



Advancing science, technology, engineering, and mathematics education for people of all ages.

Vol. 7 Issue #11

November 2015

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Community STEM in the NEWS

Another thrilling Falcon BEST!

The final "Game Day" of the third annual Falcon BEST (Boosting Engineering, Science and Technology) Robotics competition was held at Bowling Green State University's Stroh Center on October 24. Middle and high school students from fourteen schools in northwest Ohio and one school from Indiana competed in the daylong competition for various awards. Game Day is the culmination of a six-week process by over 300 enthusiastic students.

This year's game theme was "Paydirt" and engaged the students in designing a robot to move through three levels of a mine to collect minerals.

The Falcon BEST program is comprised of two parts: the robotics competition and the BEST Award. For the robotics competition, each participating school was provided an identical kit of equipment and parts, a set of game rules, and given six weeks to design, build, and test a remote controlled robot to work through the 2015 game. Students conduct every aspect of the design and construction of their robot. Local engineers, university faculty members, and other technical professionals from industry can serve as team mentors, advising and guiding students throughout the design and construction of their robot.

The BEST Award, which is optional for schools, is presented to the team that best embodies the five key elements of the BEST program, which



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include the:

- Project Engineering Notebook,
- Marketing Presentation,
- Team Exhibit and Interview,
- Spirit and Sportsmanship, and
- Robot Performance.

Falcon BEST "kicked-off" on Sept. 12 at BGSU where teams received their materials and got their first look at the 2015 game. A practice day was held on Oct. 10 at the Woodland Mall in Bowling Green. Teams were able to test their robots on the game field and connect with other teams to share ideas and resources to improve robot performance.



Hosted by Bowling Green State University's College of Technology, Architecture and Applied Engineering and the Northwest Ohio Center for Excellence in STEM Education; the Falcon BEST hub at Bowling Green is part of a nationwide organization. The mission of BEST is to inspire students to pursue careers in engineering, science, technology, and mathematics through robotics design.

2015 Falcon BEST Award List:

A full list of winners can be found at <http://www.bgsu.edu/technology-architecture-and-applied-engineering/falcon-best-robotics-competition/events/2015-events.html>.

BEST AWARD

(Overall Award - total points from engineering notebook, robotics competition, marketing, exhibit and spirit.)

- 1st - Hamilton Southeastern High School*
- 2nd - Millstream Career Center*
- 3rd - St. Ursula Academy*
- 4th - Sylvania Southview*

ROBOTICS COMPETITION

(Teams that amass the most points with their robots in the robotics competition.)

- 1st - Hamilton Southeastern High School*
- 2nd - Vanguard Technology Center*
- 3rd - Millstream Career Center*
- 4th - Maumee Valley Country Day School*

*These schools are eligible to compete at the Regional Competition in Fargo, N.D., Dec. 3-5.

K-16 STEM in the NEWS

Women in STEM Ignites Interest!

"Empowering young women in science, technology, engineering, and mathematics. Fostering confidence and inspiration"! This was the theme of the 31st annual "Women in STEM" program, held at BGSU on Nov. 6th. Over 330 sixth through eighth grade girls from schools from across the region and Detroit attended, enjoying an entire day on campus. The day began with a welcome from BGSU President Dr. Mary Ellen Mazey, and this year's event featured a keynote presentation from **MIT Engineer Emily Calandrelli**, who is also the producer and host of **FOX TV's *Xploration Outer Space***. Emily, also known as the "Space Gal", is passionate about space exploration and inspiring more females to pursue STEM study and careers.



The girls spent the day exploring and performing experiments in physics and astronomy, chemistry, biology, engineering, mathematics, environmental science and other subjects as they learned about the STEM fields and what STEM has to offer in high school and beyond. One of the goals of the program is to engage the girls in fun and exciting STEM activities from many female role models, while exposing them to a college campus, many for the very first time.



Additionally, the girls were treated to the "college dining experience" at The Oaks, a buffet style dining hall where the girls were able to choose from multiple lunch options. Each participant also received a "Women in STEM" backpack and was able to participate in the closing activity and demonstration from Imagination Station.

Some comments that students gave included:

"It was really fun with all the hands-on activities. I loved all the aquatic animals like the puffer fish and the sharks!"

"Women in STEM is a great time and experience! I had a fun time and would want to have this experience every year!"

Sponsors for this year's event were BGSU, the Northwest Ohio Center for Excellence in STEM Education, BP America, Texas Instruments, and John Deere. BP America provided scholarships to girls from inner city schools to attend.

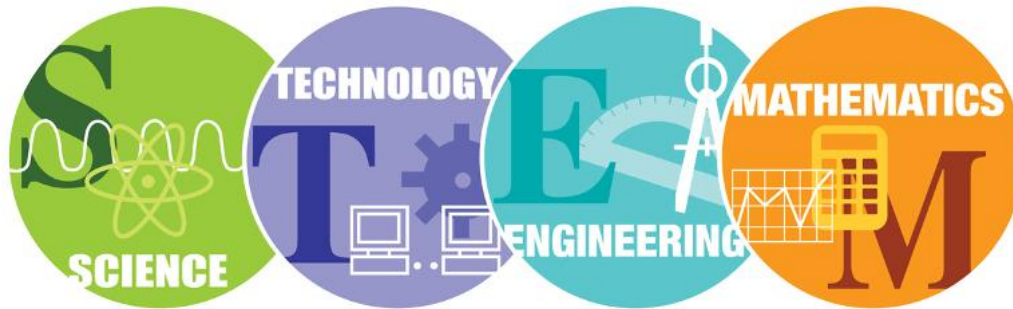
Mrs. Cynthia Madanski, a teacher who brought students from Robinson Elementary in Toledo stated, "We had an outstanding adventure today. Everything was so well organized, and The Space Gal was the perfect

keynote speaker, my girls have been talking about her speech all day!"

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STEM Opportunities

Announcing the 2015 NWO Symposium on STEM Teaching



Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching

A local professional development conference for PreK-12 teachers, administrators, pre-service teachers, college faculty/staff, and informal educators.

Featuring a keynote presentation by BGSU Professor of Teaching Excellence, Dr. Daniel Brahier!

A passionate and dedicated educator for 35 years, Dr. Brahier continues to have a tremendous impact on mathematics education nationwide. He has written several books, including the top-selling textbook for middle and high school mathematics teacher preparation, and is the co-author of *Principles to Actions*, an NCTM-published guidebook centered on mastering teaching practices with core principles for today's educators.

Dr. Brahier has taught mathematics and science at many levels during his career. He currently teaches mathematics education courses at BGSU, and serves as the Director of Science and Math Education in ACTION, a program designed to train STEM teachers in current and effective teaching methods.

Saturday, November 21, 2015 at Bowling Green State University from 8:30 AM - 4:00 PM.

[Click here](#) for more information.

Lemelson-MIT InvenTeam Initiative

This initiative provides opportunities for high school students to cultivate their creativity, curiosity, and problem-solving abilities and apply lessons from STEM subjects to invent technological

solutions to real-world problems. InvenTeams of high school students, teachers, and mentors will receive grants of up to \$10,000 to invent a technological solution to a problem of their choice. Projects can range from an assistive device to an environmental technology and to a consumer good. Applicants are encouraged to consider the needs of the world's poorest people - those earning \$2 or less a day - when brainstorming ideas, as well as the potential for community partnerships and other types of collaboration.



STEM educators at high schools and nonprofit educational organizations who have not received an InvenTeam grant within the past three years are eligible to apply. **Initial applications are due March 7, 2016.** Upon review, selected applications will be invited to submit full proposals by September 6, 2016.

Complete application and eligibility guidelines, including profiles of past InvenTeams, are available at the Lemelson-MIT Program website. <http://lemelson.mit.edu/inventeams>

New Resources From Together Counts!

Looking to teach students about where food comes from? Check out the **BRAND NEW** Farming Spotlight with lesson plans, interactives, and STEM activities for upper elementary and middle school classrooms from Discovery Education and the Together Counts™ Program. Built to fit seamlessly into existing curriculum or a school's STEM club, these lessons plans and activities will spark student curiosity and build awareness about all things farming. <http://www.togethercounts.com/Farming>



Google Education Classroom Opportunities

Google Earth launched the second edition of Voyager featuring "Animal View: Exotic Creatures in their Natural Habitat." This global safari spans all seven continents and features 60+ animals captured by StreetView and Satellite cameras. Google Earth flies students right to where the animals live in the wild. Teachers and students can follow the tour or simply explore and discover the animals on their own time.

<https://googleblog.blogspot.com>

Verizon Innovative App Challenge

No coding is required in this contest for middle and high school students, who can win up to \$20,000. **Register by Nov. 24.**

<http://appchallenge.tsaweb.org/>



eCYBERMISSION Challenge



Registration is now open for [eCYBERMISSION](#), a free, web-based STEM competition for students in 6th through 9th grade sponsored by the U.S. Army and administered by the National Science Teachers Association (NSTA). The decade-old competition is aligned with the Next Generation Science Standards and seeks to foster student innovation, creativity, and interest in pursuing STEM majors and careers. Robotics, fitness, and the environment are among the challenges 6th to 9th grade teams can choose in this virtual contest.

[Registration](#) closes **December 17, 2015**, with submissions due February 29, 2016.

This year's [Mission Challenges](#) include:

- Alternative Sources of Energy
- Environment
- Food, Health & Fitness
- Forces & Motion
- National Security & Safety
- Robotics
- Technology



The **LinkEngineering website** is an online community of educators interested in providing meaningful engineering experiences to PreK-12 students of all abilities. LinkEngineering is a community of educators working with PreK-12 students in classrooms or other settings. This includes - but is not limited to - teachers, teacher educators, and administrators. The site allows members to connect with each other and engineering education experts. LinkEngineering is a resource website that provides examples of engineering in educational settings. It also provides background information on engineering and engineering design.

For more information, please visit: <http://linkengineering.org>

Ohio Environmental Survey/BGSU



As part of a collaboration between the Department of Biology and the Department of Environment and Sustainability at BGSU, residents of northwestern Ohio are asked to participate in a quick online survey regarding the quality of the environment. This survey is designed to give Ohio residents a chance to express their thoughts about the quality of their local environment and describe what they feel affects their local environment

To take the survey: <http://bgsuenvironmentalsurvey.my-free.website/>

Tour Ohio's STEM Schools

Ohio is a leader in STEM and innovative education. Schools within the Ohio STEM Learning Network (OSLN) are opening their doors this fall to educators across the state. OSLN has organized a big push for tours in November and December. Visitors will get a chance to take a look at the school structure, peek inside classrooms, and talk to students, teachers, and administrators. Registration is required.



Schools offering tours in November and December are:

- MC2 STEM High School, November 19
- Northwestern Local Schools, November 23
- Dayton Regional STEM School, December 8 (morning)
- DECA Prep (elementary for Dayton Early College Academy), December 8 (afternoon)
- Central Ohio, December 9
- Central Ohio, December 10

For more information, please visit OSLN: http://www.osln.org/2015/10/tour-ohios-stem-schools/?utm_source=151030+STEM+tours&utm_campaign=151030+stem+tours&utm_medium=email



A Fab Lab is a collection of tools and equipment for making prototypes of devices, objects and materials designed to solve a problem or meet a need. A Fab Lab makes it possible for students to create prototypes of their design ideas thus turning ideas into reality. This can greatly enhance problem and project-based learning and enable hands-on experiences that greatly increase student engagement, motivation, and academic achievement.

On 11/16/15 visit the BiG Fab Lab in Bowling Green, Ohio to explore the possibilities- see the tools, hear from the experts, build a network, and discuss Fab Lab grant opportunities. Two sessions will be offered, or an appointment can be made for another time.

<http://bigfablab.com>



BioOhio is very excited to host the inaugural Women in Bioscience Conference, featuring speakers covering

topics such as career paths, mentoring, networking, communication strategies, success stories, and an enlightening lunch time speaker.

The goal is to highlight numerous bioscience career options, for scientific and non-scientific jobs, along with practical concepts to advance women in the bioscience industry. BioOhio has worked with a national planning committee of industry experts to help form the agenda and identify speakers.

Sponsorship opportunities are available, and include various levels to meet any organization's budget. Registration is \$195 for BioOhio members; \$125 for Core members with 10 employees or less; \$295 for non-members; \$75 for students/job seekers/government.

To register: <http://www.bioohio.com/events/women-in-bioscience-conference/>

Ohio Project Kaleidoscope (OH-PKAL)

[Ohio Project Kaleidoscope \(OH-PKAL\)](#) is a recently-formed organization dedicated to the enhancement of STEM education in Ohio. As a regional affiliate of AACU's [Project Kaleidoscope](#), OH-PKAL is creating a regional network of STEM faculty (and graduate students seeking careers in academia) promoting and enhancing evidence-based, learner-centered STEM undergraduate education.

The second annual OH-PKAL conference is [Evidence-Based Practices in Undergraduate STEM Education](#), to be held at Capital University on **Saturday, May 21, 2016**.

Conference Themes include:

- Meeting the Needs of Underprepared STEM Students
- Promoting Effective Learning Across Teaching Environments (e.g., lecture, lab, field, community, online)
- Cultivating the Value of Diversity in Science to Attract and Retain Students
- Student Learning Outcomes and Assessment
- Contribute-a-Theme

Ohio PKAL invites proposals to showcase evidence-based practices that reflect any of these themes, and that are poised for immediate uptake and adaptation in a wide range of institution types, including community colleges and minority serving institutions. Of particular interest are proposals that effectively integrate two or more of the conference themes.

For more information and to submit a proposal online, please visit <http://www.aacu.org/pkal/regional/ohio/2016-cfp>. Please note that proposals are accepted through midnight **December 15, 2015**. Conference registration will open February 1, 2016.

The Hour of Code: December 7-13, 2015!

Thanks to educators like you, the Hour of Code keeps changing the world. This year can be a turning point for computer science in our schools, with new tutorials, new prizes, and you.

Together, we want to reach 100,000 classrooms worldwide.

Every young person deserves to learn how to build technology that will impact everything in their future.



Sign up for the Hour of Code, a grassroots movement that's already introduced 100 million students to the basics of computer science. Participate with any one-hour coding activity that students love - no experience needed!

Every organizer will receive a gift card to iTunes, Amazon or the Windows Store as a thank-you gift. And you can win \$10,000 for your school. Computer science is foundational for every 21st-century student.

Most schools still don't teach it. We owe it to our children to start with just one hour. <https://hourofcode.com/us>

Doodle 4 Google 2015 Is Now Open

To celebrate, Discovery Education and Google are honoring the teachers who inspire, enlighten, encourage and empower students to explore creativity, dream big, unearth talents and expand their imagination through Doodle 4 Google. **Share your story to win exciting prizes.**



- One winner will receive \$1,000 to spend on classroom supplies and a two-night trip to Google HQ in Mountain View, CA to meet the Doodle Team.
- Four runners-up will each win \$1,000 for classroom supplies.
- Free Activities and Videos for K-12 Students.

Introduce students to the creative process through the lens of Google's Doodle team with free activities designed to spark creativity. Visit DiscoveryEducation.com/Doodle4Google to download free activities for kids in grades K through 12 with complementary videos featuring the Doodlers in action.

<http://www.google.com/doodle4google>

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NWO Hands-On STEM Activity

Bread Mold Experiment

This month's Hands-on Activity is from education.com, a website dedicated to inspire kids to love learning with expert resources.

Mold spores are everywhere just waiting for the right environment to grow and multiply in. But what is the best environment for them? Is it cold or warm? Sunny or dark? This bread mold experiment will help students find out, while developing important hypothesis-making and experiment-designing skills.

What is Needed:

- 3 pieces of bread
- 3 resealable plastic bags
- Permanent marker
- Water



Steps:

1. Put bread in all three bags.
2. Take one bag and put it in a dark place. Place the next bag in the refrigerator. Place the last bag in a sunny area. Make sure each bag is sealed tightly. Label them with a marker.
3. While you wait for the results, work with your child to develop a hypothesis as to what will happen to each bag of bread. Think about where mold grows naturally. What conditions does your child think are conducive to mold growth in nature?
4. Check each bag daily to record any changes you see, and compare the results with your child's hypothesis.

Did You Know?

- Different types of mold grow in the dark versus the light, and cold versus warm temperatures.
- All mold is dangerous to eat. If you ever have a slice of moldy bread it is recommended that the whole loaf be thrown out. Mold spores are microscopic and are already all over the entire loaf even if colonies haven't developed yet.

http://www.education.com/pdf/Making_Mold_Science_Experiment/

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Share Your Story!

Thank you for your support of NWO, our programs, our activities, and our partners. Please send us updates, press releases, and news of STEM happenings at your school, district, or organization. Please submit to nwo@bgsu.edu. We are always looking for great STEM education stories to feature in upcoming newsletters.

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Find Even More Ohio STEM Education Resources

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