

Montana Science Teachers Association



NEWS JOURNAL

A publication of the Montana Science Teachers Association

September 2014



In this Issue:

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Submitting Articles to the MSTA News Journal

When submitting articles, please adhere to the following criteria:

- Electronic submissions are preferred in Microsoft Word format. These can be attached to your email message.
- If in doubt about format, submit your work in .rtf format.
- If truly in doubt, paste your submission in the body of the email message.
- Lab activities may be mailed. Please cite any references.

Beth Thomas, Editor
beth_thomas@gfps.k12.mt.us

Tentative Submission/Publication Dates
August 15/September
November 15/December
February 15/March
April 15/May

Montana Science Teachers Association Membership Application

Name _____ Date _____
Last First

Address _____ Phone _(____)_____

City _____ County _____ State _____ Zip _____

School/Affiliation _____

School Phone(____)_____

Email _____

Grade Level	Subject	
<input type="checkbox"/> K-6	<input type="checkbox"/> All sciences	<input type="checkbox"/> Physics
<input type="checkbox"/> 6-9 MS or JH	<input type="checkbox"/> Life Science	<input type="checkbox"/> Chem
<input type="checkbox"/> 9-12	<input type="checkbox"/> Phys Science	<input type="checkbox"/> Other
<input type="checkbox"/> College/Univ.	<input type="checkbox"/> Earth Science	
<input type="checkbox"/> Sup/Admin.	<input type="checkbox"/> Biology	

Dues Category

1 year	\$20.00	_____
MSTA/MCTM	\$30.00	_____
MSTA/MEEA	\$30.00	_____
3 years	\$50.00	_____
Life	\$150.00	_____
Student	\$5.00	_____
Retired	\$5.00	_____

Make checks payable to MSTA

Return to Carol Pleninger
360 73rd Avenue W
Havre, MT 59501

From President Tom Cabbage



Hello fellow science educators,

While the profession of teaching tends to be a social one, weather that be our interaction with students, parents, or members of the community. It can however be isolating, especially if you are in a rural school and you are the science department. Even in a large school district teachers of the same content area such as science teachers don't often get the chance to meet and discuss what they are doing, what works well for them, or what experiments we are doing with our students or our teaching. While we rarely get the opportunity to do this sharing and collaborating in our schools or districts, when it happens we are all enriched from the experience. This October we have a chance to get together and have those discussions and make those connections with our colleagues and fellow educators. The MEA-MFT Convention in Missoula on October 16-17th is a chance to get to know each other, renew old friendships and to connect with people who do what we do every day and to find out what great things they and we are doing in our classrooms. While I know for many of us we do not need the PIR credit, or the renewal units for certification, but we all need the connection and revitalization that happens on those two days. MSTA has a great keynote speaker, we have fantastic sectionals by people just like you who do good things in your classrooms every day, and the collaboration and connection we make can make a world of difference for us, or student, our schools, and our communities.

On Thursday October 17th at noon we will be having our MSTA luncheon meeting. We will also have a chance to honor the years of hard work by our fellow educators. Please make plans to attend, but also take a few minutes to nominate a worthy recipient of our awards. The awards list and nomination form is on the website and it's quick and easy to fill out and send it in. We also have some vacancies on our Executive Board that you could fill! Please consider serving on the board and helping to make this great organization even better!

Opportunities for Teachers

MSTA Conference held at the MEA-MFT Conference, October 16-17 in Missoula.

The **ONLY** schedule you'll get is **ONLINE**, so get it before the conference:

http://www.mea-mft.org/educators_conference.aspx

Highlights of the Conference include...

- New Teachers Breakfast both days
- MSTA Annual Meeting and Luncheon
- Keynote Speaker Hunter Lloyd: Robotics
- Over 70 sectionals in ALL areas of science

MSTA (Science)
TEAM (Technology Education)
MCCE (Computers in Education)
Hunter Lloyd, *Montana State University - Computer Science*

How to Train Your Robot
Thursday, October 16, 2014 10:00 AM - 10:50 AM
Auditorium

Hunter Lloyd has presented his robot comedy show, "How To Train Your Robot" in over 60 schools across Montana.



MSTA Book Club

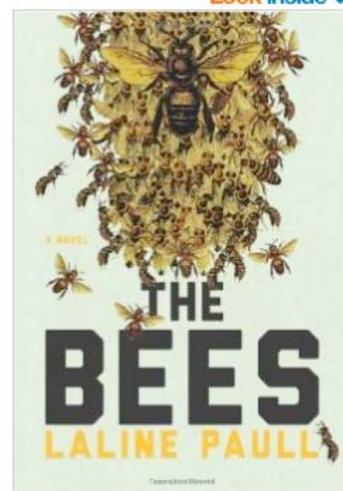
I thought it might be interesting to ask members of our community to write a book review of sorts on a recent book they have read. I hear all of the time about books my colleagues are reading and often think “I wish I had written that down so I could get the book and read it”. I am hoping that we will have a book or two each news journal publication that we can “hear about” that MSTA members have been reading.

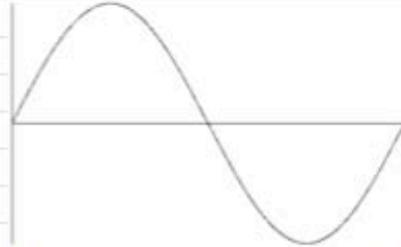
I read a book this summer as part of my AP Biology reading called *The Bees*, by Lelane Paull. While the book is a fiction novel, it has been promoted for science courses and is based on solid science surrounding bee behavior, ecology, and biology. I found the book by responding to an email from the publisher for a free copy as a member of NSTA who might use the book for the science courses I taught. I have since read that many colleges and universities as well as high school courses have added the text to their literature and science book lists for students to read.

When I started the book I had not read the reviews and so began to question the science behind the text in the story. So I did what many of us would do, I started researching bee biology to check if the story lines in the book were actually following what we know about bees and their behavior. I was surprised and pleased to find that while the humanization of the bees in the story does not have much backing, the biology and some of the behavior fits quite well into what we know about these complex social insects. From the description of the nursery to the collection of nectar and pollen to make honey and feed the hive, the science is pretty solid. The dystopian nature of the society in the hive coupled with the great narrative and story line makes the book engaging and an enjoyable read. The fact that I was learning scientific information about bee behavior, biology, and the interplay between the as well. I will definitely be adding this book to my AP biology summer reading list, and encourage you to pick up a copy if you want to be entertained while you learn about bees (Melittology).

Tom Cubbage environment and the bees made this a truly educational experience

C. M. Russell HS





That's a sin wave. It's precious. It's my precious graph. I draw it on the board after my students try to balance a yardstick with one finger (they wear goggles, of course). I have the students draw the sin wave and we talk about how the yardstick moved one direction, and they moved their hand the opposite direction and we laugh about how

difficult it is to balance the yardstick and at how irritated the class below us must be after hearing all the dropped yardsticks. I don't label the y-axis, but I call the x-axis the set-point, which represents the yardstick standing in perfect balance. As long as the yard stick doesn't go too far to the right (above the line) or too far to the left (below the line), we can keep it on our hands, if it goes too far (past the curve), the yard stick falls. We then label the peaks of the curve and dotted lines parallel to the set point line and we call the distance, normal limits. This forms the basis of how juniors and seniors study homeostasis in my Human Anatomy class – it actually forms the basis of how we study how physiology in my class. We relate everything that has some sort of homeostatic control to this graph. Blood sugar, pH, salt levels in extracellular fluid, hormones. Students write about this graph in relationship to daily experiences such as getting too much or too little sleep, and eventually they come to see how this graph relates to negative feedback and maintaining the endless cycles that the human body experiences in a lifetime. This graph is a sin wave, I did not invent it. This graph was never my idea, applying physiology to this graph was not my idea (I truly cannot remember who taught me this), but using it, and using it regularly, has impacted my teaching as much as designing curriculum, examining scope and sequence, using reading strategies, and even using technology.

Using the graph provides a template that I can use to help students relate to science, to apply what we're learning. Putting the image up next to every organ we studied, it's weekly appearance in our notes, and its constant use in my explanations because an algorithm for my students, a way of making sense of what we read, of predicting the effects of disease, connecting what we heard in lecture, and what we learned.

Metric Mastery?

Beth Thomas

I designed this project for high school students (ninth grade) to demonstrate their level of understanding of measurement. They expressed they had been measuring things since Kindergarten and are proficient or advanced. I looked at this as a great opportunity for students to show me what they know and for me to introduce students to Google Drive – if your school has a GAFE (Google Apps for Education) accounts, you can share the document from this link with them, have them make a copy in their drive and then complete the research part of it all in the document itself. My students are working independently on the research and then will be paired up to work collaboratively on a Google Presentation. Our librarian is also assisting with this project in helping students develop and refine their research skills.

Here are the sequential steps of how I am teaching this project:

1. Have students log onto their GAFE account
2. Students use the link <http://goo.gl/ZKFvxn> and open the research template – it is in a “View Only”
3. Students go to “file” and “make a copy” and rename it - ex. Beth Metric Project Research
4. Students can use this link for the rubric <http://goo.gl/Sei7jn> - it is also a “View Only”
5. To research with Google Drive, while in the document (Research template), click on “Tools” and “Research.” A side bar with Google will appear on the right hand side of the window. You can look for images (free to share and modify) and other information. When you hover over the source, you will have the option to preview, insert a link or cite the source.
6. After the research portion is completed, students will begin to create the Google Presentation, which is similar to Microsoft’s PowerPoint.
7. One student will create the presentation and will “share” it with the partner with the setting as “Can edit.”
8. You can have students present in small groups or whole group.
9. Using the rubric, the project can be assessed by the student (self-assessment) and the teacher.
10. The student can either submit the links to their research template and Google Presentation via Moodle, you can have a Google form where they copy and paste them into, or they can share the documents with you.



Welcome from Chemistryland!

Nathan Talafuse

Having students perform flame tests is an incredibly memorable lab activity, but caution must be taken to maintain a high level of safety when performing this experiment and subsequent demonstrations using methanol or other flammable solvents. The following was placed on the American Chemical Society's website as a safety reminder for all of us.

Safety Alert - Stop Using the Rainbow Demonstration

The American Chemical Society Committee on Chemical Safety recommends that the "Rainbow" demonstration on open benches involving the use of flammable solvents such as methanol be discontinued immediately. When carried out on open benches (outside of a chemical hood) these demonstrations present an unacceptable risk of flash fires and deflagrations that can cause serious injuries to students and teachers. On an open bench, invisible flammable vapors can flow across and off of the bench to the floor where they can be ignited by a flame, a spark (even static electricity), or even a hot surface. Even carrying out this demonstration in a hood poses risks if solvents are not adequately controlled. If you are considering this "Rainbow" demonstration or have used it in the past, we urge you to stop using this demonstration. There are alternatives available that demonstrate the same rainbow colors but don't use flammable solvents on an open bench. These alternate demonstrations involve soaking wooden splints in salt solutions and then placing the splints in a Bunsen burner to observe the salt's characteristic color.

Stay Safe!



#MTedchat and OPI Renewal Units



#MTedchat is a statewide Twitter chat developed to strengthen Montana's network of innovative and connected educators. Great timing and enthusiastic participants from across the region has made our chat a huge success drawing Montana's highest education leaders and professionals from far beyond our state lines. Join the conversation with moderators Crista Anderson (@cristama) and Jessica Anderson (@TriSciCurious) Tuesday evenings at 8:00 PM MT.

#MTedchat recently teamed up with Montana Digital Professional Learning Network (MDPLN) to provide Montana educator's with a means to earn renewal units for online professional development.



Want to earn renewal units for participating in #MTedchat?

Renewal Unit Participant Requirements:

- Participate in the live chat on Tuesday at 8:00 PM MDT **OR** review and explore the archives.
 - Complete the #MTedchat feedback form within **2 weeks** of the chat date.

Renewal Unit Eligibility:

- 1 Renewal Unit for one hour of live participation.

- Complete "Page 1" of the form.
- .5 Renewal Units for review and exploration of the archives.
 - Complete "Page 1" **AND** "Page 2" of the form.

Logistics:

- Renewal units will be distributed by MDPLN **bi-monthly** at the discretion of MDPLN and #MTedchat moderators.
- The aim of #MTedchat is to connect educators across the state and region. With that in mind, you may be encouraged to participate in the live discussion if you have established a pattern of choosing to read the archives.

How do I submit the form for renewal units?

- Either go to the #MTedchat website at: <https://sites.google.com/site/mtedchat/>
- OR
- View the form here: <http://bit.ly/1qgXyhR>

If you have any follow-up questions, please contact your #MTedchat moderators [@TriSciCurious](#) or [@cristama](#) on Twitter. <http://cristama/>
<http://cristama/>

Jessica Anderson



Glass Goes Dino Digging

By: Jessica Anderson, Earth Science Representative



This summer is spent a week in Makoshika State Park with Montana State University's MSSE program taking Dinosaur Paleontology. During the week, we explored the Hell Creek Formation located near Glendive, MT, as well as the Bear Paw Shale. The Hell Creek Formation is home to many species of dinosaurs, as well as marine reptiles. The Bear Paw Shale is a sedimentary formation more famously known for its ammonite fossils.

During the course I used Google Glass as a tool for documenting my adventure. I was able to collect 1st perspective, authentic footage to expose the steps a paleontologist might take when canvassing a landscape for fossils and excavating a fossil. I have compiled all of my thoughts, pictures, and video on my *Glassing up Science: One Learning Day at a Time* blog. Check it out and share it with your students!

- Post #1: <http://triscicurious.weebly.com/glassing-up-science-one-learning-day-at-a-time/glass-goes-dino-digging-part-1>
- Post #2: <http://triscicurious.weebly.com/glassing-up-science-one-learning-day-at-a-time/glass-goes-dino-digging-part-2>
- Post #3: <http://triscicurious.weebly.com/glassing-up-science-one-learning-day-at-a-time/glass-goes-dino-digging-part-3>
- Post #4: <http://triscicurious.weebly.com/glassing-up-science-one-learning-day-at-a-time/glass-goes-dino-digging-part-4-final>

Opportunities for Students

Check out the latest educational game from NASA's Space Place—OFFSET! Take matters into your own hands and help cut back on carbon emissions to slow the pace of global warming. Part pong, part resource-management, and 100% retro, this game is challenging, exciting, and educational. Players learn how the global carbon cycle works, about different sources of carbon, and about the ways alternative energy and reforestation can help offset those sources. And if a player wants to succeed, they will also learn the importance of having quick fingers and strong multitasking skills! Download it today: <http://tinyurl.com/p8rcrwn>.

OFFSET

By Jet Propulsion Laboratory

Open iTunes to buy and download apps.

Game Center 

[View More by This Developer](#)



Description

Check out NASA's latest educational game—OFFSET! Take matters into your own hands and help cut back on carbon emissions to slow the pace of global warming. Part pong, part resource-management, and 100% retro, this game is challenging, exciting, and educational. Players learn how the global carbon cycle works, about different sources of

[OFFSET Support](#) [Application License Agreement](#)

[...More](#)

Screenshots

[iPhone](#) | [iPad](#)

The Science and Math Resource Center at MSU and the Montana Science Olympiad are very excited to announce that the 30th Annual Montana Science Olympiad will take place on Tuesday, November 25, 2014 on the MSU-Bozeman campus. More than 1000 middle and high school students from all across Montana are expected to participate!

Montana Science Olympiad gives an opportunity for Montana's middle and high school students interested in science, technology, engineering and mathematics be a part of competition, see research labs and state of the art facilities, communicate with MSU researchers and graduate students, and participate in talks & tours at MSU. Furthermore, winners of the competition have a chance to participate in the National Science Olympiad.

For more information on registration, list of competition events and other related information please visit the Montana Science Olympiad website

<http://www.montana.edu/ehhd/sciencemathresourcecenter/mtso/index.html>

Please feel free to contact Elena Turner, a coordinator for the 2014 Montana Science Olympiad by email mtscioly@gmail.com or phone (406) 994-7476

Your school team is invited to participate! We hope to see you November 25, 2014!





- NASA's Climate Kids website just got a lot more teacher-friendly. The website now features a new helpful tool for educators—an easy to use page that identifies articles that align with the Next Generation Science Standards. Search for articles and activities that match the standards' disciplinary core ideas, science and engineering practices, or cross cutting concepts. Check it out at <http://climatekids.nasa.gov/science-standards>. Climate Kids is a NASA educational website about climate change and sustainability. It targets upper-elementary-age children.

- Bozeman high school Paul Anderson has done a series of short videos on NGSS. These are perfect to use as a school lesson study or just view them on your own. Check them out at:

<http://www.youtube.com/watch?v=o9SrSBGDnfU>

- National NGSS stie: <http://www.nextgenscience.org/next-generation-science-standards>

- NSTA's NGSS webpage: Follow the NGSS link off the homepage <http://www.nsta.org>

MSTA E-blast Listserv

to sign up, visit the website and
follow the E-blast link

Be sure to sign up for the
MSTA E-blast



Montana Science Teachers' Association

Teacher Award Opportunities

For information on awards, visit nsta.org

NSTA Awards

AWARD	WHO CAN APPLY	BRIEF DESCRIPTION
Robert H. Carleton Award–Dow	NSTA member	\$5000/citation/all expense paid trip
Ciba Middle/HS Teaching Awards	middle/high school science teachers	\$2000 prize/\$500 expenses
Ciba Middle/HS Principal Awards	middle/high school principals	\$2000 prize/\$500 expenses
DCAT Making a Difference Award	grades 6-12 science teachers	\$2500 prize to school/flight & 2 nights-principal and teacher
Delta Ed/Frey-Neo/CPO Science Award	preK-12 science teachers	\$1500 prize/\$500 expenses
Distinguished Informal Science Award	NSTA member	citation/3 nights hotel/\$500
Distinguished Service to Science Education Award	NSTA member	citation/3 nights hotel/\$500
Distinguished Teaching Award	NSTA member	citation/3 nights hotel/\$500
Faraday Science Communicator Award	not a science teacher/ but an individual or organization which promotes science	\$2500 expenses
Fellow Award	NSTA member	citation & pin
Legacy Award	NSTA member	\$500 expenses-family member/ 2 nights lodging
Maitland P. Simmons-Memorial Award for New Teachers	NSTA member	\$1000 expenses/certificate
Wendell G. Mohling Outstanding Aerospace Educator Award	K-12 science teachers	\$3000 prize/\$2000 expenses
SeaWorld/Busch Gardens Environmental Educator of the Year	K-12 science teachers	\$5000/all expense paid trip Deadline: November 28
Shell Oil Company	K-12 science teachers	\$10,000 prize/all expense paid trip/ finalists all expense paid trip
Sylvia Shugrue Award	elementary science teachers	\$1000 prize/\$500 expenses/citation
Vernier Technology Awards	K-12 science teachers	\$1000 prize/\$1000 products/\$1000 expenses
Zula International Awards	preK-2 science teachers with memberships in either NSTA, CESI, NAEYP, or NHSA	\$400 prize/\$1000 expenses

All award deadlines are November 30, except for Shell Oil Company which is October 15 and SeaWorld/Busch Gardens which is November 28.

Nomination for MSTA Recognition Awards

If you know of a science teacher, university person, administrator or organization in Montana who deserves recognition for contributing to science education in Montana and beyond, please consider nominating them for an MSTA Award in one of the following areas:

Elementary	Earth Science	Chemistry
University member	Middle School Science	Biology
Distinguished Service	Physics	Administrator
Organization or Group		

Criteria for selection is based in part, but not limited to, the following: longevity or service, contribution to topic area, participation in MSTA and/or NSTA, presentation of workshops, improvement of fellow teachers and community service.

Nomination Form

Name _____ Award Area _____

Address _____

Current Position _____

Name and address of the person making the nomination:

Email address: _____

Attach a 500 word or less statement of why you are making the nomination. This statement may include the nominee's resume, educational background, teaching positions, awards and honors, leadership positions and professional activities.

Nominations may be emailed.

Send to

Beth Thomas
601 Carol Dr.
Great Falls, MT 59405

Mark Your Calendars

Oct. 16, 17: MEA, Missoula

Nov. 25: Science Olympiad – MSU, Bozeman

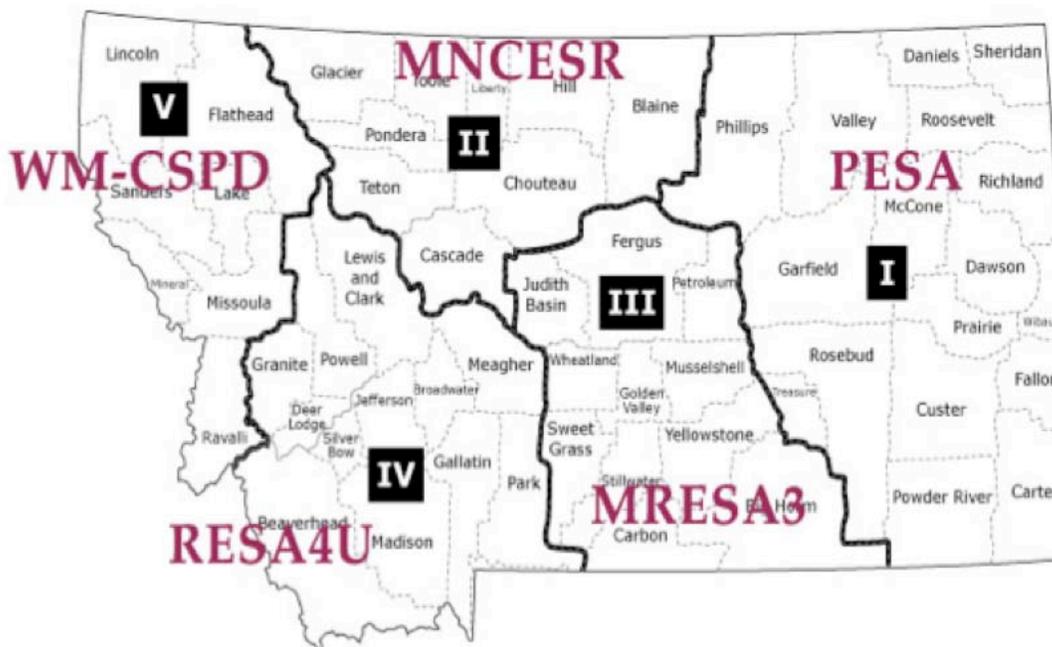
Dec. 4-6: NSTA Regional Conference – Long Beach, CA

March 12-15: NSTA National Conference – Chicago, IL

April 15-18: NCTM National Conference – Boston, MA



MSTA Regions



Numerous representative and board positions are currently available. If interested in running for an MSTA office, please contact Tom Cubbage:

tom_cubbage@gfps.k12.mt.us

See the MSTA website for a list of Board positions: follow the Board Members link

www.montanascience.org