

March 2013
www.emast.org



MAST e-Rapper

President's Message from Carl Bilotta

With February now over and MSA testing getting started, it is time to look towards spring and the many professional development opportunities that are available to you to continue to provide the best science teaching to the students of Maryland.

This spring will bring the completed release of NGSS at the end of March. It is an exciting time to be a science educator. With the recent release of the January draft and looking at how much work Achieve is putting into the standards, it is a great time for us to reflect upon our own teaching. NGSS is bringing science practices into a much greater focus. I was recently at a meeting in which the presenter stated that even without NGSS, the Science and Engineering practices as stated in the document would be worth implementing in every science classroom. It is just good teaching!

Our executive board has been hard at work discussing and finalizing details of how MAST can position ourselves to better serve you! The NGSS FREE Webinar Series provided by NSTA concerning the cross cutting concepts in the new NGSS is now available. The next few webinars in the series are:

- March 5 – Cause and Effect: Mechanism and Explanation
- March 19 – Scale, Proportion, and Quantity
- April 16 – Systems and System Models

For the full list and to register, please visit <http://www.nsta.org/about/standardsupdate>

Another great resource on NGSS that I have found is a video series by a High School Science Teacher named Paul Anderson. He has been teaching high school science for the last nineteen years. He has been teaching science on YouTube for the last three years. Paul spent the first seven years teaching all of the science classes at a small rural school in northern Montana. Paul was the 2011 Montana Teacher of the Year, and was also one of four finalists for the 2011 National Teacher of the Year. Click on the link to visit his site with all of the videos he has done for NGSS. <http://www.bozemanscience.com/next-generation-science-standards>

We are currently accepting applications for our Excellence Awards for Science Teachers at the Elementary, Middle, High, and Collegiate levels. You may also nominate your favorite educational outreach professional. Applications can be found on the MAST Website under MAST Excellence Awards at www.emast.org. Applications are due May 17.

All the Best,

Carl Bilotta

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MAST President

Next Generation Science Standards Update

The committee is reviewing the public comments submitted this past month by the public, it will go one more time to the state committees, and then the last and final draft will be released. In the meantime, each of you can take time to familiarize yourself with the second public draft. Don't just look at the standards for the courses or grades you teach, but take time to read the front matter. This section can offer enlightenment as to how to prepare to implement the standards once they are finalized should our state chose to adopt them. Also, there are many different appendices that offer support to understand the standards, and one to note in particular is Appendix J where it describes how counties may choose to decide which standards are taught in which courses in the higher grades. There are some interesting ideas about both middle and high school science courses in these appendices.

If there is any way that either MAST or NSTA can support your move to implementation if/when the standards are adopted, or your implementation of the Common Core just send any of the board members or officers an email and we will happy to assist you. Our contact information is listed on emast.org.

Need a Science Content Boost?

MIT and Harvard have teamed together to make a few of their undergraduate courses available to large numbers of participants for no cost through their online system, edX. <https://www.edx.org/courses> Each semester which courses are offered are rotated. There is no cost for participation in the course, no application required, and if you pass the course the college offering the course will provide a certificate of course passage.

This semester one of the courses that is offered is the first Biology course at MIT. I decided to try it out since I occasionally teach Biology but have not taken college level Biology for a few years. Each week there is a series of lectures. The lectures are broken into segments that are about 10 minutes long with each segment followed by two or three multiple choice or short answer questions. After answering the questions the system gives you immediate feedback as to whether or not you have answered correctly. Then there is a weekly homework assignment with a due date. There are also what they call "Deep Dives" which are lectures from some of the teaching assistants that go more in depth of some of the topics covered in the main lecture of the week.

Other weeks there are videos of the laboratory activities and online simulations. For example in week two there was a cool puzzle game in which students were challenged to properly fold proteins according to the covalent bonds and hydrogen bonds that the parts of the proteins would form. There are tests every few weeks, I haven't gotten that far in the course but I have learned quite a bit so far, and enjoy the discussion with the other students and the exploration of the topics through the questions and online simulations.

For the Biology course, a large number of science teachers enrolled, so NSTA is offering a series of webinars that discuss pedagogy related to the curriculum each week. You can jump into the course at any time, although if you join later you might not earn a passing grade. This term the courses include: electricity and magnetism, biology, circuits and electronics, quantum mechanics, and many others! Its worth a look...

Bookmark it!

<https://www.edx.org/courses>

I have a BS and MS in physics but I also teach chemistry and biology. While I took one course of each in college, it was quite a while ago and not something that I remember much about. The edX courses are full undergraduate courses offered by top universities such as MIT and Harvard with real live professors. The last a semester and several courses are offered at a time for no cost to the students. If you enroll and pass the class, you will receive a certificate of successful completion from the college that taught the class. I'm going to try out the Electricity and Magnetism course from MIT as a first course. What a great way to strengthen content knowledge in preparation for NGSS!

<https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/pages/index.html>

Always wanted to have your own blackboard course, but thought it was too expensive? Its free for public school teachers, and the online help is wonderful.

<http://www.instructables.com/>

Could you use more magnetic stir plates in your classroom but don't have the funds to buy them from science supply houses? This is a site that publishes step by step instructions for building lots of things for life in general but many for science classrooms like centrifuges, hot plate stir plate combinations, and others. They also regularly host fun contests so you can win sometimes silly and sometimes very useful prizes.

A Good Read

Absolutely Small: How Quantum Theory Explains Our Everyday World
Michael Fayer, Ph. D.

Over the years there are always questions that my students asked me that I just was not able to answer. I would ask the local expert scientists who volunteer by answering questions from science teachers, but never really received sufficient answers for the students. This book answers quite a few of those questions completely and understandably even though my quantum physics course was many years ago. Some of my favorites is why are cherries red and blueberries blue?

Save the Date for Fall Conference 2013: October 18, 2013!

The Baltimore Zoo



Bring The Zoo To You!

Experience the wonder of wildlife by scheduling a ZOOMobile program from The Maryland Zoo in Baltimore! The ZOOMobile brings educational, entertaining, and interactive programs featuring live animals to you! ZOOMobile presentations cover a wide array of topics including endangered and threatened species, animal classification, habitat exploration, and more. Each ZOOMobile program includes an educational encounter with 3 to 4 animals. We offer 30 minute ZOOMobile programs for children ages 2 to 5, and 50 minute programs for children and adults ages 6 and above.

For more information about the ZOOMobile program, visit: <http://www.marylandzoo.org/education/outreach/>.

To schedule your ZOOMobile program, call (443) 552-5300, or e-mail Outreach@marylandzoo.org. You can also schedule a ZOOMobile program by visiting: <http://www.marylandzoo.org/education/outreach/schedule-a-program/>.

MAST Mission Statement

The Maryland Association of Science Teachers (MAST), a local affiliate of the National Science Teachers Association, is a professional, non-profit organization dedicated to science education in the state of Maryland. It strives to make science accessible and enjoyable to the citizens of Maryland by promoting and supporting career education in science and technology, instruction for general science literacy, and science outreach programs in all geographic regions of Maryland.

MAST PHILOSOPHY AND GOALS

The Maryland Association of Science Teachers, dedicated to scientific literacy, cares deeply about its mission and members engaged in science education. Its members believe that science is a human endeavor employing careful observation and reasoning necessary for professional and personal problem solving and decision making in our increasingly more technological society. To support this MAST promotes science research, applied science, and science education as professional careers. It also understands that science literacy opens doors for all Marylanders to pursue alternative technology careers, and to understand and enjoy the world they live in.

To these ends, MAST has the following goals:

- 1) provide science educators at all academic levels in the state of Maryland with the opportunities for professional development through the presentation and exchange of knowledge, strategies, and resources;
 - 2) acknowledge the accomplishments of exemplary science teachers, students, and administrators;
 - 3) encourage and utilize partnerships with business, professional organizations, and science resource centers;
 - 4) broaden the base of support in MAST through increased membership throughout the five designated regions;
 - 5) provide financial support for outstanding science-related educational programs.
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