

WSSF Quarter Note

Student Demonstrations of Learning: Go Wyo!

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The 2016 Wyoming State Science Fair will sponsor THREE student demonstrations of learning activities:

- Halliburton Energy of the West Essay Contest
- Robotics Team demonstrations and exhibits
- STEAM t-shirt and button logo contest

For more details contact WSSF Leadership at

wyostatefair@gmail.com



ENERGY IN THE WEST Essay Contest: September 2015—November 2015

The word "energy" incidentally equates with the Greek word for "challenge." I think there is much to learn in thinking of our federal energy problem in that light. Further, it is important for us to think of energy in terms of a gift of life.

-- Thomas Carr

♦ Energy in the West Essay Contest: (Respond to the question below)

What are the greatest benefits and challenges of energy research in Wyoming? How do we take advantage of these benefits and address these challenges?

- Any student from a Wyoming school enrolled in grades 4 through 12 may submit their essay by November 30th to <http://tinyurl.com/EiWessay>
- Essay minimum lengths: 300 (lower elementary) -1000 (high school) words
- Winners will be selected based on:
 - ◇ Thoroughness of argument with supporting factual information
 - ◇ Credibility of references (each essay must cite at least five sources including at least two peer-reviewed sources)
- ♦ **Robotics Teams:** If your school or club would like to do a demonstration of your robot programs at the Wyoming State Science Fair in March, please get in touch (wyostatefair@gmail.com); enter ROBOTS in the subject line!
- ♦ **Logos:** Submit original WSSF 2016 art by November 1st for FB voting!

Special points of interest:

- Near-Peer Mentor program
- Energy in the West essay contest for students grades 4 - 12
- Robotics team exhibitions and demonstrations
- STEAM T-shirt and button logo contest continues
- Lia Eggleston gets **Honorable Mention** award at Pittsburgh ISEF 2015
- Meet the new WSSF Director

Open the (Library) Door to Knowledge with GoWYLD

Picture of J. Pasek courtesy of UW Libraries

Scientific research builds upon what is already known. Explore what scientists have written related to your research question. Look for references that will help you design your study and understand your results.

Libraries are great places to search for credible sources of scientific information. Wyoming residents can access online resources provided by the Wyoming State Library through the GoWYLD.net website. On GoWYLD.net, click on “remote user login” in the upper right corner. Enter your Wyoming public library card number and the PIN “WYLD” (or a PIN from your public library), and click on “Authenticate.”

Look under the Subject Area links for “[Science & Technology](#)” and “[Student Research](#).” Other links such as “[Government Info](#)” or “[Health & Medicine](#)” are helpful for certain topic areas.

For ideas and background information, start with broad overviews and encyclopedias. Good sources for Middle and Junior High students include *Britannica School* and *SIRS Discoverer*. For High School students, start with *Science in Context*, *Britannica School*, *MAS Ultra*, or *Gale Virtual Reference Library* (Science). For more specific articles, use *ProQuest Science & Technology*, *Agricola* (agriculture), or *GreenFILE* (environment) databases. For help, consult the [Research Guide to Science Sources in GoWYLD.net](#), or ask your local librarian. Another way to think about the C in CERO is [confirmation of your own](#) results; in science these confirmations are called REPLICATES. When a scientist is able to repeat a study and get similar results, the level of confidence in those results increases. Sometimes, a scientist repeats a study and gets different results every time! Sometimes that is what can be expected but as much as possible we want to be able to explain results. If someone else has a similar experience, you’re probably ok!

Article by Judy Pasek

STEM Liaison Librarian

Research & Instruction, University of Wyoming Libraries



WSSF will have a new registration

website in 2016. Starting in

November, you can find information

about forms, rules and awards at

<https://wy.zfairs.com/> Coming

soon...look for a MAJOR launch in

November 2015. More details at

wssf.sfiab.com

Teacher's Corner: Tips and Project Ideas

Selecting a Topic /Defining a Question

Step 1) Help students select a research topic/idea by encouraging them to keep a journal where they record questions, observations and ah ha's that pop into their heads or out of their mouths. Review these notes later with your student and look for a dominant theme or recurring topic of interest that can be refined into a focused, testable question based on their own curiosity.

Step 2) Refine the topic into a focused, testable question by asking **more** questions and discussing the chosen topic with your student. Keep asking and generating questions until you have a good list written down.

Step 3) Conduct background literature research to see which questions have been answered (and are not, therefore, original). Don't be discouraged if the questions have already been answered; this shows interest in the topic. Help the student select a different question entirely, or forge ahead bravely and refine the questions further so their answers are likely to contribute new knowledge or understanding.

Step 4) Choosing a final question can be challenging. The best question is both interesting and answerable/testable using available time and resources. Interesting questions tend to address a gap or doubt in knowledge, or have a practical implication.

Near-Peer Mentors

Do you want help thinking about your project ideas BEFORE the science fair? Math and Science majors from across the university are willing to help walk you through your ideas. Sign up by sending an email to

Cayleigh Brown at

UWsciencefairmentoring@gmail.com

Summer 2015: Teacher Outreach in Casper & Sheridan

As part of the Halliburton 2014-2015 Building Capacity Grant, the Wyoming State Science Fair was happy to support teachers as they worked to think about how science fair ideas could be generated from “play”! On day one of the three-day Casper workshop, teachers discovered ways to build mathematics and language arts lessons around science. So what were the tools of the trade? M & Ms, cell phones and a little imagination! On day two, teachers visited the Halli-



burton Casper site and learned about topics from energy to slurry. Dr. Joy and Erin led teachers in a series of follow-up simulations on the last day. Teachers did a little chemistry and geology while getting a chance to see how to integrate science modeling practices into their classrooms.

UW-CEAS: Inspiring the Next Generation of Scientists and Engineers!

In July, faculty and staff from the UW College of Engineering and Applied Science (CEAS) had the opportunity to host over 130 1st-5th grade students from ACSD. Students circulated through a series of learning stations engaging in creative, hands-on activities. Students also visited the 3-D Visualization Center at the UW School of Energy Resources. The CEAS looks forward to the opportunity to continue

to connect with teachers and students across the state to develop and inspire the next generation of scientists and engineers!

For more information on how to get your school or child involved in K-12 Engineering programs, please contact Teddi Hofmann, the CEAS K-14 STEM



Teachers in Casper got a chance to “tinker” with robotics kits, visit Halliburton for a tour and build simulations as they get project ideas!

Education Program Coordinator, at thofmann@uwyo.edu or 766-4253.

Dr. Hakeem Oluseyi of [Discovery Channel's "Outrageous Acts of Science"](#) will be one of the keynote speakers at this year's Math-Science Conference in Casper (October 25-26) thanks in part to WSSF-Verizon Foundation grant!

Upcoming Science Teacher Workshops

STEM educators throughout the state will have several opportunities to network with other teachers from Wyoming this year. In addition to the Wyoming Department of Education sponsored “Roadmap to STEM Conference (August 3 – 5), teachers may want to attend:

- Wyoming After School Alliance Conference (October 19-20, Laramie, WY): <http://wyafterschoolalliance.org/events-2/2015-wyaa-state-conference/>
- Wyoming Math and Science Teachers' Conference (October 26-27, Casper, WY): www.caspercollege.edu/events/mst/



Lia Eggleston, ISEF Finalist in 2014 and 2015, received an Honorable Mention certificate from the American Statistical Association (and some journal subscriptions) as a result of her work in Pittsburgh! Way to go Lia!

University of Wyoming ~ Science & Mathematics Teaching Center

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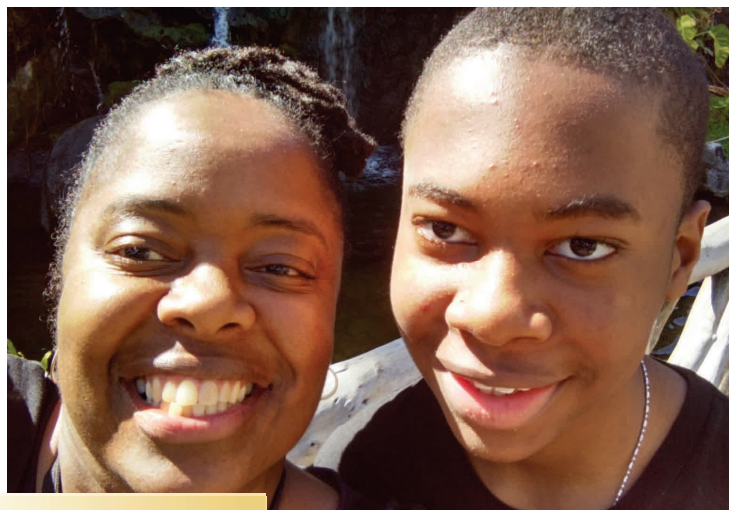
Building capacity to meet grand challenges...

We're on Facebook
@WyoStateFair

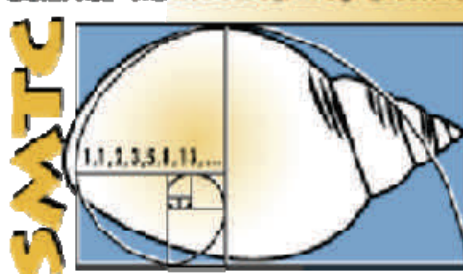
“Teamwork makes the dream work”!

Dear WSSF Community...thank you for being a wonderful part of my life for the last year and a half. I will look forward to resuming my life as a high school chemistry teacher and mother. I am thankful for my friends and family that have supported me as I embarked on this journey.

—Dr. Joy,
WSSF Director
(2014-2015)



SCIENCE • MATH TEACHING CENTER



Math research idea...

My new favorite thing to do is to track my fitness using a small mobile device. Quantified Self (<http://quantifiedself.com>) gives visitors access to tons of data for analysis. Visit the site for ideas about how to teach Common Core Standards for grade 8 (Investigate patterns of association of bivariate data) or High School (Interpreting categorical and quantitative data) [CCSS.MATH.8.SPA.1, SPA.3, SPA.4; HSS.IDA.1, IDA.2, IDA.3, IDA.4, IDB.5, IDB.6, IDC.7, IDC.8, IDC9].

Before you go...

Meet the New WSSF Director

Erin Stoesz is one of the most decorated science student researchers from the Wyoming State Science Fair. She will become the next Wyoming State Science Fair Director in August 2015.

Three Trips to ISEF: Nine Awards!

In her own words...

I am so pleased to be welcomed into the position of Wyoming State Science Fair Director. As a University of Wyoming alumna (B.S. in Geology and a B.A. in Celtic Studies, 2001) I am thrilled to be returning to work at my alma mater after a stint at Indiana University (M.S. in Geology).

Vision: "Last year the WSSF saw entries from ~370 students and had more than 600 students participate around the state. My vision for 2016 is to continue to increase participation in WSSF and improve the overall quality of student research by promoting and using existing science experiences as a springboard for student innovation."

