

NCSTA

REFLECTOR EXPRESS

THE END IS IN SIGHT!

Breathe.

We're almost at the finish line.
You can do it!

Please enjoy this special edition of the Reflector which highlights summer opportunities, as well as PDI updates.

We at NCSTA thank you for your service to our students and we wish you a peaceful, restful summer.

Science is all around you. Enjoy it!
Cindy Bullard
CindyBullard0@gmail.com

PDI 2016 | *Success in Science for All - Improving Student Literacy*

North Carolina Science Teachers Association
NCSTA 46th Professional Development Institute
 Greensboro, NC - October 21-22, 2016

PDI 2016 SUCCESS IN SCIENCE FOR ALL - IMPROVING STUDENT LITERACY

Start making plans to attend the [46th NCSTA Professional Development Institute](#). We are excited to be returning to the Koury Convention Center in Greensboro with another great opportunity for professional development. Join us for over 200 sessions and tour our exhibit hall to visit our fantastic vendors who support us each year with their displays.

Our theme this year is "Success in Science or All - Improving Student Literacy". Our three

strands are: "Let' Get Physical," "STEM for All," and "Integrating Science and Literacy".

We are also offering our second Literacy Workshop. The workshop will allow participants to take advantage of all NCSTA sessions for a full day, as well as attend a specially prepared workshop on day two. Please see the article below for more information about our Literacy Workshop.

Click [here](#) to learn more about PDI 2016.

PDI 2016 LITERACY WORKSHOP

NCSTA will be hosting our second literacy workshop, STEM: The Key to Conquering Literacy, at our 2016 Professional Development Institute. In addition to our traditional professional institute sessions and exhibits, we are offering a separate workshop specially designed to show all K-6 classroom teachers the best practices for strengthening literacy skills through the use of STEM activities. Our workshop presenters will exhibit strategies that will be immediately transferable to the classroom.

In addition to a full array of sessions in biology, chemistry, physics, and the earth/environmental sciences, NCSTA will offer a special strand for teachers in schools that struggle to get their students to reach high levels of achievement in the STEM areas as well as general literacy. This workshop opportunity, "STEM: The Key to Conquering Literacy", will be comprised of two days of "hands-on" examples of strategies that are effective for improving STEM skills as well as literacy skills. Day One will provide participants with an opportunity to choose five strand sessions that match their grade level needs.

NCSTA is enlisting science educators across the state and region who have shown success improving student literacy through STEM experiences to share ideas and strategies during day one of this strand. During this day, participants will also attend the Science Networking Event and the NCSTA Awards Ceremony and Reception.

On Day Two, teachers will participate in a series of 5-6 sessions especially planned to address the needs of students in low-achieving schools. These sessions are designed for up to 100 teachers from grades K through 6. Expert elementary trainers will demonstrate how to improve vocabulary, persuasive writing, reading for understanding, interactive science note-booking, and how to communicate ideas. The K-6th grade teachers will participate in STEM activities that emphasize and require the effective use of literacy skills. Teachers will also see how to use STEM activities to help students research and solve problems, then draw, explain and communicate logical conclusions.

Topics Include:

- More Speaking/Listening/Arguing Like a Scientist
- Using Text Features in Trade Books to Teach Science Literacy
- Teaching Science Vocabulary Through Trade Books
- Science Note-booking to Improve Literacy Skills
- How to Use Reading and Writing to Assess Conceptual Understanding

PDI CALL FOR PRESENTERS

The North Carolina Science Teachers Association invites you to share your expertise with science educators across the state. This year, we will focus on improving science literacy as well as literacy in the areas of language arts and mathematics. We are seeking presenters who can provide high-quality example lessons and demonstrations designed

to improve student skills. By applying literacy skills and the inquiry process to "real world" problems, students will successfully create and communicate solutions that will benefit society.

In addition to a full array of sessions in life, earth, and the physical sciences, we are seeking presenters for three strands at the PDI this October. Presenters at all grade levels are encouraged to submit a proposal.

Strand 1: STEM Strategies that Work will consist of the best classroom activities and examples for truly integrating the four areas of STEM. We are looking for ideas that can be implemented almost anywhere using easy-to-obtain materials.

Strand 2: Let's Get Physical will focus on the areas of chemistry and physics at all grade levels. Teachers often tell us they are least prepared in this area, but physical science makes up a vital part of the curriculum at all grade levels.

Strand 3: Integration of Science and English-Language Arts will provide teachers with ways to be more efficient with the time they have to teach each day. Sessions will demonstrate how to teach science concepts while requiring students to apply language skills to improve their reading, writing, speaking and listening skills.

Click [here](#) to submit your proposal.
The deadline to submit is June 16, 2016.



THOUGHTS ON PDI

Submitted by Jeanna Goodson

NCSTA provides science teachers the tools they need to grow professionally and the opportunity to network with other professionals in their field. Many teachers take advantage of this resource, but others either don't have the funding support from their local districts, or don't know the value of NCSTA's offerings.

The Professional Development Institute (PDI) hosted annually by the NCSTA has been an invaluable resource for me personally. I strive to make my high school classroom interactive and hands on. Over the last 20 years, I have added activities and demonstrations I learned at the NCSTA's PDI. During one PDI, I learned about NC DENR's Environmental Education Certification program when I stopped at a booth in the Exhibit hall. I started the program immediately. Several years, and many valuable workshops later I had my certification. Attending free workshops like Project WILD, Project Learning Tree, and workshops offered at State Parks, all part of the certification process, exposed me to activities I still use in my classes today.

I have also attended concurrent sessions at the PDI over the years. Many of these sessions are hosted by other teachers who share their experiences and the lessons, games, activities, and demonstrations they have created. These sessions are the most valuable to me, because they present lessons teachers have used and tested over the course of

their careers. Most of these lessons use inexpensive materials that every school has available.

Teachers have many resources available to them. They must find a way to sort through these resources to find ones that fit their teaching style and are practical for use in their classrooms. The NCSTA's PDI is a great way to spend time exploring services available, through sessions, guest speakers, and exhibits. I encourage all teachers, especially beginning teachers to find a way to attend – it will be well worth your time and effort!

NCSTA AWARDS

Submitted by Ann McClung



Do you know anyone that should be recognized for their accomplishments in Science Education? Please nominate your fellow colleague today. Listed below are the different categories for which you may nominate a fellow science educator. Please click [here](#) to see the requirements for each award and to complete a nomination form. Each nomination must have a narrative from the nominator describing the nominee's experience and/or contributions in science education and two letters of support with one being from a supervisor. Deadline for submission is June 1, 2016.

Categories:

- Outstanding Student Teaching Award
- District Outstanding Science Teaching Award for the eight NCSTA Districts
- Elementary
- Middle
- High School
- Distinguished Service in Science Education in North Carolina Award
- Elementary
- Middle
- High School
- Administrator/Supervisor
- College/University
- Commercial
- Non-School Setting
- Vi Hunsucker Award



SUMMER OPPORTUNITY WITH STIPEND FOR TEACHERS OF GRADES 3-12

*NC Science and Engineering Fair
Presented by the Biogen Foundation*

Come find out about the International Science and Engineering Fair (ISEF) rules, regulations, and forms. Participants in this workshop will learn how to initiate, manage, and evaluate student science an engineering

research projects in the classroom.

The one-day workshop includes:

\$15 registration fee (returned as a part of the \$65 stipend)

\$65 Stipend

All materials and program book.

Morning coffee, snacks, and lunch.

0.5 CEU for completion

Click [here](#) for more information and to access the registration form.

STEM WEST UPDATE AND ROBOX SUMO TEACHER OPPORTUNITY

Submitted by Carol Moore



Since the spring of 2014, STEM West has been meeting twice a year to support a regional effort of aligning traditional educational standards with the occupational needs of western North Carolina. On April 10th, 2016 STEM West held its initial meeting at the Western Piedmont Council of Governments (WPCOG). The WPCOG serves Alexander, Burke, Caldwell, and Catawba Counties. With over 40 attendees from business, education (K-12, higher, and informal), and government, Dr. Carol Moore presented the initiatives for year one. Dr. Moore brings over 30 years of classroom experience and curriculum specialist leadership. She has retired to be able to dedicate her efforts to developing STEM West into a viable organization to increase STEM education in the region while working as the education arm of Workforce Development at the WPCOG.

With funding from the Duke Energy Foundation, Biogen, and Burroughs Wellcome Fund, STEM West will be scaling projects vetted through pilots. Working with Tracy Hall of Education Matters of Catawba Valley Community College, the EXTREME STEM Tours for all 8th grade students that originated with Catawba County Schools and funding from the Golden Leaf Foundation, will be scaled to surrounding districts. This summer, 20 8th through 12th grade science, math, and career-technical education teachers will be selected from 7 school districts to participate in Filling the Gap. The week-long training will take place July 25th-29th. This project was piloted in 2014-15 with funding for the *Community Action Plans (CAP)* from the Institute for Emerging Issues. These 20 teachers will be partnered with local STEM businesses to write and implement project based learning (PBL) units in their classrooms that align with a real business problem.

Moore stated, "PBL done effectively, can address many of the challenges teachers and the business community have raised. This pedagogy increases student engagement because the problems, projects, and issues are real and important. Students work collaboratively, using technological and local resources to solve problems or create projects to reveal their learning. The Filling the Gap, similar to the CAP, project adds an additional element of linking the problem and project to a local STEM business. Our business partners are engaged in professional development with the teachers and are the link to making the unit real and engaging. These types of efforts are building and increasing partnerships between our schools and local STEM businesses in our community."

The Biogen grant will also offer 30 teachers the opportunity to attend a Train-the-trainer

event called "Robox Sumo," a more economic robotics event for the community on July 15th. Attendees will leave with information, experience, and a bag of supplies to host their own events.

STEM West continues to develop partnerships across the region and state to increase student interest in STEM careers and to create equal access for all students interested in a STEM education pathway. If you have questions, are interested in the Robox Sumo training or Filling the Gap, or want to become involved in STEM West contact:

carol.moore@wpcog.org.



NATIONAL WEEK OF MAKING JUNE 17 – 23, 2016

Welcome **NC STEM Leaders, Educators, Community and Friends!**

My name is Iris R. Wagstaff. I am a native of Goldsboro, NC and I am currently serving as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow. I am working at the National Institute of Justice Office of Investigative Forensics in Washington, DC. I am excited to tell you about the [National Week of Making](#) from **June 17th through the 23rd** as I think you would have a great time joining in the fun. I have actually been working on an organizing team of folks in the Federal Government planning for and supporting the National Week of Making.

To build on last year's National Week of Making, the team I'm a part of is working to celebrate the diversity of makers across the U.S. and to tell the stories of how communities are embracing the Maker Movement. We feel strongly that more people need to hear about the impact that the work so many are doing is having on everything from education and entrepreneurship to manufacturing and local problem solving. As a key player within the maker community we would love your help spread the word about great work happening in your backyard!

There are lots of great ways to get involved in the week of activities! You could organizing a local workshop for youth or adults, host a Maker Town, hold a fundraiser for a local non-profit, showcase local makers, or even participate in events such as the National Maker Faire or Capitol Hill Maker Faire here in Washington, D.C.! Learn more and get inspired by visiting this [link](#).

Additionally, if you are in Washington, D.C. June 18-19, the National Maker Faire (which is free and open to the public), will be held at the University of the District of Columbia. The Call for Makers just opened up and is now posted online. To learn more click [here](#).

We are looking forward to having you join forces with us from June 17th through the 23rd and would love for as many others as possible get involved. Please feel free to

forward this email on to others and encourage them to connect with us all! Here are a few ways folks in the community are already active:

- **Posting a photo about the #NationOfMakers** – lots of folks are already active online and there are even some community-created images created by Adam Bellow that can be found below.
- **Organizing an event and/or host an open house** at your local school, library, rec center, makerspace or set up a hangout online to connect and share your inventions with Makers across the country. Some have posted their events on a community website such as [Week of Making](#).
- **Volunteering to be a mentor** for someone who is interested in learning a new skill or find a mentor who would be interested in teaching a new skill you've been wanting to learn for a while.
- **Organizing a maker roundtable, maker town hall, or maker tour** to convene thought leaders and decision makers in your community. (An example of this is what [Adam Savage](#) did last week in Cleveland - which was organized by Adam's team at Tested in collaboration with Lisa Camp from Case Western Reserve University and Sonya Prior-Jones of the Fab Foundation out of MIT – Adam is actually talking about it live today during a Reddit AMA you can follow [here](#).
- **Your idea here!**

Stay updated [here](#) and follow the community conversation online at [#NationOfMakers](#) and [#WeekofMaking](#).

Informational Call Schedule and Registration Links

[Tuesday May 31](#) @ 2pm EDT

[Thursday June 2](#) @ 12pm EDT

Contact Information:

Please put "Week of Making" in Subject line

Andrew Coy - Andrew.Coy@ostp.eop.gov

Iris R. Wagstaff – Iris.Wagstaff@ojp.usdoj.gov

James Coburn - James.coburn@fda.hhs.gov

CALL FOR SUBMISSIONS - JOURNAL FOR INTEDISCIPLINARY TEACHER LEADERSHIP

The Kenan Fellows Program is accepting submissions for the second issue of its Journal of Interdisciplinary Teacher Leadership. The peer-reviewed journal publishes original scholarly work bi-annually on research, best practices, professional learning, and leadership in K-12 education.



The journal reviews submissions online. For submission guidelines and/or to submit and article click [here](#). Please send questions to the managing editor, Amneris Solano at



SUMMER SCIENCE SAFETY

Submitted by Dr. Linda Stroud

As we do workshops with our teachers and students this summer, I am sure we will want to "wow" them. It is our objective to excite them and send them back into the field with new materials to "wow" their fellow teachers and students for the upcoming school year.

Let's be sure to:

1. Perform any demonstrations under a chemical fume hood whenever we are working with any heat or fire.
2. Have participants wear personal protective equipment (PPE) whenever we are working with any heat, fire, or projectiles.
3. Know where the eyewash, show, fire extinguisher, and fire blankets are located.
4. "Stop, Drop, and Roll" is the name of the safety protocol if a person catches on fire. If at all possible, once the fire is out, get the individual into the shower and flush for 15 minutes. Of course, a call for help has gone out during this time. A fire blanket is used to prevent shock. These can also hold heat in and increase a burn.
5. Never ever take a stock bottle of a chemical into a lab. Take small quantities - 50 mL methanol, 10 g NaCl. In every case that I have read of an accident in the flame experiment, Rainbow, the stock bottle (4 L) methanol bottle was involved.

Let's be safe with just a few adjustments. Safety is not hard to do.

EARTH SCIENCE TEACHERS LIST SERVE

Submitted by Fred Beyer



Stay up-to-date with the latest research in earth sciences!

Research articles, abstracts, maps, photographs, student investigations, and North Carolina field sites. Click [here](#) to subscribe.

TIME TO QUIT AND GO HOME

Submitted by Fred Beyer

Schools are about to close, or have just close out the 2015-2016 academic year. After you take some time off to rest and recuperate, pull out your records from this past year and consider doing some of the following things while you have time to think and plan for next year.

1. Take last year's instructional plan and improve it. Don't reinvent the wheel. Some teachers start over every year. It's a practice that wastes an incredible amount of energy.
2. I hope you kept notes about what worked and what didn't. Now you have time to search for lessons and activities to replace the ones that didn't work or didn't work as well as you wanted them to.
3. Insert new discoveries Your textbook is at least ten years out-of-date. There is no reason why your lessons should be too.
4. Make sure the science curriculum you are using matches the specifications of the test used to evaluate your program. Match your instructional plans to the test specifications. Your school's testing coordinator should be able to assist you.
5. Take your curriculum apart and design an instructional plan to place emphasis on the concepts stressed in the test specifications. If you do this, your students' scores should improve, and you may find you have time to cover topics that are not in the test specifications.
6. Take each concept and break it down to a series of simple ideas that your students should be able to understand. At the middle school level, many, if not most, of your students will be concrete learners. If you don't reach them your best laid plans won't work.
7. Lay out your instructional plan to present the ideas in each concept in a logical order so each idea builds on the one before, and leads to the next until the entire concept has been constructed.
8. Introduce vocabulary terms as you need them, not all at once. A list of words without concrete meaning, or a mental framework to link them, is a complete waste of time.
9. Make homework brief and to the point. If possible involve the parents in the homework (I'm a realist but we can also hope). Too much homework can be counterproductive and on occasion can actually reinforce a conceptual error making it very difficult to undo.
10. Design your assessments like lab practicals. If measurement, data analysis, or graphing is involved, make the students do it - especially if the end of year test requires your students to interpret data or graphs.
11. Look for ways to incorporate electronic media in your instruction. When students use iPads or laptops to investigate an idea, they are forced to become active learners and as a result their learning improves.

The next item is the most important.

12. Plan your instruction for each idea in some kind of activity that requires the active engagement of every student. If students have to do something with every concept and connect previous concepts to understand the idea being studied, they will understand the concept when they finish. Have them build models, color diagrams, take something apart and reassemble it, make a circuit from a diagram, reverse the idea and make the diagram of a circuit and so on, but never, never, never resort to worksheets. When you are looking for specific examples of geologic features don't forget our national parks and the United Nations World Heritage Sites. Using these locations in our country and around the world can acquaint your students with some of the most famous features on our planet.

Finally, look for new ways to be your students' cheerleader. Remember, adults already have a framework on which their knowledge is built, but children still have to build their framework. They are too accustomed to failing. Put reminders in your plans to praise your students every time there is a victory - no matter how small.

With that being said, have a happy summer.



CINDY BULLARD, EDITOR

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Please contact me regarding any comments, questions, or submissions to the NCSTA Reflector.

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 ncsta.org/