



September 2011

Editor's Note

Welcome to another school year! Let me introduce myself. My name is Charlotte Trout and I am currently the Secondary Science Curriculum and Instruction Specialist for Washington County Public Schools. I accepted this position 3 years ago, after 26 years in the classroom as a physics and chemistry teacher at Williamsport High School. Coincidentally, I also joined the MAST Executive Board 3 years ago after being a member for most of my career.

I love teaching science and I love helping science teachers. I also have truly appreciated all that MAST has done through the years to help me be the best science teacher I can be. I hope I can give a little back to the organization that has helped me by serving as editor for the e-Rapper this year. I am following a great editor who has set the bar high.

Now to the important part: in this issue you will find information about our Fall Conference which is rapidly approaching. We will be gathering October 21 at Marriot's Ridge High School in Howard County. We have an exciting keynote speaker lined up and will have a full program of presentations. The school is easy to access off I-70 and I hope you will be able to join. Check out the conference flyer on page 9. We are accepting presentation proposals through the month of September. Be sure to check out our new website at the same address: <http://emast.org>. As well as serving as a source of information, our new site allows you to renew your membership and register for the conference online.

Also, in this issue you will find the return of some favorite columns – Bookmark It!, Demonstration of the Month and Teacher to Teacher. And, of course, please be sure to read the President's Message from our new MAST president, Alison Haapka.

May the 2011-12 school year be a great one for you. I hope many of you will take a moment to jot down and send a few words to me in order to share your best teaching ideas with all of us.

Charlotte

Charlotte Trout, Washington County
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"Spirit, Opportunity, Innovation: Science Education for a Smarter Planet"

Welcome back to a new school year! I am excited that you chose me to lead the Maryland Association of Science Teachers this year. My name is Alison Hapka, and I am your current President. The theme for this school year is "Spirit, Opportunity, Innovation: Science Education for a Smarter Planet."

As science educators it is important for us to have spirit and drive so that we can be the best that we can be, even in the face of ever-changing expectations from our students, their parents, the school administration, the school community, and state and federal governments. Our job is to adapt to these ever-changing expectations so that we can train our students to be scientifically literate citizens, innovative in their thinking, and resourceful successful professionals in whatever career path they choose to follow.

One challenge our students will face is the interdisciplinary nature of their careers. The challenges they will attack in their careers will not be a "chemistry" problem, or an "algebra" problem but a problem that may require the application of science, math, communication, and technology skills. Hence the term STEM was coined, or sometimes STEAM.

What is the best way to help students achieve this success? Is it the same for every student? Can every teacher mentor, coach, or teach students towards these goals in the same way? The answers to these questions are what make our jobs exciting and challenging each and every day. Each student, each group of students, and each course are constantly presenting new and different challenges for teachers. To meet these challenges, MAST and NSTA offer continuous support and assistance. These challenges are the reason our organizations are so critical to supporting teachers in their success.

Hopefully this school year will help each of us learn how to better open doors to opportunities for collaboration, form new professional relationships, and encourage each of us to continue to strive for success for our students. Let's innovate the way we educate so our students will have the skills they need to succeed in science and society!

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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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Each month E-rapper will feature a site for you to bookmark for future use in your instruction. Bookmark it even if you can't explore it right away.

This month's featured site is brought to you by The Center for Innovation in Engineering and Science Education, or CIESE. This site offers interdisciplinary projects with a special emphasis on Today's real world connections and a plethora of information and resources for your classroom.

You can find real time data from the Internet and a pathway to reach peers in the worldwide community. They list their projects and provide links to the National Science Standards.

<http://www.k12science.org/currichome.html>

As you explore this site be sure and visit the Ask an Expert section. I have incorporated a separate bookmark for this section, as it looks like a good resource for research for students.

<http://www.k12science.org/askanexpert.html>

This site contains sections on;

- **Collaborative projects** that tie into your curriculum. I investigated the Global Water Sampling Project. Granted it was last year's data, so I am hoping the update it to include this year's project. I believe they will, as it has been ongoing for 10 years. Students can create a class webpage, and contribute their data to a worldwide study. Sounds like a real world connection to me! Bucket Buddies is the elementary version of this secondary project. There is also a genetics project on this page that looks interesting.

<http://www.k12science.org/collabprojs.html>

- **STEM** - Need a little help for incorporating STEM into your classroom? Visit the section on engineering projects where you will find projects that you can incorporate into your project based curriculum. Here are some of the projects. Students can design;
 - a model lighting systems to use in developing countries.
 - a water purification systems for clean water
 - an aquaponics system that sustains plant and animal life.

There are projects on weather, plate tectonics and environmental topics. This is a must visit for you if you need more project or student service learning project ideas.

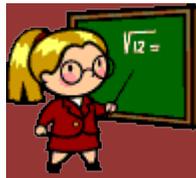
<http://www.k12science.org/engineeringproj.html>

- **Educational Links** - Last but not least, visit the educational link section of the site where you will find links on how to deal with misconceptions, more collaborative planning sites, sites on lesson plans, information sharing and more. <http://www.k12science.org/edulinks.html>

Best wishes for a great school year.

Jackie Geer, Montgomery County

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Teacher to Teacher

Power Rankings for Lab Groups

Group performance in lab situations is a serious aspect of any science classroom. During an age of inquiry-based learning, it is absolutely necessary to make sure all students do the best they can in lab investigations. After some feedback from advisors and supervisors, I was able to generate an effective system based on competition this past fall.



The “Power Ranking” system has students arrange themselves into groups to design a logo and team name. Once this is determined, I inform them that they will compete against each other during all group activities and be ranked based on their performance. The four areas in which their performance is scored are as follows: completion time, quality of work, behavior/safety and clean work areas. Each area is scored from 0 to 5 with a maximum score of 20 for the group. Each lab and group activity is assessed in this manner along with the traditional assessment (i.e. lab report). In addition, the group with the highest overall score at the end of the grading period will receive a prize such as bonus points or, this is more popular, food and drink items that can be purchased at the grocery store. I maintain a board with the rankings posted in a prominent place in the room and students constantly discuss their current rank along with what they need for improvement. Overall, I discovered that this system boosts student performance, group-reflection and enthusiasm for activities.

William Rundle,
Chemistry teacher, South Hagerstown High School, Washington County

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Demonstration of the Month

The Levitating Match

First, welcome back from your summer! I hope everyone has begun an exciting new school year.

My first demo description of the new school year is amazingly simple.

Supplies needed

Box of safety matches

Dixie bathroom cup (2 ounce size)

1. Remove two matches from the box. These are the wooden matches.
2. Punch a small hole in the center of the bottom of a bathroom cup.
3. Insert one of the matches into the cup (with the head of the match sticking above the bottom of the cup).
4. Lean the second match, against the match sticking out of the cup, so the two matches are head to head. (This takes a little bit of practice to get it to lean against the first match without falling.)
5. When the two matches are sitting steadily, light another match and light the head of the first match.
6. As match no. 1 burns down, it will light the second (leaning match) which will also begin to burn.
7. Blow out the fire before it reaches the cup.
8. Observe that match no. 2 is now fused to match no. 1 and the tail of match number 2 lifts itself and ends up suspended perpendicular to match no. 1.

Enjoy the demo and your school year!

Gary Fuhrman, Carroll County

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Sustain and Integrate!



The Maryland Association of Science Teachers **Fall Conference: Friday Oct. 21st**

Marriott's Ridge High School, Howard County
12100 Woodford Drive, Marriottsville, MD 21104

Strands

- *Pulling it All Together with STEM*
- *A Sustainable Planet through Science*
- *The Architecture of Scientific Inquiry through Curriculum Design*

REGISTER NOW-ONLINE
MAST is looking for Presenters and Participants! No substitutes needed!

PROGRAM OF EVENTS

- 7:30 – 8:30 am Registration, Social, Breakfast, Vendor Displays**
- 8:30 – 8:50 am Opening Remarks, Announcements, MAST Awards**
- 9:00 – 9:45 am Keynote Address, Dr. Timothy Foecke, Director of NIST Center for Metal Forming**
- 10:00 – 10:50 Session 1**
- 11:00 – 11:50 Session 2**
- 12:00 – 1:00 Luncheon and Vendor Displays**
- 1:00 – 1:50 Session 3**
- 2:00 – 2:50 Session 4**
- 3:00 – 3:30 Door Prizes and Giveaways!**

Registration Fee is \$20. Go to emast.org! Do it today!
A light breakfast and lunch will be provided for all. Be a Part of It!

Questions? Contact Elizabeth.mccook@fcps.org



Come see the MdBioLab truck!

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Flinn Scientific Announces

Free Online Safety Training Videos for Science Teachers

Flinn Scientific's highly regarded safety training is now available to all science teachers—everywhere and anytime—absolutely free on the Flinn Web site at www.flinnsci.com.

The critical safety information every high school and middle school science teacher needs to know is covered: liability, right-to-know laws, personal protective equipment, MSDS requirements and so much more. The videos are efficiently organized in concise chapters for easy viewing.

Discover how Flinn's safety training will give all science teachers the confidence and knowledge to improve laboratory safety:

- Comprehensive Safety Training—10 Major Topics, Over 40 Videos
- Maximum Convenience—Available online 24/7
- Get Flinn Certified in Safety by Taking Online Assessments
- Free Professional Development Opportunities
- No Fees! It's All Free!

Teachers have the option of viewing individual videos or following a course sequence and completing online assessments to receive certification. All science teachers can be "Flinn Certified in Safety." Additional free videos covering the following topics are also available: Laboratory Design, Safety and the Law, and Cleaning the Chemical Storeroom.

**To begin your free safety training go to flinnsci.com
and click on "Free Online Laboratory Safety Training"**

For more information please contact:

Flinn Scientific, Inc.
P.O. Box 219
Batavia, IL 60510
1-800-452-1261
E-mail: flinn@flinnsci.com
Web site: www.flinnsci.com

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MEMBERSHIP FORM

Welcome to MAST! Please print, complete, and mail this form to the address below or use the Member Application link at <http://emast.org>

Type of Membership – Please check one space in each column.

- | | |
|--|----------------------------------|
| <input type="checkbox"/> 1 year – \$15.00 | <input type="checkbox"/> New |
| <input type="checkbox"/> 3 year – \$40.00 | <input type="checkbox"/> Renewal |
| <input type="checkbox"/> Student – \$5.00 (1 year) | |

Member Information – Please fill this out completely!

Last Name		First Name		Level – please check all that apply: <input type="checkbox"/> Pre-K <input type="checkbox"/> Elementary <input type="checkbox"/> Student <input type="checkbox"/> Supervisory <input type="checkbox"/> Middle/Jr. High <input type="checkbox"/> High School <input type="checkbox"/> College/University <input type="checkbox"/> Organization (please specify) <input type="checkbox"/> Other (please specify)
Street Address				
City		State	Zip	
Local School System		School		
Home Phone	Work Phone		Cell Phone	
Email Address		Alternate Email Address		

I would like to donate \$ _____ to support:
 the MAST Awards for Excellence in Science Education Program
 the MAST Mini-Grants Program

Please make your check payable to the Maryland Association of Science Teachers (MAST) and send it with this completed application to:
 MAST
 P.O. Box 368
 Finksburg, MD 21048

For Office Use: Date Received _____ Amt Paid _____ Membership to: _____
 Cash _____ Check Number _____ Check date _____ MER 6.11

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NEW!!! FOSS®, Third Edition

The Next Generation of Active Learning in Science

The Lawrence Hall of Science and Delta Education are pleased to announce the release of the new FOSS 3rd Edition during the 2011-2012 school year. The **Full Option Science System** is a premiere inquiry-based science program for elementary and middle school science. FOSS 3rd Edition combines the vision of the Next Generation Framework for Science and cutting edge research in instruction and assessment to prepare students for the 21st Century.

Through Active Learning, students conduct investigations, record data and observations in notebooks, read about science content and the nature of science, and extend learning through technology and by solving problems.

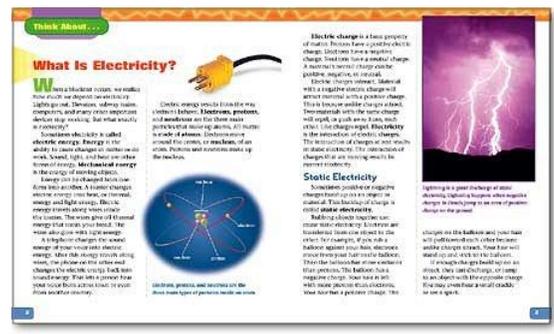
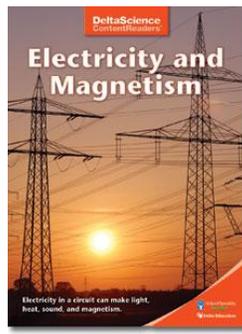
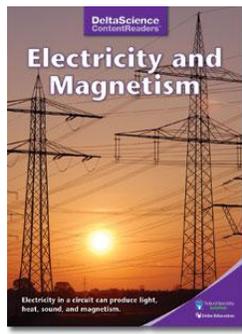
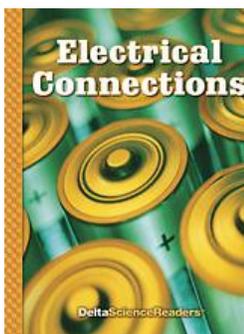
Begin to explore the new FOSS 3rd Edition by scheduling an appointment with your FOSS/Delta Education sales representative, today!

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With science content readers from Delta Education, you can provide your students with standards-based content at a reading level they need.

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- Engaging, colorful, high-interest selection of **non-fiction** readers (over 150 titles to select from)
- Wide range of reading levels for **science content addressed in the Maryland State Curriculum**
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