

MSTA Newsletter



A publication of the Michigan Science Teachers Association • Volume 66.4 • FALL 2014

In this Issue

From the Desk of the Executive Director _____ 1

From the President's Desk _____ 1

From MDE _____ 3

Curriculum Update _____ 7

Conference Update _____ 10

PAEMST _____ 14

Featured Lesson:
Energy Sources
Research Project _____ 18

From the President's Desk

By Charles Buciencki, MSTA President

As president of MSTA, I was invited to attend the National Congress meetings in Washington, DC held by the NSTA in July 2014. I thought it would be nice to give you a front row seat to some of the science taking place at the national level.

One of the important charges of these meetings is to provide each state a voice for science advocacy by helping to define the NSTA policy for the coming year. Attending members from each state are encouraged to give feedback on the issues that would be the most beneficial to their memberships. These ideas are then used to draft NSTA policy goals that will ideally provide benefits to the entire membership.

One of the identified proposals this year was to revise the NSTA policy on science assessment. These policies needed to be updated to include support for NGSS and to reflect more contemporary trends in science practices and assessment. The rationale provided for this proposal included information on advancements in assessment techniques, student response modes and data retrieval and analysis. The need for improved use of assessment

continued on page 2

From The Desk of Your Executive Director

From Robby Cramer, MSTA Executive Director

“Science without literacy is like a ship without a sail.”

— J. Osborne

Two weeks ago, while attending a seminar at Create for STEM at MSU, I sent my first “Tweet”! I wanted my message to be something significant. I chose a quote from Jonathan Osborne: “Science without literacy is like a ship without a sail.” Osborne was speaking on the Science and Engineering Practices from [A Framework for K-12 Science Education: Practices, Cross Cutting Concepts and Core Ideas.](#)

As Osborne focused his remarks on Styles of Scientific Reasoning, Scientific Practices and Argument in Science and Science Education, he shared what these practices look like in the elementary classroom: “Do It, Draw It, Talk It, Write It, Read It.”

Leaders from Michigan Department of Education continue the process of articulating a vision for science education in our state that will meet the needs of Michigan children

in the future. In August, they presented on assessment in science, during September they shared a presentation on instructional strategies for science education and in October they focused on professional development needs for new science standards. During public comment at the October State Board of Education meeting, members of the science community addressed the needs of pre-service teachers and in-service science teachers. For links to the power points of these presentations go to (<http://www.michMDE.gov/mde>.)

New Science Standards, based upon the Framework, will offer our students opportunities to develop skills that will allow them to become more complex scientific thinkers. Our students will become more adept as they construct their new understandings of science concepts and theories and become able to engage in arguments based upon evidence. Flexible use of these

continued on page 2

From the President's Desk

continued from page 1

for the appraisal of curriculum, instruction, teacher evaluation, and new tools to carry out these tasks was also cited. The conversations here were very rich and word choice become very precise as the group approached the final draft of the resolution.

The second proposal put forth by the group dealt with the importance of science in our educational system. It was proposed that NSTA should advocate the importance of science in evaluating overall student academic performance and that science assessment is essential to any overall student evaluation. The rationale discussion that developed dealt with U.S. global competitiveness and the ability to produce a scientifically literate and high-quality STEM workforce.

Some very worthwhile conversations were brought forth on behalf of both of these proposals and it was inspiring to be a part of these discussions and to see dedicated individuals working to increase scientific endeavors throughout our organizations.

I am pleased to share this look into the policy negotiations underway at the national level to promote science and it is gratifying to see how these policies align with the MSTA mission statement to stimulate, support, and provide leadership for the improvement of science education throughout Michigan and to include, in this case, our nation.

From the Executive Director

continued from page 1

science and engineering practices will enable our children to be independent, life-long learners. Who knows what will be the challenges they face when they are well into their careers? For many of us, **our challenge will be the shift from teacher-directed instruction to more of a coaching model of instruction as students “do science,” actively constructing and verbally sharing their own understanding.**

We need to prepare our students for opportunities and careers that have yet to be created. The three dimensions of the Framework offers a pathway for all of our students.

Guided Tours Planetarium Hands-on Activities Self-guided Programs Outreach



Schedule
online at
ummnh.org

Topics include:

Geology ▪ Paleontology ▪ Astronomy
Weather ▪ Archaeology ▪ Ecology
Dinosaurs ▪ Wildlife

Educator's Guide available online.

Call (734) 764-0480

or email UMMNH.Scheduling@umich.edu

to request a Guide!

SCHOLARSHIPS AVAILABLE



M

UNIVERSITY OF MICHIGAN
Museum of Natural History

1109 Geddes Avenue, Ann Arbor, MI 48109

tel 734.764.0478 fax 734.647.2767

www.ummnh.org

UPDATE!

Spring 2015 Testing Schedule

From Megan Schrauben, Michigan Department of Education Representative, 2015 Testing Update

The Michigan Department of Education (MDE) Spring 2015 testing dates for all summative assessments are included in this document.

Students in grades 3 – 8 and 11 will be assessed on Michigan’s current content standards in English language arts (ELA), mathematics, science, and social studies.

Since Michigan moved from fall testing in grades 3 – 9 to spring testing, students will be tested on content learned in the current school year versus prior year student knowledge. This move necessitated a change in the tested grades for science and social studies. Beginning with 2015, students in grades 4, 7, and 11 will be tested in science, while students in grades 5, 8, and 11 will be tested in social studies. This is a change from last year.

The English language arts assessment consists of reading and writing, at each grade 3 – 8, and 11. This is a change from prior years when writing was assessed only at grades 4, 7, and 11. Mathematics will continue to be assessed at grades 3 – 8 and 11.

The ACT Plus Writing® and WorkKeys® have been extended for one year as the college entrance and work skills assessments for grade 11 and eligible grade 12 students. The testing schedule is:

	ACT Plus Writing	WorkKeys
Initial Test Date	March 3	March 4
Makeup Date	March 17	March 18
Accommodations Testing Window	March 3 – 17	March 4 – 18

The following pages include an updated overall *Spring 2015 Testing Schedule for Summative Assessments* and the testing dates specified for the paper/pencil tests.



Online Testing

has the flexibility of testing **any** time during the testing window designated for each grade level.



Paper/Pencil Testing

must be administered on the dates specified for each content area in the window designated for each grade level.

continued on page 4

Spring 2015 Testing Schedule

continued from page 3

September 11, 2014



Spring 2015 Testing Schedule for Summative Assessments

	Week Beginning																		
	2/9	2/16	2/23	3/2	3/9	3/16	3/23	3/30	4/6	4/13	4/20	4/27	5/4	5/11	5/18	5/25	6/1	6/8	
Grades 5 and 8																			
Grades 4 and 7																			
Grades 3 and 6																			
Grade 11																			
MI-Access Alternate Assessments																			
College Entrance: ACT Plus Writing*																			
Accommodations Testing																			
Work Skills: WorkKeys*																			
Accommodations Testing																			
WIDA Access for ELLs																			
WIDA Alternate Access for ELLs																			

*Online testing has the flexibility of testing **any** time during the testing window designated for each grade level. Paper and pencil tests must be administered on the dates specified for each content area in the window designated for each grade level.*

*ACT Plus Writing and WorkKeys have been extended for one year. The initial testing dates for Spring 2015 are March 3rd for ACT and March 4th for WorkKeys. The makeup dates are March 17th for ACT and March 18th for WorkKeys. The accommodations testing window is March 3 – 17 for ACT and March 4 – 18 for WorkKeys.

Icon Legend Online Assessment Paper/Pencil Assessment

The general assessment for grades 3 – 8 and 11 are shown in the first four rows of the table. The window for these assessments spans eight weeks with grades testing within sub windows as specified.

Specific dates for the paper and pencil tests in each grade level sub window are shown for all content areas in the following calendars.

continued on page 5

Spring 2015 Testing Schedule

continued from page 4

September 11, 2014



Paper/Pencil Test Dates Grade 11

April 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14 ELA Day 1	15 ELA Day 2	16 SCIENCE	17 Makeup ELA/Science	18
19	20 Makeup ELA/Science	21 MATH Day 1	22 MATH Day 2	23 SOCIAL STUDIES	24 Makeup any content area	25
26	27	28 Makeup - any content area	29	30	1	

Paper/Pencil Test Dates Grades 4 and 7

April 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28 ELA Day 1	29 ELA Day 2	30 Makeup ELA	1	

Paper/Pencil Test Dates Grades 3 and 6

May 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19 ELA Day 1	20 ELA Day 2	21 Makeup - ELA	22	23
24	25 Memorial Day	26 Makeup ELA	27 MATH Day 1	28 MATH Day 2	29 Makeup any content area	30
31						

Paper/Pencil Test Dates Grades 5 and 8

April 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14 ELA Day 1	15 ELA Day 2	16 Makeup - ELA	17	18
19	20 Makeup ELA	21 MATH Day 1	22 MATH Day 2	23 SOCIAL STUDIES	24 Makeup any content area	25
26	27	28 Makeup - any content area	29	30	1	

May 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Makeup ELA	2
3	4 Makeup ELA	5 MATH Day 1	6 MATH Day 2	7 SCIENCE	8 Makeup any content area	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 2015						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Follow MSTA on



Visit www.msta-mich.org for the latest information on the 2015 Conference and much more.

Are You Prepared...

to Teach in the 21st-Century Classroom?

Lawrence Technological University

Can Help!

Master of Science Education

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

Master of Educational Technology

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

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

For more information on these and other science programs, visit www.ltu.edu/sciences

Waive your application fee at www.ltu.edu/applyfree



Possible is everything.

Lawrence Technological University | Office of Admissions

21000 West Ten Mile Road, Southfield, MI 48075-1058 | 800.225.5588 | admissions@ltu.edu | www.ltu.edu/sciences

CURRICULUM IDEAS

Need Engineering Resources?

From MSTA's Curriculum Director, Jennifer Arnsward, Kent ISD -

Based on the Framework for K-12 Science Education, the Next Generation Science Standards reflect several conceptual shifts:

1. K-12 science education should reflect the interconnected nature of science as it is practiced and experienced in the real world.
2. The Next Generation Science Standards are student performance expectations - NOT curriculum
3. The science concepts in the NGSS build coherently from K-12.
4. The NGSS focus on deeper understanding of content as well as application of content.
5. Science and Engineering are integrated in the NGSS, from K-12.
6. The NGSS are designed to prepare students for college, career, and citizenship.
7. The NGSS and Common Core State Standards (English Language Arts and Mathematics) are aligned.

Retrieved from Appendix A- Next Generation Science Standards www.nextgenscience.org

Teachers often share with me that they do not have engineering resources. Since these are new for many Michigan educators, I thought it would be the perfect opportunity to share my favorite engineering resources!

MDOT TRAC

www.michigan.gov/mdot-trac

Since 2004, the Michigan Department of Transportation (MDOT) has been offering the American Association of State Highway Transportation Officials (AASHTO) TRAC (Transportation and Civil Engineering) Program to schools in Michigan. TRAC is a free hands-on education program designed for integration into science, math and social science classes.

A World in Motion

<http://www.awim.org/>

SAE International's A World In Motion® (AWIM) program is a teacher-administered, industry volunteer-assisted program that brings science, technology, engineering and math (STEM) education to life in the classroom for students in Kindergarten through Grade 12. Benchmarked to the national standards, the AWIM program incorporates the laws of physics, motion, flight and electronics into age-appropriate hands on activities that reinforce classroom STEM curriculum. (Free lessons plans, kits available for purchase)

Engineering is Elementary

www.EiE.org

Engineering is Elementary® (EiE®) is a project of the National Center for Technological Literacy® at the Museum of Science, Boston. Explore our research-based, teacher-tested, and award-winning curricula:

Engineering is Elementary - for elementary classrooms (\$)

Engineering Adventures - for grades 3 and up in afterschool and camp programs (free)

Engineering Everywhere - for middle-school afterschool and camp programs (free)

Try Engineering

www.tryengineering.org

Tryengineering.org is a resource for students, their parents, their teachers and their school counselors. This is a portal about engineering and engineering careers, hoping it will help young people understand better what engineering means, and how an engineering career can be made part of their future. This site contains engineering and lesson plans for students of all ages that are standards aligned.

Teach Engineering

www.teachengineering.org

TeachEngineering.org is a searchable, web-based digital library collection populated with standards-based engineering curricula for use by K-12 teachers and engineering faculty to make applied science and math (engineering) come alive in K-12 settings. The Teach Engineering collection provides educators with *free* access to a growing curricular resource of multi-week units, lessons, activities and living labs.

TeachEngineering.org is a collaborative project between faculty, students and teachers associated with **five founding** partner universities, with NSF National Science Foundation funding. The collection continues to grow and evolve with new additions submitted from more than 50 **additional contributors**, a cadre of volunteer teacher and engineer reviewers, and feedback from teachers who use the curricula in their classrooms.

Engineering, Go for IT

www.egfi-k12.org

eGFI is proudly brought to you by the American Society for Engineering Education (ASEE). They are committed to promoting and enhancing efforts to improve K-12

continued on page 8

CURRICULUM IDEAS

Engineering Resources

continued from page 7

STEM and engineering education. - See more at:
<http://www.egfi-k12.org/about/#sthash.5Xks8i9J.dpuf>

Here you will find a variety of tools to boost your students' math and science skills, enliven the classroom with engineering projects, expand your own professional horizons and stay informed. Subscribe, and a newsletter with updated features will arrive in your in-box every month.

PBS Design Squad

<http://pbskids.org/designsquad>

DESIGN SQUAD NATION is a 10-part series of TV shows and video blogs that build on the success of the award-winning PBS reality competition series DESIGN SQUAD to get kids excited about engineering. DESIGN SQUAD NATION is high-energy, high-drama reality TV led by Judy and Adam, two professional engineers who work with kids around the world to make their wishes come true through engineering. From creating a park for skaters

at the White Mountain Apache Reservation in Arizona to building a playground in a rural village in Nicaragua's northern mountains, the goal of DESIGN SQUAD NATION is to inspire viewers to take on their own hands-on engineering activities.

PictureSTEM

<https://sites.google.com/a/umn.edu/picturestem/home>

The PictureSTEM curriculum provides a model of STEM integration that employs engineering and literacy contexts to integrate science, technology and mathematics content in meaningful and significant ways.

These program descriptions have been retrieved from resource sites

Do you have additional engineering resources you would like to share?

Email them to Jen Arnswald, MSTA Curriculum Director:
jennifer_arnswald@msta-mich.org



WE LOVE SCIENCE AS MUCH AS YOU.

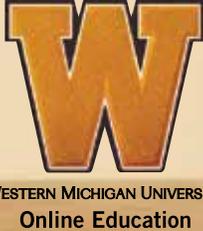
Online M.A. in Science Education

When did you fall in love with science? The online M.A. in Science Education at Western Michigan University allows you to focus on the science content you enjoy so much. Learn more about what you love.

wmich.edu/online/science



visit website



WESTERN MICHIGAN UNIVERSITY
Online Education



Innovation starts here

Whether it's a medical breakthrough or the reinvention of the automobile, students and professors at Wayne State 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. What's more, we send more students to the National Conference on Undergraduate Research than any other school in Michigan.

Encourage your students to apply to Wayne State by Dec. 1, 2014, for optimal scholarship consideration.
wayne.edu



AIM HIGHER

CONFERENCE REPORTS

Conference Update

From Liz Larwa, MSTA Elementary Director and Karen Kelly, Pierce Middle School, Waterford, MI, 2015 Conference Co-chairs

The 62nd Michigan Science Teachers Association Conference is quickly approaching. This conference will be held on February 27-28, 2015 at the Amway Grand Plaza Hotel in Grand Rapids. Below are some of the highlights you can expect this year:

Do you want to hear how you can effectively utilize formative assessments in your classroom to uncover students' ideas and use students' thinking to inform instruction?

We are very excited to welcome Page Keeley as our dynamic keynote speaker. Page Keeley is the Senior Science Program Director at the Maine Mathematics and Science Alliance, where she directs projects in the areas of leadership, standards-based curriculum and instruction, formative assessment, professional development design, and instructional coaching. She has directed several major National Science Foundation-funded projects and has authored nine books, several chapters and journal articles. She provides professional development and consultation services to school districts, math-science partnership (MSP) projects, university programs, and math/science organizations throughout the United States. She is the author of the Uncovering Student Ideas in Science series, focusing on formative assessments. Stay tuned for more information about her keynote session, as well as opportunities to purchase her books at the conference.

Do you want to learn what is happening in our state right now in regards to NGSS? How can you

start bringing NGSS practices into your classroom?

The MSTA Conference Committee is gathering experts to discuss the most up-to-date information about NGSS in Michigan. We are also creating a series of focus strands for the 2015 conference. The purpose of the strands is to offer educators the opportunity to attend in-depth, grouped sessions based on a specific need or interest. These strands will be offered in addition to the informative sessions for which MSTA is known. There are many sessions being offered by teachers just like you sharing what they are doing in the classroom to embrace NGSS, including the engineering practices and more.

Friday night - What to do?

The MSTA conference committee is excited to announce that we have two great events planned. One is the Awards Banquet where you can join this year's MSTA award winners and be awed by these inspirational teachers. There will also be a free movie night featuring videos from the Howard Hughes Medical Institute (HHMI). The videos are about 20 minutes long and there will be someone there from HHMI to answer questions. There will also be a session and a booth hosted by the Institute. Anyone who views the video will receive a free one and a teacher resource packet.

Are there professional development sessions that are more in-depth?

The Professional Development workshops on Thursday, February 26th last from a half day to a whole day. These popular and informative sessions

Pure Michigan *Science*
Engineering Grand Ideas in Science
MSTA 62nd Annual Conference February 27-28, 2015
Amway Grand Plaza Hotel, Grand Rapids, MI

continued on page 11

CONFERENCE REPORTS

continued from page 10

require pre-registration, so be sure to watch for the information on our website regarding these soon.

Do you want to have a more personal relationship with MSTA?

The MSTA Conference is offering an opportunity to meet and greet your regional director. During the break between the morning and afternoon sessions, the regional directors will be present in the exhibit hall, ready to talk with you and let you know what is happening in your region, as well as to listen to your ideas on how they might better meet your needs.

Do you have some new ideas for MSTA or want to get more involved?

Come to the general membership meeting on Saturday morning for Muffins with Members. Chat with board members, and let your voice be heard.

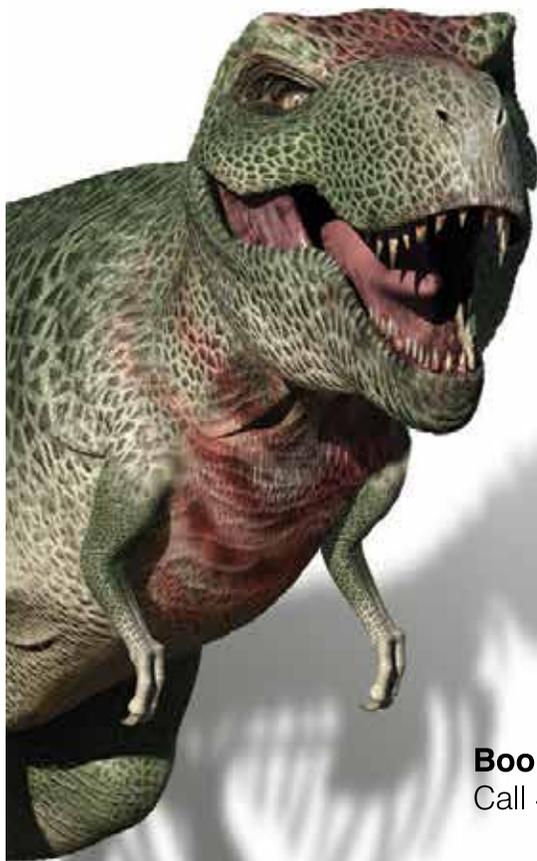
Do you want to see the newest materials out there to use in your classroom?

Visit the exhibit hall to see the largest concentration of science educational materials available anywhere in the state. Enter drawings for giveaways from the exhibitors. Also visit the always popular MESTA rock shop, NSTA book store, and the Cyber Café. Please remember that as always, there is an 'early bird' registration savings. Visit the website for details and deadlines.

We look forward to seeing you make this MSTA Conference your Pure Michigan destination to "Engineering Grand Ideas in Science".

*Karen Kelly
Conference chair*

*Liz Larwa
Conference Co-chair*



DINOSAURS UNEARTHED[®]

Now – April 12, 2015

Experience a new reality with an adventure back in time 65 million years.

Actively engage in a unique learning experience that features realistic, animatronic dinosaurs as well as skeletons, fossils, a predator scene and much more!

Book your field trip today!

Call 419-244-2674 ext. 250 for details.



Toledo's Science Center • 419-244-2674 • imaginationstationtoledo.org

Regional Directors Hold Retreat

from David McCloy, Region 8 Director

The sounds of howling wolves and scampering children filled the hallways of Great Wolf Lodge as the MSTA Regional Directors held their annual retreat in Traverse City on October 10-11, 2014. The noise was not really much of a distraction as business and a long agenda made the weekend more work than play.

With much planning and implementing ahead on the Next Generation Science Standards and with rumors that several school districts have begun to adopt NGSS as policy, MSTA feels positioned nicely to take a leadership role on this topic and to lend a helping hand should statewide adoption take place. Talks centered on how the fourteen regional directors can best help schools and teachers with the transition. Approximately one-third of the country is now using the NGSS. Because that is the case, MSTA feels confident that interstate sharing of ideas and materials is forthcoming. Materials on implementation, practice, assessment, cross-cutting, and disciplinary core ideas are becoming common search topics by many in Michigan's science education community. How best to sift through the chaff and glean the fruit will become an issue as teacher's time remains precious. The regional directors agree that promotion and attendance at the February MSTA Conference in Grand Rapids could be crucial for the help many schools may seek.

Other topics discussed included:

- the role of the MSTA website in informing our membership of local events
- how cross-regional partnering can save regional director time and better inform membership of the wonderful science activities taking place in nearby schools and,
- how best to promote the added benefits of being an MSTA member, such as free or reduced admission to several Michigan museums and nature centers, a high-quality newsletter and journal packed with updates and teaching tips at all grade levels, and a sense of community as science teachers throughout the state join with other like-minded individuals in sharing and solving concerns.

All in all, a very busy and fruitful time was had – well worth the effort on behalf of MSTA members everywhere. For more information about MSTA might help you, feel free to contact your regional director through the MSTA website, www.msta-mich.org.



we have FUN
down to a
science.

www.Mi-Sci.org  

IMAX® / Planetarium / Hundreds of Interactive Exhibits
Live Stage Shows and Demonstrations

 **MICHIGAN**
Science
CENTER

MAKE A FIELD TRIP RESERVATION!
Call: 313.577.8400, Option 5

5020 John R. Street, Detroit, MI 48202

MSTA Mini-Grant Application



The Michigan Science Teachers Association announces a \$1000.00 mini-grant for its current MSTA members.

- Up to 2 awards of \$1000.00 each will be given to current MSTA members.
- The grant deadline is June 26, 2015
- As part of the Grant process, award winners are required to write a narrative of their project to be published in the MSTA Newsletter or Journal.
- Award winners will be notified by September, 2015.
- Projects **MUST** be completed by June 10, 2016.
- Grant money is released upon demonstration of expenses.
- A final report must be submitted that includes evaluation of outcomes.

Grant Narrative:

- Begin with a summary of your project. (Maximum one page).
- Describe how this project relates to the MSTA mission statement, (“...to stimulate, support, and provide leadership for the improvement of science education throughout Michigan.”) the Michigan Curriculum Framework and authentic assessment in Science. (Maximum one page).
- Purpose of Grant: Give your statement of needs or problem to be addressed. Describe the target audience and how they will benefit. (Maximum one page).
- Describe the Project: Include a description of project goals, expected outcomes and how they will be evaluated. Indicate timelines when appropriate. (Maximum one page).
- Budget Details: Describe costs involved with the project. Give complete item descriptions and costs of purchases to be made. Indicate in-kind support.
- Payment: Winners will receive \$900 of the \$1,000 grant up front. Winners **MUST** submit an article for publication in one of MSTA’s 4 Newsletters or 2 Journals. The last publication is the May Newsletter and is the final publication with which an article must be submitted. Once the article and receipts of expenses has been received, the final \$100 will be paid to winner(s). Request for payment of the \$100 must be received no later than June 10, 2016.

Name: _____

Home Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Email Address: _____

School District: _____ School Name: _____

School Address: _____

City: _____ State: _____ Zip: _____

Position/Title: _____ Grade Level(s): _____

Completed application **MUST be postmarked by June 26, 2015.**

Mail to: Mr. Thomas P. Waclawski, 5975 Donna Court, Traverse City, MI 49684

Phone: 231-943-4804, Email: ka8ylktom@chartermi.net

Congratulations to our Own!

Utica and Blissfield Teachers Chosen As 2014 State Finalists For Presidential Teaching Award In Science

Bethany Swartz, a fourth grade teacher at Jack Harvey Elementary in Sterling Heights, and **Gary Koppelman**, a fifth grade teacher at Blissfield Elementary in Blissfield, have been selected as Michigan state finalists in science for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST).

The two Michigan elementary school science teachers are now eligible to receive a PAEMST award, the nation's highest honor for U.S. mathematics and science teachers for grades K-12. The awards program is administered by the National Science Foundation (NSF) on behalf of the White House.

As finalists, Beth and Gary are candidates for Michigan's Presidential Award. Their applications have been forwarded for judging at the national level. Each year, a national committee of distinguished scientists, mathematicians and educators recommends up to 108 teachers to receive PAEMST awards - up to two teachers (mathematics or science) from each state, the District of Columbia, Puerto Rico, the U.S. territories as a group, and the schools operated in the United States and overseas by the Department of Defense Education Activity. The announcement of the State Awardees will likely occur in the Spring 2015. Teachers who are selected as PAEMST awardees receive a \$10,000 award, a Presidential certificate and a trip to Washington, DC, for a series of recognition events, professional development activities and an awards ceremony. Swartz and Koppelman are two of four state finalists - two mathematics and two science teachers, chosen from a myriad of state applicants.

PAEMST awardees have been shown to devote more time to professional development, incorporate innovative approaches into their classroom teaching, and are more likely to use computers and other technologies in their classrooms.

Mr. Koppelman has been a teacher within the Blissfield Schools for 22 years. "I believe science is life, and it is essential to approach science concepts experientially for students to gain understanding and be prepared for their future. My approach to the elementary curriculum is through the discipline of science, causing students to make connections to find answers. I have found that, to make an impact on students, the real world needs to be



brought to the students' educational environment, and that environment needs to be as 'real' as the real world," says Koppelman. "I find Gary's greatest accomplishment is the recognition bestowed by many of his former students who credit his positive influence in their becoming industry leaders and educators in the areas of animal science, biology, chemistry and physics," says Scott Moellenberndt, Superintendent of Blissfield Community Schools. "He is an inspiration. He is a mentor. He is a teacher of students. He is a teacher of teachers. He is a scientist. He is passionate about science. He knows a great deal about all sciences. He is a visionary. He is my friend," states Connie Graf, 2nd grade teacher and colleague.

Ms. Swartz is a teacher of 8 years in the Utica Community Schools. "Students engage more fully with their learning when they have a purpose to explore and investigate. As a result, my overarching instructional approach for [real world investigation] is to immerse students in a yearlong project involving raising salmon for the local watershed," says Swartz. "Ms. Swartz is an enthusiastic teacher who absolutely loves what she does. Beth is a natural teacher, and she has the 'It Factor' one needs in order to be a teacher," says Laurie Pritchard, principal at Jack Harvey Elementary.

As state finalists in science, they will be recognized by the Network of Michigan Educators and our State Superintendent at an awards ceremony to be held in Lansing this December. The Michigan Science Teachers Association will also honor Gary and Beth at its awards ceremony in February at our annual conference.

Professional Resources & Opportunities

Presidential Awards for Excellence in Mathematics and Science Teaching

Do you know or are you an exemplary math or science teacher in **seventh through twelfth grade**? Please consider nominating him/her/them for the PAEMST Awards. The Presidential Award for Excellence in Mathematics and Science Teaching is the highest recognition a K-12 teacher can receive for outstanding science or mathematics teaching in the United States.

Why apply? Recipients of the award receive the following:

- A certificate signed by the President of the United States.
- A paid trip for two to Washington, D.C., to attend a series of recognition events and professional development opportunities.
- A \$10,000 award from the National Science Foundation.

In addition to recognizing outstanding teaching in mathematics or science, the program provides teachers with an opportunity to build lasting partnerships with colleagues across the nation. This growing network of award-winning teachers serves as a vital resource for improving science, technology, engineering, and mathematics education and keeping America globally competitive.

Awardees are recognized for their contributions to teaching and learning and their ability to help students make progress in mathematics and science. In addition to honoring individual achievement, the goal of the award program is to exemplify the highest standards of mathematics and science teaching. Since the program's inception in 1983, more than 4000 outstanding teachers have been recognized for their contributions to mathematics and science education. If you know great teachers, nominate them to join this prestigious network of professionals.

Nominations are now available on the PAEMST website. Teachers may nominate themselves or someone else (e.g., principals, teachers, parents, or other members of the general public) may nominate them for this award. To apply, teachers must first be nominated for the award. Once nominated, teachers will receive an email with a login and password to access the online application. The application deadline for secondary teachers (Grades



seven through twelve) is May 1, 2015. Elementary teachers (Kindergarten through sixth grade) are eligible to apply in 2016.

The Michigan Department of Education has asked the Michigan Science Teachers Association to oversee this program for the State of Michigan. We are honored to be the host of this awards program. If you have any questions, please feel free to contact, Betty Crowder, our State Coordinator, at betty.crowder@msta-mich.org. In the meantime, please visit the Presidential Awards website to find the nomination form for the teacher of your choice! Why not you? www.paemst.org The rewards are worth the effort! You deserve it!

Have you ever envisioned installing a native garden at your school?

Do you already have a native planting, but wish to enhance it?

Our 501(c)(3) non-profit organization offers grants for up to \$1000 for educational plantings using native species

Educate our youth on:

- the importance of our native flora
- the interactions between flora and fauna
- our native plant communities
- preserving our natural heritage
- plus much, much more

Please visit

WWW.WILDFLOWERSMICH.ORG

for more information.

The deadline for 2015 grant applications is December 15th.



Wildflower Association of Michigan

Encouraging the preservation and restoration of Michigan's native plants and native plant communities

DON'T MISS OUT ON THE OVER 200 SESSIONS AT THIS YEAR'S Michigan Science Teachers Associations 62nd Annual Conference!

Here is a sample!!

Thursday, February 26, 2015

- Using the EQUIP Rubric to Evaluate NGSS Units and Lessons
- Getting to Know NGSS Disciplinary Core Ideas, Scientific and Engineering Practices
- Traditional to Transformed
- Human Cadaver Workshop at Grand Rapids Community College

Friday, February 27, 2015

- Featured speaker - Nationally published author and senior science program director at the Maine M/S Alliance, Page Keely!
- Thinking, Acting and Writing Like Scientists: First Grade Investigators Explore the Causes and Effects of Sounds and Vibrations
- Speak Up! Incorporating Discourse into our Classroom Instruction
- NGSS Unit Development - Building NGSS PEs: A 10-Step Process
- Over 30 sessions relating to NGSS!
- and OVER 200 more sessions!
- Vendors with the latest Science information!

Saturday, February 28, 2015

- Michigan's Next Generation Science Classroom
- Resources to Support NGSS Implementation
- Real Kids, Virtual Critters and Amazing Science
- Bringing the Body's Electrical Potential To Life
- Vendors with the latest Science information!
- and MORE!!

Free to a good home

I have two boxes of old *Journal of Chemical Education* magazines that I "rescued" - thinking I would love to go through and find great old labs to do with my class. The dates on the boxes say from 1983 to 1998. I now realize I probably will never go through them, so I'm offering this treasure to anyone who might want to take advantage of the offer. Please contact me by email and we'll set up a plan to get them to their new owner!

Cheryl Hach
MSTA Newsletter Editor

cherylhach@hotmail.com

For full details all the sessions, go to www.msta-mich.org

The Schooner Appledore your Great Lakes classroom



what hands-on learning should be

Join us aboard the **Appledore IV** and experience **SCIENCE UNDER SAIL** – an engaging environmental science program incorporating informal **STEM** education with traditional tall ship sailing.

Book before
December 31, 2014
and receive \$100 off!

BaySail | 989.895.5193 | program@baysailbaycity.org



Create excitement
in your classroom!



This school year, take advantage of **MSTABuy2014**. Michigan Science Teachers Association members receive 20-50% off from the list price of the featured items below. In addition, when placing an order on our website at **AVENINC.COM** use the code **MSTABuy2014** at checkout to receive a 10% discount on all other items.



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

Call us at
734-973-0099



or visit
AVENINC.COM



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

FEATURED LESSON -

Energy Sources Research Project

From Michelle Mitchell, Education Program Administrator, Consumers Energy

Your project is to select and investigate one of the energy sources listed below. You must build a model, create a poster board or design a power point presentation which demonstrates your chosen energy source. You will also write a summary of your project which includes a description of the energy source, the advantages and disadvantages of the energy source, the percentage of energy usage for that energy source in the United States and Michigan. The summary must include a list of sources used and may include the Consumers Energy app, EmPOWERed Kids, as well as books and websites. Finally, you will present your model, poster board or power point to the class.

Energy Sources:

Hydroelectric

Fossil Fuels

Wind

Solar

Nuclear Power

Geothermal

Biomass

Project Requirements:

- 1) The model, poster board or power point must be scientifically correct.
- 2) Written summary includes:
 - a) Description of energy source
 - b) Advantages and disadvantages of energy source
 - c) List of all sources used to obtain your information
- 3) Present model, poster board or power point to the class. (Rubric follows)

continued on page 19



Are you looking for a fun outdoor field trip destination?

Come to the Battle Creek Outdoor Education Center

Hands on science activities include: Birds of Prey, Pond Exploration, Canoeing, Remotely Operated Vehicles, Snake Study, Orienteering, Team Building, and Archery.

Why Clear Lake Camp? Exceptional staff, great service, and quality facility.

Contact us for overnight or day program field trip plans. Now scheduling groups for spring 2015.



10160 South M-37 Hwy
Dowling, Michigan 49050
Phone: (269) 271-8161
Fax: (269) 721 - 1071
www.clearlakecamp.org

Energy Sources

continued from page 18

Presentation Rubric Energy Sources	Unsatisfactory 0-2	Poor 3	Good 4	Excellent 5	Total
Organization	Audience cannot understand presentation because facts presented do not seem to be in order.	Presentation is very short. Audience has difficulty following presentation because student jumps around.	Presentation is appropriate length. Student presents information in logical order which audience can follow.	Student presents information in logical, interesting sequence which audience can follow.	
Subject Knowledge	Student does not seem to know information and cannot answer questions about subject.	Student is uncomfortable with information and is able to answer only simple questions.	Student is at ease with expected answers to all questions, but fails to give more details.	Student demonstrates full knowledge (more than required) by answering all class questions with explanations and details.	
Speech	Student mumbles, incorrectly pronounces words, and speaks too quietly for students in the back of class to hear.	Student's voice is low. Student incorrectly pronounces words. Audience members have difficulty hearing presentation.	Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation.	Student uses a clear voice and correct, correct pronunciation of terms so that all audience members can hear presentation. Student is happy!	
Eye Contact	Student reads all of report with no eye contact.	Student occasionally uses eye contact, but still reads most of report.	Student maintains eye contact most of the time but often returns to notes or maintains eye contact only with teacher.	Student maintains eye contact with entire audience, seldom returning to notes.	

continued on page 20

Energy Sources

continued from page 20

Here are some sources to get you started:

Types of Energy: Mixture

- eia.gov/kids/
- www.kathimitchell.com/energy.htm

Fossil Fuels

- www.energyquest.ca.gov/story/chapter08.html
- www.discoveringfossils.co.uk/fossilfuels.htm
- www.eia.doe.gov/kids/energyfacts/sources/non-renewable/coal.html

Wind

- www.energyquest.ca.gov/story/chapter16.html
- www.eia.doe.gov/kids/energyfacts/sources/renewable/wind.html

Hydroelectric

- www.energyquest.ca.gov/story/chapter12.html
- www.eia.doe.gov/kids/energyfacts/sources/renewable/water.html

Biomass

- www.energyquest.ca.gov/story/chapter10.html
- www.eia.doe.gov/kids/energyfacts/sources/renewable/biomass.html

Solar

- www.solarenergy.org/younger-kids
- www.eia.doe.gov/kids/energyfacts/sources/renewable/solar.html
- www.energyquest.ca.gov/story/chapter15.html

Geothermal

- www.energyquest.ca.gov/story/chapter11.html
- www1.eere.energy.gov/geothermal/geothermal_basics.html
- www.eia.doe.gov/kids/energyfacts/sources/renewable/geothermal.html

Nuclear

- www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html
- www.kids.esdb.bg/uranium.html

Other Energy Kids Research Ideas:

- <http://www.eia.gov/kids/resources/teachers/pdfs/EIAScavengerHunt.pdf>

Michelle adds, “We have a ton of lesson plans on our website available to teachers.” Check them out!!

- <http://www.consumersenergy.com/kids/TeachersParents.aspx?id=627|LessonPlans>

The more we know, the more we discover

Michigan Society for Medical Research



CALLING ALL MICHIGAN HIGH SCHOOL SCIENCE TEACHERS!

MISMR's Annual Essay Contest with cash prizes for students and winning teachers!

TOPIC: Why Animals Are Important in Biomedical Research ?

Every year, the Michigan Society for Medical Research (MISMR) sponsors an essay contest open to all Michigan high school students. The contest is part of MISMR's educational outreach program, which promotes awareness of the benefits, ethics and methods of biomedical research, and increases awareness and interest in science.

Entries are judged on originality, creativity (including a creative title), command of the English language, and evidence that an extra effort was made to learn about biomedical research and why animals are used.

We are eager to have this be the biggest submission year to date! Use it as a class assignment, extra credit, or something else. Deadline for submissions is January 15, 2015. It's a great way to bridge science and writing skills with one assignment and have students preparing for college papers.

Details including how to write a critical analysis paper can be found at:

<http://www.mismr.org/services/essay/2014CallForEntries.pdf>

email: Ruthann Thorne at rtthorne@med.umich.edu for more information

The Fledgeling



The Fledgeling flies! MSTA science lessons for elementary teachers is published as a recurring feature in the MSTA Newsletter. Establishing good science and engineering practices are essential for a solid science program. This is true for all age groups. Through science inquiry and engineering design, all students can be achievers. The Fledgeling is edited by Sally DeRoo, MSTA.

FALL LEAVES AND COLOR

Observing fall color is a popular Great Lakes pastime. Our young folks often collect leaves for color and patterns establishing basic observation skills. Preschool children can sort leaves by color and pattern. The identification process has begun. Oaks and Maples, simple leaves are the first challenge. Kids then move to compound leaves of Hickory and Ash. The green pigment of chlorophyll is dominant in the leaves while they are manufacturing food for the tree. The other pigments are present, but masked by the green!



We often give kids a special name for a tree that has unique characteristics. The Sassafras is often called the mitten tree. The leaves form right and left hand mittens, finger mittens and closed hand mittens. Sassafras is one of the first to turn orange, yellow and red in the Fall. Peter Rabbit drank Sassafras Tea for a sick stomach. This is a great time to read the book and point out the unique tree.

Sassafras often grows in groves. As more and more land is cleared, some of our native trees are disappearing! As a spring project, plant a Native tree!

By bringing various plants, plant parts, and animals into the classroom, students are able to make observations to construct evidence. They can look at plant and animal structures and functions, growth and development, inheritance of traits, and variations of traits.



SCIENCE/LEAF JOURNAL

Why not establish a Leaf Journal? Select a tree and watch the changes. The leaves turn to color, photosynthesis shuts down. Draw the tree, record the date and discuss. Ask the group what factors might have caused the changes in the tree? Weather, sunlight, water should be discussed. The tree is getting ready for winter by dropping leaves. Introduce the word deciduous.

Children trace their hands as a framed gift. Try tracing some leaves to show the patterned edges (margins): Oak and Maple are simple. Add the leaf tracing to the Journal.

Use the patterns to establish the Journal. Provide crayons to record the color observations. This is a take home project.



The Fledgeling

CLASS PETS?

We are well into the new school year. Our classroom is in order, time to consider a class pet??

When selecting a pet, large or small, think care!

Facilities can create a health hazard to pet and students! Do consider the responsibility of a pet. All animals need a suitable environment, food and water. Since class pets are confined to a specific area, they require a great deal of attention.

The third grade class decided to invite a Tortoise into their classroom. (The teacher agreed and a small Tortoise was purchased. The class named her Tortellini.) Travis was especially fond of the little tortoise. He became the official Tortoise Keeper.

When summer recess came, Travis asked his parents if Tortellini could spend the summer months with them. She would be returned to the 4th grade class in the Fall.

All went well, Dad built a fancy cage and Mom make sure Tortellini had the proper food.

Travis is now in Middle School. Tortellini has become a member of the household. She weighs 75 pounds. Consider the classroom pet! Pets grow and change. Housing accommodations can be difficult.

Finding a proper home for Tortellini has been unsuccessful. She may become a permanent member of the Withrow family for years to come!

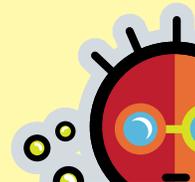
Tortellini is a desert Tortoise she is 5 years old. We got her from school when I was in third grade. It all started when I got her for the summer. She doubled in size over the summer. My Mom fell in love with Tortellini, we took her in as a pet. My teacher was going to get rid of her so my Mom took her.

Tortellini started eating more now, she eats a half a head



of lettuce a day or a tomato she eats her tomatoes in cubes. We take her out side once a week. She is very fast for a Tortoise. Tortellini will live to be fifty years old.

Travis Withrow
4th Grade



The Fledgeling

Compare Tortellini as she grows! She is beside her “special” food canister that contains tortoise food that has all the ingredients she needed to grow healthy! In the last picture, this is Tortellini at 75 lbs!!

