problem Based Learning
Making Sense of Phenomena by Using a Free Online Modeling Tool
Making Sense of Science Through Notebooks
Making STEM a Reality with Real Data
Man's Real BFF 2.0
Mathematizing Biodiversity: Using Species Accumlation Curves to Measure Biodiversity
May the Force Be With You
Medicines and Me-developing a New Flu Prevention Drug
MEECS - Ecosystems and Biodiversity
MEECS - Energy Resources
MEECS - Water Quality
Michigan Environmental Public Health Tracking - A Tool You Can Use!
Michigan Predator Prey Project
Microbes Ate My Underwear!
Middle School Share-a-thon
Mi-STAR From A Teacher Perspective
Mi-STAR Professional Learning Session I: Introducing the Challenge
Mi-STAR Professional Learning Session II: Real World Science Investigations
Mi-STAR Professional Learning Session III: Addressing 21st Century Challenges
Mi-STAR Up and Running in Your School
Modeling and Experimental Design Using Isopods
Modeling the Introduction of a New Species: NGSS Ecology
Moving from Learning Read and Write to Reading and Writing to Learn: Literacy Strategies in the Science Classroom

Interest Levels

Middle School continued

National Geographic Educator Certification Workshop
Natural Learning
Newton's 2nd Law of Motion Activity, NGSS
NGSS Unit Creation & Assessment
NGSS Yourself
Observe, Investigate and Enjoy! A Tour of Free, NGSS Aligned, Classroom Activities
Oh Deer! Populations, Models, and Technology
One Crime Scene; 100 Students! Oh my!
Online Formative Assessment Tools in Science
Online Resources for the Science Classroom
Opioids, Flu, Zoonoses, Obesity: Oh My!
Penny Ante Science: Activities in General Science, Earth Science, Life Science, and Physical Science
Phenomenon-First Examples in the Classroom
Physical Science Phenomena for Middle School
PlayFlu: Using Wearable Technology and Kinesthetic Teaching to Engage Kids in Modeling Scientific Phenomena
Productive Talk in the Science Class
Productive Talk: How to Get Students to Share Their Thinking Through Scientific Discussions
Project-Based Inquiry Science™ (PBIS): Creating "Coherence and Science Storylines" for Middle School
Project-Based Inquiry Science™ (PBIS): Creating "Coherence and Science Storylines" for Middle School
Promoting Classroom Discussions with Talk Moves
Questioning Our World- An introduction to Plate Tectonics
RC Cars, Sensors, and Coding… Oh My!
Reflecting on Learning with Google Drive
Rock with Your Students!
Safer Chemistry: STEM Connection and Green Chemistry Replacement Labs
Salmon in YOUR Classroom
Scaffolding 3-Dimensional Science Using (free) Carbon TIME Units
Schoolyard BioBlitz: Connecting Citizen Science to the Classroom
Science Songs, Simple Stuff and Sliquids
Science Talks
Seeing is Believing: Physics Demonstrations to Energize Your Classroom
Spandex of Gravity - Modeling the Very Fabric of Space and Time!
STEAM: If We Can Do It, You Can Do It!
STEM Cells on Station
STEM Connecting Schools and Businesses
STEM is about more than Rockets and Robots
Stop Creating Lesson Plans: Start Creating Learning Experiences
Structuring Discussion to Be Equitable and Rigorous
Student Drivers - Driving Question Boards Empower Students to Figure Out What They Really Need to Know and How They Will Get There
Summer Isn't Just for Suntans. It is for Research too!
Super Protection from Superbugs: the Fight Against Antibiotic Resistance
TATTS MSS: Tips and Tricks to Survive MSS
Teaching about Floods Using Extreme Weather Events
Teaching Chemistry to Middle School Students
Teaching Physics with ROV's
Teaching Science When You Don't Know Diddly-Squat
Teaching Science: The Next Generation
Teaching with the Big Ideas in Mind
The Coaching Connection: Supporting Best Practice Science Instruction
The Lake Michigan Food Web: What did the Lampreys do?
The Lecture Is Dead: Using Alternative Classroom Models to Enhance Student Learning
The Triple E's of Climate Change: Environmental Change, Epidemiology & ELISA Testing!
Thematic Science Fairs - Using Scientific Inquiry to Increase Environmental Literacy
Three-Dimensional Assessment Writing Workshop
Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance
Tools for Thinking about Assessment for the New MSS - MSELA
Transition from one Dimensional GLCE's to Three Dimensional NGSS
Turning Science Fiction Into Science Facts: A Compelling Project Based Approach Using New STEM Investigative Techniques
Updates from the Michigan Department of Education and the DTMB
Using 3D Learning Strategies to Improve Standardized Assessment
Using a Driving Question Board to Figure out Phenomena
Using Our National Parks to Blend Curriculum
Using Texts to Engage Students in Three-Dimensional Science
Using Three-Dimensional Rubrics in Formative Assessments to Figure out Phenomena
Using Wildlife CSI to Teach Claim, Evidence, Reasoning
Vernal Pool Patrol: Citizen Science and Place-Based Education to Promote Science Learning and Stewardship
Video Storylines in the Science Classroom
Wait, What? There's a New Science Assessment?!?
Water Quality: Developing Citizen Scientists
Waves
Weather and Climate
Weaving Stories Throughout Your Biology Course Using HHMI Biointeractive Resources
We've got Gall, do you?
What did they say? Student Discourse and the NGSS
What Does that Graph Show Me?
What The Heck Happened?!?!
Yeah, Buoy! (Buoyancy Demos)

High School

"Starting From Scratch"
#gettingsciencedone -- Citizen Science
1 Class Period+ 1 Model System + 2 Cellular Processes= Success 4 Students!
3-2-1 Blast Off!
A New Formula? PASCO + Curriculum = PASCO education (ALL in one STEM solution for Chemistry and Physics)
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Activities for the Anthropocene
Aerial Exploration of Environmental Study Sites, Using Kites, Cameras and Other Sensors
AP Chem Labs with Minimal Prep
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Cheap Easy Demonstration Usable by Most
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Citizen Scientists Needed! Students Collecting Data for the GLOBE Urban Heat Island Effect Campaign
Claim-Evidence-Reasoning: The Value of Scientific Explanations in STEM
Claims, Evidence and Reasoning (CER) in an AP chemistry classroom.
Classification Can Be Fun
Community Connection Activities in Biology Classrooms
Conservation and You!
Cookbook Conversions
Cosmetic Experiments for Grades 8-12
Creating Three-Dimensional, Equity-Based Tasks for an NGSS Classroom.
Cultivating Classroom Culture for New(er) Teachers
Curriculum Review for 3-Dimensions
Dark & Light: Nature Writing & Observation

Interest Levels

Deriving the Law of Conservation of Matter through Student Models
Digital Data Nuggets - Real Research, Real Data, Real Classrooms
Digital Microscopy for $40
District Science Leader Round-table: High School Course Sequence Sharing
Doing, Thinking, Understanding: Science Performance Assessments
Earth System Science Resources to Use on Monday! Free from NOAA to You!
Easy Tech Tools to Facilitate Discussion/Reflection
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Exploring Biology through Dissection with Flinn Scientific
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Genetics Lessons You Can Use Tomorrow!
GRACE Project Update
Great Demos on a Small Budget
Hands-On With Virtual Nuclear Research
Healthy Grading: A Moral Imperative
Hollistic Instruction (Biology Focus)
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How to Develop an Instructional Storyline
How to See What Your Students are Thinking: Student Modeling and the NGSS
How to Start an AP Environmental Science Course (and love it too!)
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Incorporating STEM into the Classroom
Inexpensive Hands On Chemistry Activities That Help Students Make Connections
Inquiry-based Introduction to Gel Electrophoresis
Integrating Chromebook with Vernier Technology
Integrating Environmental Data Analysis into your Classroom: Climate Change and Michigan's Cherries
Interactions: A Free Three-dimensional Science Curriculum for 9th Grade Physical Science
Invade Your Parks and Back Again!
Invaders in Your Classroom: Resource Kits to Teach About Aquatic Invasives
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Mathematizing Biodiversity: Using Species Accumulation Curves to Measure Biodiversity
May the Force Be With You
Medicines and Me-developing a New Flu Prevention Drug
Merging High School Geology with NGSS
Michigan Chemistry Teachers Meeting
Michigan Environmental Public Health Tracking - A Tool You Can Use!
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Modeling and Experimental Design Using Isopods
Mysteries of Magnetism - THEMIS & MMS
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Partnering with the Michigan Nature Association in a Place Based Education Opportunity.
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Secondary Teachers of Science as Agents of Change: An NGSS Approach to Understanding the Environmental Impacts of Everyday Decisions
Seeing is Believing: Physics Demonstrations to Energize Your Classroom
Setting the Stage for Doing Science in Chemistry
Slow Down to Go Fast? How Modeling Can Increase Student Engagement Through Storytelling
Solar Panels and Pool Covers: Revving UP Biology
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Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance
Tools for Thinking About Assessment For The New MSS. - MSELA
Transition From One Dimensional GLCE's to Three Dimensional NGSS

Interest Levels

High School continued

Turning Chemistry Labs into STEM Labs
Turning Science Fiction Into Science Facts: A Compelling Project Based Approach Using New STEM Investigative Techniques
Updates from the Michigan Department of Education and the DTMB
Using 3D Learning Strategies to Improve Standardized Assessment
Using a Driving Question Board to Figure out Phenomena
Using Our National Parks to Blend Curriculum
Using Phenomena in Biology to Give Context and Purpose for Learning
Using Texts to Engage Students in Three-Dimensional Science
Using Wildlife CSI to Teach Claim, Evidence, Reasoning
Vernal Pool Patrol: Citizen Science and Place-Based Education to Promote Science Learning and Stewardship
Video Storylines in the Science Classroom
Wait, What? There's a New Science Assessment?!?
Weaving Stories Throughout Your Biology Course Using HHMI Biointeractive Resources
We've Got Gall, Do You?
What Did They Say? Student Discourse and the NGSS
What Does That Graph Show Me?
What The Heck Happened?!?!
Writing in Science
Yeah, Buoy! (Buoyancy Demos)

College

1 Class Period+ 1 Model System + 2 Cellular Processes= Success 4 Students!
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Challenge Your Students to Make a Dozen Classroom Motors
Classification Can Be Fun
Cosmetic Experiments for Grades 8-12
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Digital Microscopy for $40
Electromagnetic Spectrum & Radioactivity
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Evo-Ed Cases: Connecting Biology Across the Curriculum
Exploring Biology through Dissection with Flinn Scientific
Exponential Inquiry- Merging Math and Biotech to Amplify Learning
Great Demos on a Small Budget
Healthy Grading: A Moral Imperative
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Influence of Research Experiences on Science Teacher Knowledge and Practice
Investigating Ecological Relationships Using HHMI Biointeractive Resources
Journaling in Science using Evidence Notebooks
Justify Your Energy-Based Claims
Lloyd's Toolbox of Engineering Ideas & Activities
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Teaching about Floods Using Extreme Weather Events
The Lecture Is Dead: Using Alternative Classroom Models to Enhance Student Learning
The Triple E's of Climate Change: Environmental Change, Epidemiology & ELISA Testing!
Tips You Can Use in Class Tomorrow: Building Community, Accountability, and Class Relevance
Weaving Stories Throughout Your Biology Course Using HHMI Biointeractive Resources
We've got Gall, do you?

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Region 2 Director - Rachel Badanowski

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Region 4 Director - Susan Tate

Whitehall Schools
5122 Lakeview Street
Montague, MI 49437
susantate@whitehallschools.net

Region 5 Director - Conni Crittenden

Williamston Schools
603 Ardson Road
East Lansing, MI 48823
crittec@gmail.com

Region 6 Director - Laura Ritter

Troy High School
4447 Northfield Parkway
Troy, MI 48098
lritter77@gmail.com

Region 7 Director – Terry Grabill

Fremont Middle School
500 Woodrow
Freemont, MI 49412
tgrabill@fremont.net

Region 8 Director

Position currently vacant

Region 9 Director- Jennifer Richmond

Carsonville – Port Sanilac School
5772 Wildcat Road
Crosswell, MI 48422
jlzrichmond@gmail.com

Region 10 Director - Carolyn Mammen

Trinity Lutheran School/TCAPS
1003 Maple St.
Traverse City, MI 49684
cmammen@charter.net

Region 11 Director

Position currently vacant

Region 12 Director – Sarah Geborkoff

Houghton Middle School
21507 Denton Road
Chassell, MI 49916

Region 13 Director – Chris Standerford

Northern Michigan University
401 Presque Isle, West Science 2805
Marquette, MI 49855
cstander@nmu.edu

Region 14 Director - Lynn Thomas

Escanaba High School
500 S. Lincoln Road
Escanaba, MI 49837
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.

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

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

2016

Teacher of Promise	Dakota Bahlau
Teacher of Promise	Paula Gentile
Elementary Science Teacher of the Year	Sherri Hane
Middle School Science Teacher of the Year	Colleen Polydoras
High School Science Teacher of the Year	Joshua Barclay
College Science Teacher of the Year	Dr. Mark Francek
Informal Science Educator	Janet Vail
MSTA Special Award	Stephen Best
Distinguished Service Award	Cheryl Hach

2017

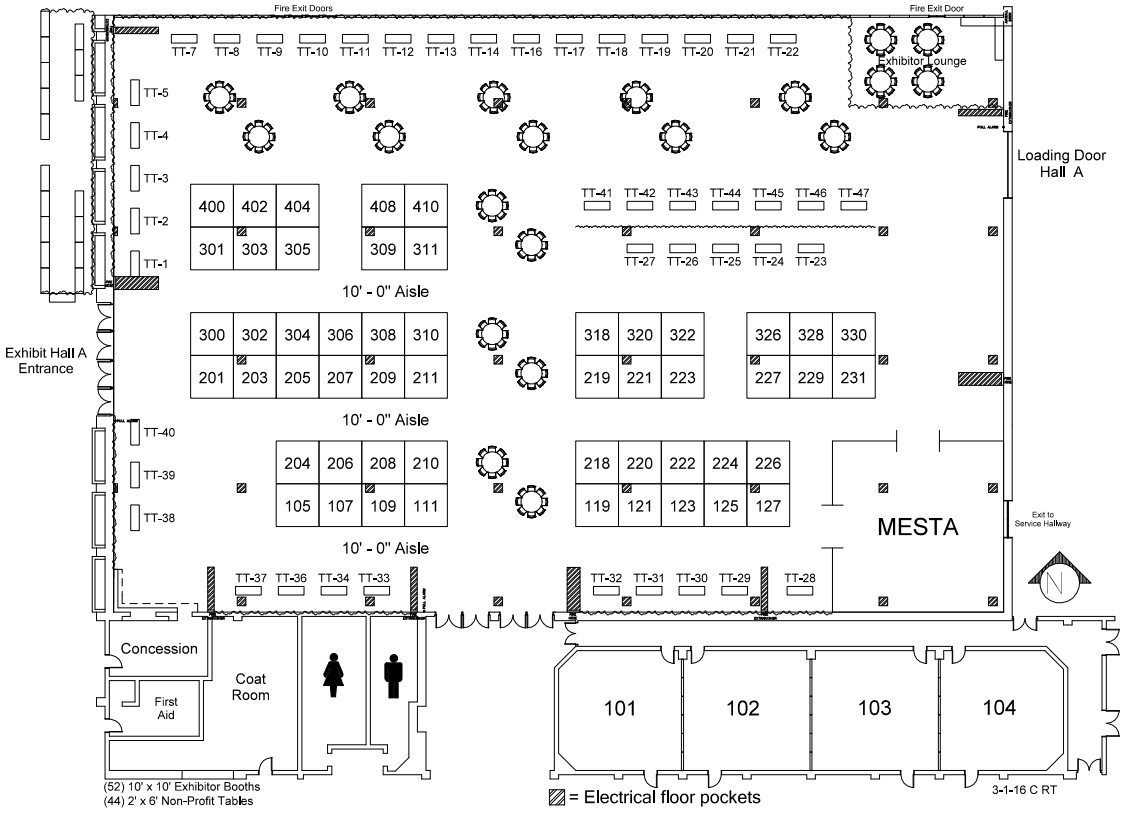
Teacher of Promise	Hadley Brill
Elementary Science Teacher of the Year	Robert Thomson
Middle School Science Teacher of the Year	Leigh Ann Roehm
High School Science Teacher of the Year	Scott Milam
College Science Teacher of the Year	Dr. Janet Vigna
Administrator of the Year	Thomas Ten Brink
Informal Science Educator	Brandon Schroeder
MSTA Special Award	Sue Campbell
Distinguished Service Award	Conni Crittenden
The George G. Mallinson Award	Karl Klimek
Dan Wolz Clean Water Education Grant	Sarah Geborkoff

2018

Teacher of Promise	Nathan Hatt
Middle School Science Teacher of the Year	Jean Buller
High School Science Teacher of the Year	Anne Jeannette LaSovage
College Science Teacher of the Year	Dr. Brian DeJong
Administrator of the Year	Heidi Mercer
Informal Science Educator	Tracy D'Augustino
Distinguished Service Award	Liz Larwa
Dan Wolz Clean Water Education Grant	Holly Hereau
The George G. Mallinson Award	Deborah Peek- Brown

Exhibitor Information

Lansing Center - Exhibit Hall A



Activate Learning
Booth #: Lansing Center - Room 103

Cynthia Weller
134 6th Ave
LaGrange, IL 60525
P: 708.205.5691
E: cweller@activatelearning.com

Activate Learning is a leader in research-based, K-12 STEM curricula, including IQWST and PBIS for MS science, and several leading HS math, science and engineering curricula. Our project-based, investigation-centered, and literacy-rich programs immerse students in rigorous learning environments, in which their original questions and everyday experiences are central to standard-based, 3D learning.

American Chemical Society
Booth #: TT18

Kathy Kitzman
16273 Pomona Drive
Redford, MI 48240
P: 313.575.1292
E: kathyk@sefmd.org

As the world's largest scientific society, the ACS provides many resources for educators, including the recently formed American Association of Chemistry Teachers (AACT).

Amplify
Booth #: 300, 302

Matthew Paupore
2228 Crystal Croing
Howell, MI 48843
P: 734.740.2169
E: mpaupore@amplify.com

Amplify is reimagining the way teachers teach and students learn. Amplify Science invites students to explore phenomena with the purpose of solving authentic problems.

Ann Arbor Hands-On Museum, Leslie Science & Natural Center, Yankee Air Museum
Booth #: TT31, TT32

Corrina Strecker
220 E Ann St
Ann Arbor, MI 48104
P: 734-995-5439
E: cstrecker@aahom.org

Ann Arbor Hands-On Museum, Leslie Science & Natural Center, Yankee Air Museum

Exhibitor Information

Arbor Scientific
Booth #: 119, 121

Sebastian Jolta
PO Box 2750
Ann Arbor, MI 48106
P: 734.239.3651
E: sebastian@arborsci.com

Arbor Scientific is highly recogonized in the educational physics & chemistry community from the middle school level to the collegial level for providing high quality equipment for the classroom

Backyard Brains
Booth #: 402

Greg Gage
308 1/2 S.State Street
Ann Arbor, MI 48104
P: 734.968.7570
E: gagegreg@backyardbrains.com

We provide STEM project-based learning curriculum in the exciting fields of neuroscience and biomedical engineering. See our 4 TED Talks, and new TV show.

Battle Creek Outdoor Education Center, Clear Lake Camp
Booth #: TT3

Matthew Santner
10160 S. M-37 Hwy
Dowling, MI 49050
P: (269) 721-8161
E: oecevents@battle-creek.k12.mi.us

The OEC provides field trips for school groups. Programs emphasize social skills, team building, and life sciences.

Bedford, Freeman & Worth High School Publishers
Booth #: 310

Ana Ramos
1 New York Plaza, Suite 4500
New York, NY 10004
P: 212.375.7000
E: conventions@macmillan.com

At Bedford, Freeman & Worth (BFW) High School Publishers we pave the way with innovative products, including market-leading AP texts and on-level programs aligned to NGSS

Benz Microscope Optics Center, Inc.
Booth #: 301, 303

Michael L. Benz
3980 Varsity Dr.
Ann Arbor, MI 48108
P: (734) 994-3880
E: benzmicroscope@aol.com

We sell and service microscopes and sell discounted science supplies.

Bio-Rad Explorer
Booth #: 222

Tamica Stubbs
3720 Flowerfield Road
Charlotte, NC 28210
P: 510-410-7595
E: tamica_stubbs@bio-rad.com

The Biotechnology Explorer program provides access to technological innovations in modern biology through practical hands-on activities in a format that works in the classroom.

Camp Invention
Booth #: 318

Bilal Taftaf
3701 Highland Dr.
North Canton, OH 44720
P: (330) 814-0188
E: mbryant@invent.org

Carolina Biological Supply Company
Booth #: 207

Rick Brost
2700 York Road
Burlington, NC 27215
P: 336.213.3487
E: rick.brost@carolina.com

Carolina Biological Supply Company is a worldwide leader in science education, providing top-quality, innovative science and math materials for educators. Carolina serves the K-16 market with everything needed to equip science laboratories and classrooms.

Central Michigan University - Biological Station
Booth #: TT12

John Gordon
ET 200
Mt. Pleasant, MI 48858
P: 989.774-4400
E: godo2jj@cmich.edu

CMU Biological offers courses and workshops for high school students, teachers, and any individual interested in exploring the natural enviornment of beautiful Beaver Island.

Cereal City Science
Booth #: 309

Cindy Older
201 W. Michigan Ave
Battle Creek, MI 49017
P: 269.213.3824
E: cindy@bcamsc.org

Cereal City Science (BCAMSC) supports K-MS educators and students with curricula and professional development with NGSS and CCSS. The research-based program proves STEM instruction where students are engaged in phenomena and problem solving.

Consumers Energy
Booth #: 308
Michelle Stepek
400 Clay Ave. SW
Grand Rapids, MI 49548
P: 616.530.4478
E: michelle.stepek@cmsendergy.com
Consumers Energy offers FREE resources for teachers on topics related to energy and safety.

Delta Education/Foss
Booth #: 404
Kathleen Shutter
80 Norhwest Blvd.
Nashua, NH 06061-3000
P: 859.404.3870
E: kathleen.schutter@schoolspecialty.com
Delta Education publishes K-8 FOSS Next Generation and Delta Science modules. Over 25 years of research brings you the best in hands-on, inquiry-based learning.

Detroit Zoological Society
Booth #: TT21, TT22
Claire Lannoye-Hall
8450 West 10 Mile Road
Royal Oak, MI 48067
P: 248.541.5717
E: education@dzs.org
The Detroit Zoological Society - a renowned leader in education, conservation, animal welfare, and sustainability – operates the Detroit Zoo and Belle Isle Nature Center.

DNR Outdoor Adventure Center
Booth #: TT14
Natalie Cypher
1801 Atwater St
Detroit, MI 48207
P: 313.396.6874
E: cyhern@michigan.gov
The outdoor Adventure Center is a hands-on facility focusing on Michigan's natural resources and recreation opportunities. We offer field trips and classes for all grade levels.

Educational Innovations, Inc
Booth #: 231, 330
Edward Beyer
5 Francis J Clarke Circle
Bethel, CT 06801
P: 203.748.3224
E: ted@teachersource.com
Educational Innovations, Inc. is teacher owned and operated! We are committed to bringing you SUPER, WOW, NEAT! Science supplies! We Make Science Sizzle!

Engineering is Elementary
Booth #: 410
Danielle Rodriguez
1 Science Drive
Boston, MA 02114
P: 617.589.3121
E: drodriguez@mos.org
EiE designs engineering curricular materials, resources, and teacher professional development to help create the next generation of problem solvers.

Engineering Society of Detroit- Future City
Booth #: TT24
Sue Ruffner
20700 Civic Center Dr., Suite 450
Southfield, MI 48076
P: 248.323.0735
E: amarrs@esd.org
Engineering Society of Detroit sponsors middle school "Future City" engineering competions. Winners compete in Washington D.C. National winners earn a trip to Space Camp and $5,000!

ETA Hand2mind
Booth #: 223
Julie Ciborowski
500 Green View Court
Vernon Hills, IL 60061
P: 847.968.5204
E: jciborowski@hand2mind.com
Discover simple solutions to integrate hands-on learning into your classroom for daily math practice, differentiated instruction, guided lessons, STEM, and more.

ExploreLearning
Booth #: 227
Abby Dogum
110 Avon Street, Suite 300
Charlottesville, VA 22902
P: 866.882.4141
E: adogum@explorelearning.com
ExploreLearning develops online solutions to improve learning in math and science including:Gizmos - online simulations for math and science: and Reflex - a math fact fluency solution.

FARM Science Lab
Booth #: TT 7
Michelle Blodgett
7373 W. Saginaw Highway
Lansing, MI 48917
P: 517.679.5969
E: mblodgge@michfb.com
FARM Science Lab is a 40 foot mobile classroom, tooled with STEM-based lessons that align with NGSS to increase agriculture awareness.

Exhibitor Information

Flinn Scientific, Inc
Booth #: 210
David Jones
Po Box 219
Batavia, IL 60510
P: 800.452.1261
E: djones@flinnsci.com
Flinn Scientific develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle schools, high schools and higer ed.

Harrington Education Partnerships/Smart Science
Booth #: 306
Lorette Harrington
2203 Bollman Drive
Lansing, MI 48917
P: 517.282.1484
E: lorhar59@gmail.com
Robust online experiential Science Labs meet MGSS handouts. Differentiation, instruction and assessments. Grades 3-College

Houghton Mifflin Harcourt
Booth #: 326
Lisa Clisham
One pierce Place, Suite 900W
Itasca, IL 60143
P: 630.338.6402
E: lisa.chilsham@hmhco.com
Houghton Mifflin Harcourt provides pre-K-12 content, services, and cutting-edge solutions across a variety of media to enable learning in a changing landscape. Visit: hmhco.com

Impression 5 Science Center
Booth #: TT23
Mieaela Blazer
200 Museum Drive
Lansing, MI 48933
P: 517.485.8166 x144
E: balzer@impression5.org

Inland Seas Education Association
Booth #: TT30
Courtney Bierschbach
PO Box 218 100 Dame Street
Suttons Bay, MI 49682
P: 231.271.3077
E: cbierschbach@schoolship.org
Explore the Great Lakes with Inland Seas! ISEA is a non-profit that specializes in hands-on STEM field trips for all ages aboard traditionally rigged tallships

Institute of Food Technologists - Great Lakes Section
Booth #: TT26
Scott Peterson
445 State Street
Fremont, MI 49413
P: 616.304.2362
E: scott.peterson@rd.nestle.com
GLSIFT is comprised of food industry professionals that typically have college degrees in chemistry microbiology, engineering, food science or nutritional science

IQ hub
Booth #: TT8
Emily Crambell
3055 West M21
St. Johns, MI 48879
P: 989.227.3847
E: emily.crambell@agroliquid.com
The Iqhub is a museum and educational center, located in St. Johns, Michigan. We offer FREE Science fieldtrips to students of all ages!

Lab-Aids
Booth #: 304
Bill Cline
9323 Sailwind Dr
Ft Wayne, IN 46804
P: 260.273.0815
E: bcline@lab-aids.com
Lab-Aids proudly publishes the Science Education for Public Understanding Program (SEPUP) which began developing science instructional materials with funding from the National Science Foundtation (NSF) in 1987.

Lawrence Technological University
Booth #: TT25
Adam Berry
21000 West 10 Mile Road
Southfield, MI 48075
P: 248.204.3170
E: aberry@ltu.edu
Lawrence Tech is a private independent University located in Southfield, Michigan, focusing on STEM related degree programs.

Learning A-Z
Booth #: 211
Ann Bridges
1840 E River Rd, Suite 320
Tuson, AZ 85718
P: 520.999.3863
E: ann.bridges@learningaz.com
Learning A-Z is a literacy-focused pre-K, K-12 education technology provider. Our products blend traditional teaching-led instruction with technology enable resources to make teaching more effective and efficient.

Leelanau Outdoor Center
Booth #: TT28
Steve Hufstader
1653 S Port Oneida Rd
Maple City, MI 49664
P: 231.334.3808
E: steve.h@locprograms.org
Our mission is to provide outstanding experiential and ecological learning in the natural environment that promotes the discovery and development of character, leadership and knowledge.

Magformers
Booth #: 320
Mitchell Barman
44125 Ford Road
Canton, MI 48187
P: 734.667.1673
E: mbarman@magformers.com
Magformers - a magnetic construction building toy company. Our products are designed for STEM education and are gender neutral.

McGraw-Hill Education
Booth #: 109, 111
Colleen Mattox
8787 Orion Place
Columbus, OH 43240-4027
P: (614) 430-4709
E: colleen.mattox@mheducation.com
McGraw-Hill Education is the digital learning experiences company intent on changing the world of education. Drawing on our rich heritage of educational expertise, we offer highly personalized learning experiences that improve learning outcomes around the world.

MDSTA
Booth #: TT33
Pamela Bentley Callaway
21610 Kenosha Street
Oak Park, MI 48237
P: 248.541.1781
E: pcallaway9@gmail.com
MDSTA, the oldest Science Teacher organization in Michigan, dedicated to promoting excellence and innovation to educators in Southeast Michigan counties since 1940.

MEEMIC
Booth#: 221
Rick Pinkos
725 S. Adams, Suite 230
Birmingham, MI 48009
P: 248.594.5700
E: rick@randahlagency.com
MEEMIC provides insurance for educators, with special discounts on Auto, Home, Renters, and Boat polices.

Merlin Entertainments, LLC
Booth #: 203, 205
Dawn Priebe
4316 Baldwin Rd
Auburn Hills, MI 48326
P: 248.409.6008
E: dawn.priebe@merlinentertainments.biz

MESTA (Michigan Earth Science Teacher Association
Booth #: CORNER OF HALL
Lisa Bouda
E: bouda90@comcast.net

Michigan Alliance for Environmental and Outdoor Education (MAEOE)
Booth #: TT9
Brittany Burgess
PO Box 51235
Livonia, MI 48151
E: brchunn@umich.edu
MAEOE is the statewide network & advocate for professionals who are educating Michigan citizens toward outdoor environmental literacy stewardship recreation.

Michigan Antibiotic Resistance Reduction Coalition
Booth #: TT19
Elaine Bailey
49623 Nautical Dr.
Chesterfield Twp., MI 48047
P: (586) 201-4047
E: elainebailey@mi-morning.org
The Michigan Antibiotic Resistance Reduction Coalition seeks to improve the use of antibiotics throught collaborative educational efforts.

Michigan Chemistry Council
Booth #: TT41
John Dulmes
326 West Ottawa Street
Lansing, MI 48933
P: 517.372.8898
E: info@michiganchemistry.com
The Michigan Chemistry Council is the statewide organization for the chemical industry, and works to promote awareness of industry innovations, careers, and resources.

Exhibitor Information

Michigan Department of Education
Booth #: TT34

Ruth Anne Hodges
608 West Allegan Street
Lansing, MI 48933
P: 517-241-4285
E: hodgesr@michigan.gov

The MDE will have staff available to answer questions around course design, appropriate placement of teachers, science MiStep, and MME, as well as other state education policies.

Michigan Department of Environmental Quality
Booth #: 125

Tom Occhipinti
525 W Allergan St
Lansing, MI 48909
P: 517.284.6867
E: occhipintit@michigan.gov

The DEQ promotes wise management of Michigan's air, land, and water resources to support a sustainable environment, healthy communities, and vibrant economy

Michigan Department of Health and Human Services - MiTracking
Booth #: TT16

Celeste Bavin
2364 Woodlake Dr, Suite 180
Okemos, MI 48864
P: 517.324.7392
E: maraj@michigan.gov

The Michigan Department of Health and Human Services Division of Environmental Health addresses health concerns related to hazardous chemicals in the environment.

Michigan DNR
Booth #: TT 1, TT 2

Kevin Frailey
320 S. Walnut Street
Lansing, MI 48933
P: 517.974-7941
E: fraileyk@michigan.gov

Michigan DNR has programs and materials for teachers. Come learn about educational opportunities and pick up FREE materials.

Michigan eLibrary/Library of Michigan
Booth #: TT10

Mary Smith
320 S. Walnut Street
Lansing, MI 48933
P: 517.373.1580
E: smithm99@michigan.gov

The Michigan eLibrary, a program of the Library of Michigan/MDE, is our state's digital library with quality vetted resources from PreK to adult.

Michigan Nature Association
Booth #: TT27

Julie Stoneman
2310 Science Parkway
Okemos, MI 48864
P: 866.223.2231
E: jstoneman@michigannature.org

The Michigan Nature Association is a non-profit, statewide conservation organization working to protect Michigan's rare, threatened, and endangered species.

Michigan Science Center
Booth #: TT38

Susie Marvin
5020 John R St
Detroit, MI 48202
P: 313.577.8400
E: susie.marvin@mi-sci.org

With 250+ Hands-On exhibits, 5 Theaters, Traveling Science and Distance Learning Programs, and Teacher Professional Development, MISCI Inspires people of all ages with STEM!

Michigan Sea Grant
Booth #: TT29

Todd Marsee
520 E Liberty St, suite 310
Ann Arbor, MI 48104
P: 734.764.1437
E: marsee@umich.edu

Michigan Sea Grant is dedicated to research, outreach & education about issues facing Great Lakes habitats and communities.

Minione Systems
Booth #: 305

Mindy Lee-Olsen
7738 Arjons Dr
San Diego, CA 92126
P: 858.684.3190
E: mindy_leeolsen@theminione.com

Minione Systems provides fast, safe, reliable, and affordable electrophorosis and PCR systems for hands-on learning in classrooms. Teach electrophorosis or PCR labs in 45 minutes.

MSTA
Booth #: TT37

MSTA Store
Booth #: TT36

MSU - W.K. Kellogg Biological Station
Booth #: TT42
Misty Klotz
3700 E. Gull Lake Drive
Hickory Corners, MI
P: 269-671-2402
E: klotzmis@msu.edu

NASCO
Booth #: 408
Sarah Feirn
901 Jonesville Ave.
Fort Atkinson, WI 53538
P: 920.568.5514
E: sfeirn@ensco.com

National Geographic Learning/Cengage
Booth #: 322
Marge Sousa
20 Channel L Center Street
Boston, MA 02210
P: 617.757.8075
E: donna.livingstone@cengage.com
National Geographic Learning, a part of Cengage, provides quality PreK-12, Academic, and Adult Education instructional solutions for reading, science, social studies, mathematics, world languages, ESL/ELD, Advanced, Honors, & Electives, Careers and Technical Education, and Professional Development. See our new catalog at NGL.cengage.com/catalogs.

NSTA
Booth #: 105, 107
Rick Bounds
1840 Wilson Blvd
Arlington, VA 22201
P: 703.312.9210
E: rbounds@nsta.org

Organization for Bat Conservation
Booth #: TT5
Aja Marcato
39221 Woodward Ave PO Box 801
Bloomfield Hills, MI 48303
P: 248.645.3232
The Organization for Bat Conservation is a 501© 3 non-profit that work to save bats through environmental education and also acts as a bat sanctuary.

PASCO Scientific
Booth #: 311
Julie Thomas
10101 Foothills Blvd
Rosenville, CA 95747
P: 916.300.5527
E: jthomas@pasco.com
PASCO's Mission is to provide educators worldwide with innovative ways to teach and learn science.

Pearson
Booth #: 204, 206
Sabrina Lawrence
19144 Leigh Lane
Pflugerville, TX 78660
P: (512) 713-9194
E: sabrina.lawrence@pearson.com
Paul Meyers, Shavon Johnson/Pearson partners with educators to deliver new personalized ways of learning through effective assessments, instructional tools, services, and technologies.

Potter Park Zoo
Booth #: 208
Jennifer Horvatin
1301 S Pennsylvania Ave
Lansing, MI 48912
P: 517.342.2713
E: jhorvatin@ingham.org
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!

Preuss Pets
Booth #: 400
Kirbay Preuss
P: 517.719.4085
E: kirbay.preuss@gmail.com
Preuss Pets encourages meaningfull connections between people and pets by providing healthy animals, quality pet products, and community education.

RIPPLE: Reduce Invasive Pet and Plant Escapes
Booth #: TT17
Paige Filice
480 Wilson Road
East Lansing, MI 48824
P: 517.505.6221
E: filicepa@msu.edu
Non-native plants from aquariums and water gardens released into the wild are an environmental issue. This education campaign aims at reducing their release.

Scholastic Library Publishing
Booth #: 123
Laureen Bowman
35460 Heritage Lane
Farmington, MI 48335
P: 248.474.6527
E: laureen@archieassociates.com
Scholastic Library Publishing has digital resources aligned to NGSS Science Flix True Flix and the new Go Grolier Online

Exhibitor Information

Square One Education Network
Booth #: TT39, TT40
Barb Land
3725 West Primilla Lane
Jacksom, MI 49201
P: 248.736.7537
E: barb@squareonenetwork.org

STEMscopes
Booth #: 127
Joyce Enanas
5177 Richmond Ave.
Houston, TX 77056
Built on a digital platform, enhanced by print and brought to life in hands-on kits, STEMScopes is an all-in-one STEM solution that aligns to your State's Standards.

TCI
Booth #: 224, 226
Thoa Tran
2440 W. El Camino Real, Suite 400
Mountain View, CA 94040
P: (650) 390-6600
E: ttran@teachtci.com
Bring Science Alive! is a program built from the ground up to align to the Next Generation Science Standards (NGSS) and the Common Core.

The Markerboard People
Booth #: 201
Jason Lightner
1611 N. Grand River PO Box 80560
Lansing, MI 48906
P: (800) 379-3727
E: feedback@dryerase.com
Student Dry Erase Markerboards. Unbeatable Prices! Perfect for graphing, handwriting, math, science, and more! Long-lasting, non-toxic, ultra-love odor markers too!

The Robot Garage
Booth #: 209
Sarah Jacobs
637 South Eaton
Birmingham, MI 48009
P: 248.225.0993
E: sarah@therobotgarage.com

Van Andel Education Institute
Booth #: TT4
Robin Dhaseleer
333 Bostwick Ave NE
Grand Rapids, MI 49503
P: 616.234.5484
E: robin.dhaseleer@vaei.org
VAEI is a nonprofit organization dedicationed to helping educators bring inquiry-based learning to life and engaging students in thinking and acting like scientists.

Vernier Software & Technology
Booth #: 219
Angie Harr
13979 SW Millikan Way
Beaverton, OR 97005
P: 888.837.6437
E: aharr@vernier.com
Vernier creates easy-to-use science interfaces, sensors, and graphing/analysis software. Vernier's technology-based solutions enhance STEM education, increase learning, and build students' critical thinking skills

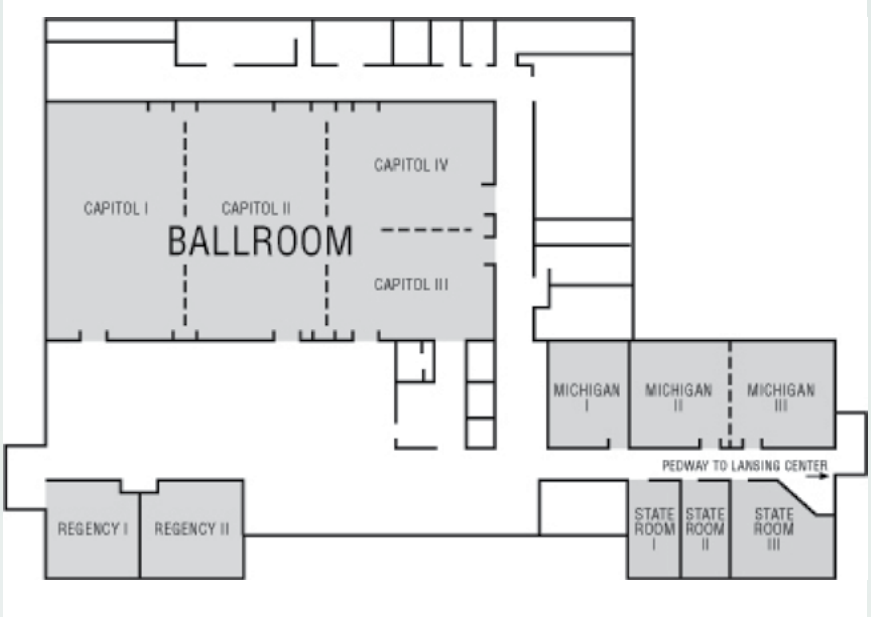
Wayne State University
College of Education Booth #: 220
College of Liberal Arts & Sciences Booth #: 218
Jeff Conn
666 W. Hancock – Dept. of Physics
Detroit, MI 48201
P: 313.577.7816
E: jconn@sun.science.wayne.edu
Wayne State university - The College of Liberal Arts & Sciences, and the College of Education, will have information on their programs for K-12 science teachers and school administrators. Stop by and check them out!

Western Michigan University
Booth #: TT13
Heather White
1903 W Michigan Ave
Kalamazoo, MI 49008
P: 269.808.6473
E: heather.white@wmich.edu
The MA in Science Education at WMU is 100% online!

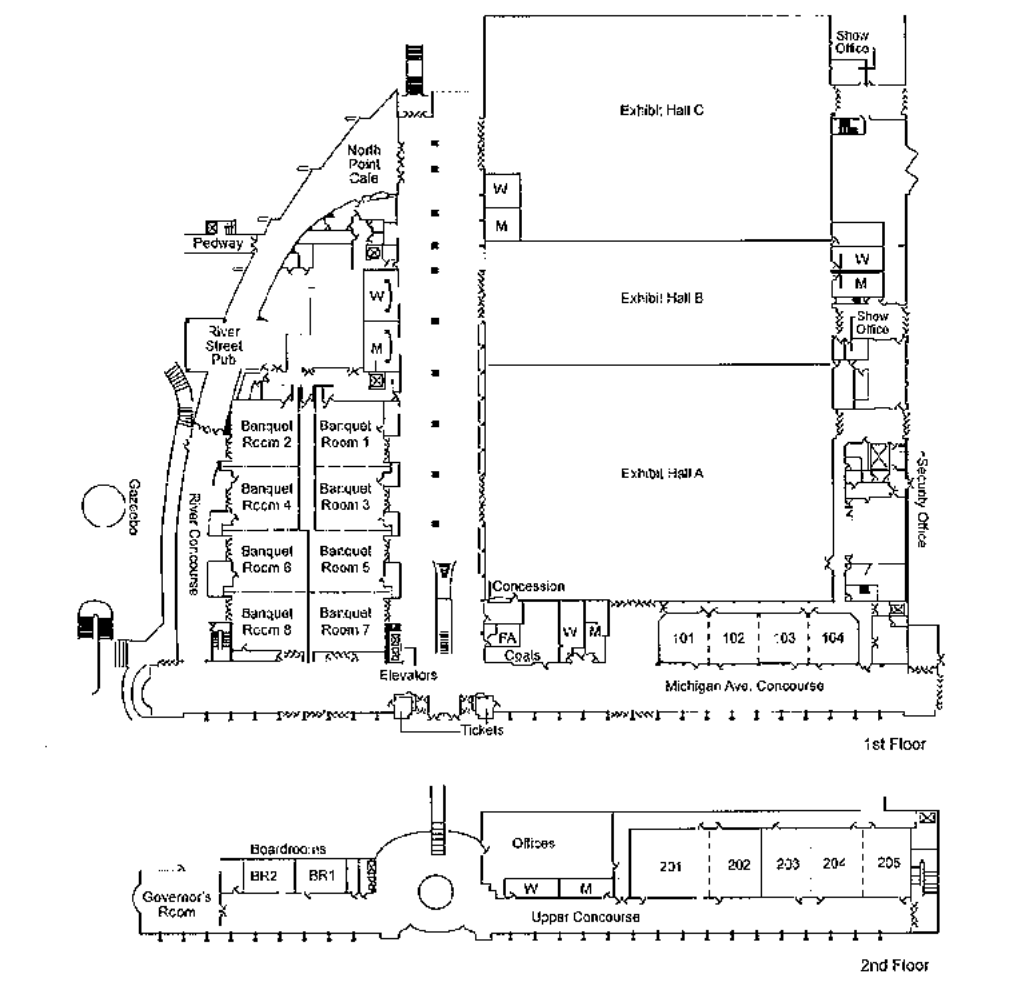
Woldumar Nature Center
Booth #: TT12
Kevin Wernet
5734 Old Lansing Rd
Lansing, MI 48917
P: 517.322.0030
E: director@woldumar.org
Woldumar Nature Center is Lansing's only private nonprofit nature center with a mission to educate people about the natural environment.

YMCA Hayo-Went-Ha Camps
Booth #: TT20
David Yuhaus
919 N. East Torch Lake Drive
Central Lake, MI 49622
P: 231.54435915
E: dyuhaus@hayowentha.org
YMCA Hayo-Went-Ha Camps offer experiential environmental education programs to students of all ages. Nestled amongst the beauty of Northern Michigan.

Radisson Hotel Map



Lansing Center Map



Innovation starts here

Whether it's a biomedical breakthrough or an archaeological discovery, students and professors in Wayne State University's College of Liberal Arts and Sciences work side by side to change our understanding of the world. WSU gives undergraduates the chance to learn across disciplines, combining the personal experience of a small college with the global advantages of a major research university.

There's unrivaled opportunity in the heart of Detroit, a city whose history, culture and economic resurgence make it one of the most fascinating places in the world. Join us at Wayne State University and take part in the reinvention of a great American city.

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