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In This Issue

K-16 STEM in the NEWS

2014 NWO Symposium Captivates!

"I cannot say enough good things about the keynote speaker. Probably the best keynote speaker I have ever seen. He was extremely interesting and very personable. I was captivated during his entire talk. Great choice for a keynote!" So said one of the many teachers attending the 2014 NWO Symposium on STEM Teaching and Learning held at Bowling Green State University on November 1. The annual Symposium featured a keynote presentation from NASA Engineer Kobie Boykins, one of the pioneer engineers with NASA's ongoing Mars Exploration program, and a mechanical engineer at NASA's Jet Propulsion Laboratory.

Few events in the last decade of space exploration have captured the world's imagination like NASA's ongoing Mars Exploration Program. In 2004, the successful deployment of the Mars Exploration Rovers, Spirit and Opportunity, launched a new era of scientific investigation of the Earth's nearest planetary neighbor. For Boykins, the rovers' success was also a personal triumph: he helped design and build the solar arrays that enabled the rovers to keep going long after their planned 90-day life. Remarkably, opportunity is still roaming Mars today and sending back images, more than nine years later.

Boykins' boundless enthusiasm for unraveling the mysteries of outer space, and Mars in particular, was infectious. In his keynote presentation, "Exploring the Red Planet: Engineering, Innovation, and Perseverance", he shared his passion for space exploration by recounting the design and construction of the rovers and the story of their successful missions.

[Innovative Learning Spaces]

[INFOhio Offers New One-Stop Searching with ISearch]

[Imagination Station Dinosaurs UnEarthed Exhibit Now Open]

[The Hour of Code is Coming]

[Lemelson-MIT Program Announces 2014-15 InvenTeam Initiative]

Boykins is currently intimately involved with NASA's latest venture to Mars, as supervisor of the mobility and remote sensing mast teams for the Mars Science Laboratory, better known as Curiosity. Curiosity landed on Mars in August 2012 and has already made headlines with evidence that conditions on Mars, including the presence of water, once could have supported life. For his work on this and other compelling projects, Boykins last year received a NASA Exceptional Service Medal, one of the highest honors given to NASA employees and contractors.

[(read more)]

NWO Hands-On STEM Activity

[SUN! POWER! ICE! POP!]

Community STEM in the NEWS

Falcon BEST Holds Thrilling Competition

The final "Game Day" of the second annual **Falcon BEST** (Boosting Engineering, Science and Technology) Robotics competition was held at Bowling Green State University's Stroh Center on November 8. The "Game Day" event was the culmination of a six-week process by over 200 students from 13 area high schools competing for various awards within the competition.

This year's theme was "Bladerunner". Teams were challenged to program their robots on how to best transport and assemble wind turbines without negatively affecting their transportation system and environmentally sensitive areas.

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 in an effort to outperform other schools' robots. Students conduct every aspect of the design and construction of their robot. Local engineers, University faculty members, and other technical professionals from industry serve as team mentors, advising and guiding students throughout the design and construction of their robot.

The BEST (Boosting Engineering, Science, and Technology) Award is

presented to the team that best embodies the concept of 5 elements, which include:

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

The BEST Award competition is optional for schools.

The series of events began with a kickoff on Sept. 27, followed by a practice day on Oct. 25 at the Veteran's Building in City Park in Bowling Green.

2014 Falcon BEST Award List:

Founders Award: Port Clinton High School
Most Robust Machine: Bowling Green Middle and High Schools
BEST Marketing Presentation: TIE: Anthony Wayne High School & Perrysburg High School
BEST Engineering Notebook: Cardinal Stritch Catholic High School
BEST Exhibit and Interview: McComb High School
BEST Spirit and Sportsmanship: Maumee Valley Country Day
BEST T-Shirt Design: Perrysburg High School

Robotics Competition Award:

- **4th:** Cardinal Stritch Catholic High School
- **3rd:** Port Clinton High School
- **2nd:** Anthony Wayne High School
- **1st:** Maumee Valley Country Day School

BEST Award:

- **3rd:** St. Ursula
- **2nd:** Cardinal Stritch High School
- **1st:** Anthony Wayne High School

The College of Technology, Architecture, and Applied Engineering and the Northwest Ohio Center for Excellence in STEM Education organized the Falcon BEST competition at Bowling Green State University. 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.

[back to top]

STEM Opportunities

Kids Tech University (KTU) announces the 2015 KTU spring semester program being held at BGSU. The BGSU KTU events are intended for kids between the ages of 9 and 12 (by September 30, 2014).

Spring 2015 Registration Procedure: Online enrollment began at 6 p.m. on Nov. 12, 2014, and 150 children will be accepted into the program. Registration is on a "first-come, first-served" basis that is open to children satisfying the age restriction, regardless of academic achievements. A waiting list will be available after registration is full for a county or for the program.

KTU is held in the same campus lecture halls used by BGSU students. The morning session features a talk and extended question period with an invited speaker. The afternoon sessions includes a series of hands on activities, relevant to the session topic that the children can participate in with their parents.

2015 Interactive Sessions- Bowling Green State University

- **February 07, 2015** | "How do fossils reveal our planet's past, present, and future?" - Answered by Dr. Peg Yacobucci
- **February 14, 2015** | "A mighty oak tree is killed in the forest; DNA can tell us who did it." - Answered by Dr. Karen Lynn Snover-Clift
- **March 28, 2015** | "What's the best way to grow crystals?" - Answered by Dr. Andrew Torelli
- **April 11, 2015** | "Why are the foods that you love the most in danger from rusts, blights, molds and mildews?" - Answered by Dr. John McDowell

http://kidstechuniversity-bgsu.vbi.vt.edu

Four-year scholarships are available at Bowling Green State University for incoming freshmen considering careers in teaching science and/or mathematics. The Ohio Board of Regents has awarded Choose Ohio First grant funds to BGSU in order to promote STEM education. This unique program called **Science and Math Education in ACTION** offers recipients nearly $20,000 over four years (based on continued state funding)!

High school seniors considering teaching either secondary science or math OR middle childhood science and math may be eligible for this scholarship program.

The basic criteria for consideration includes:

1. Ohio resident
2. Incoming freshman fall 2015
3. Minimum high school GPA of 3.0*
4. Recommended minimum ACT 23*
5. Considering a career teaching science and/or mathematics

*Most ACTION scholars are well above these minimum requirements.

The deadline to apply for Fall 2015 is January 23, 2015.

In addition to four-year scholarships, the ACTION program also offers unique opportunities for students such as a month-long Summer Bridge program to prepare incoming freshmen for college, personal interactions with faculty, involvement with science or math research projects, and real-world, hands-on experiences in science and math.

For more details and an application, go to www.bgsu.edu/action. For additional questions, please call 419-372-6561 or e-mail action@bgsu.edu.

Four-year scholarships are available for under-represented minority students planning to major in STEM (science, technology, engineering and mathematics) fields through BGSU's Academic Investment in Mathematics and Science (AIMS) program. First year scholarships of $2,000, which may increase by $500 for each year of successful completion of program requirements, will be awarded to 20-25 of the best qualified candidates. For more information and the application form, please visit the AIMS website: http://www.bgsu.edu/aims.html

Foundation for Technology and Engineering Educators Invites Applications for K-12 Programs

DEADLINE: DECEMBER 1, 2014

The Foundation for Technology and Engineering Educators, in partnership with Pitsco/Hearlihy & Company, is accepting applications for technology and engineering education programs at any grade level.

Through the Excellence in Teaching Technology and Engineering grant program, the foundation will award grants of $2,000 to K-12 teachers to encourage the integration of a quality technology teaching.

For further information: http://www.grantsalert.com/grants/Foundations/1299/PITSCO/HEARLIHY/FTEE-GRAN

World of 7 Billion Video Contest

Back by popular demand, the World of 7 Billion student video contest can help bring technology and creativity into high school science classes. The contest challenges students to create a short (60 seconds or less) video illustrating the connection between world population growth and one of three global challenges dealing with either the sixth extinction, available farmland, or global education. Students can win up to $1,000, and teachers will receive free curriculum resources.

The contest deadline is February 19, 2015. Full contest guidelines, resources for research, past winners, and more can be found at the video contest website. http://www.worldof7billion.org/student-video-contest/

Cleveland State University, in collaboration with the **University of California, San Diego**, is offering an exciting professional development program to train teachers on a new AP course in Computer Science entitled Computer Science: Principles course.

Teachers who participate in the program will receive curriculum materials for the course, as well as a stipend of $2,000 in addition to another $1,000 in program materials and travel support. Teachers will be required to attend two workshops in Summer 2015, and then required to teach the CS Principles course during the 2015-16 academic year.

For further information about the program, please visit http://www.csedohio.org.

First Energy All American Soap Box Derby Gravity Race Challenge

With Soap Box Derby cars being used in over 300 schools in 13 states and in classrooms in Singapore, Canada, Germany, New Zealand, and Japan, the International Soap Box Derby continues its mission to develop and provide educational opportunities for K-12 youth worldwide. Promoting the STEM initiative in education through gravity racing, the Gravity Racing Challenge (GRC) program is designed to provide K-12 educators and students with meaningful, project- and standards-based, inter-curricular learning opportunities. Educators are successfully implementing the GRC program in classrooms and after-school, summer or enrichment programs and clubs worldwide.

Preparations for the May 16, 2015 Gravity Racing Challenge competition are underway, with school teams comprised of up to 10 student members (driver, alternate driver, 2-4 pit crew members and media specialists) and two coaches, now forming.

Please visit: www.aasbd.org/education/gravity-racing-challenge.aspx

OELMA Educonference on Innovative Learning Spaces

Registration opens November 15

On March 14, 2015, The Ohio Educational Library Media Association (OELMA) is hosting a one-day Educonference at the Bio-Med Science Academy in Rootstown, Ohio (Portage County). The focus of the daylong event will be innovation through creation, and will serve as a catalyst to implement purposeful STEAM (Science, Technology, Engineering, Arts, Mathematics) activities that meet Ohio Learning Standards and foster creativity in students.

The Innovative Learning Spaces Educonference is designed for school librarians, teachers, technology leaders, administrators, and youth services librarians. This one-day conference will address four topics:

1. Makerspaces and Schools
2. Innovative Design on a Budget for 2015 and Beyond
3. Technologies for Innovative Teaching and Learning
4. Advocacy through Innovation

http://www.oelma.org/events/educonference

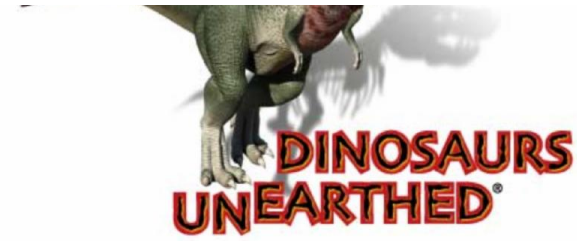
INFOhio Offers New One-Stop Searching with ISearch

ISearch is offered free to all Ohio PreK-12 schools, public and private. ISearch makes finding resources at different reading levels easy. Students can click either the basic or advanced tabs to find the levels they need. Although ISearch is open to all Ohio PreK-12 students, it works best for 4th-12th-graders, students who are now "reading to learn." ISearch is available at http://www.infohio.org/students/er/item/isearch.The ISearch search box also appears at the top of the list on all the INFOhio student resource pages.

For more information about using ISearch, contact support@infohio.org with questions or comments about ISearch.

Imagination Station Dinosaurs Unearthed Exhibit Now Open

Experience a new reality with an adventure back in time 65 million years. Actively engage in a unique learning experience and discover roaring, moving, life-size,



animatronic dinosaurs. State-of-the-art and scientifically accurate-down to the feathers on *Tyrannosaurus rex*. Dinosaurs Unearthed features realistic, full-bodied dinosaurs as well as educational interactives, skeletons, fossils, a predator scene and much more! Interactive stations explore dinosaur sounds, anatomy and digestion, as well as fossil detective work. The exhibition highlights educational content that reflects the newest scientific discoveries in paleontology: including evidence suggesting some dinosaurs are the ancestors of modern day birds. Some paleontologists think that dinosaurs such as the *Tyrannosaurus rex* once began their lives covered with hair-like feathers. In addition to life-sized dinosaur skeletons, fossil specimens and interactive activities, Dinosaurs Unearthed boasts state-of-the-art animatronic dinosaurs, some of which can be operated and controlled by you. Designed in consultation with paleontologists and crafted by hand, these models capture some of the most life-like motions ever created.

Open October 25, 2014 - April 12, 2015

http://imaginationstationtoledo.org/content/dinosaursunearthed/

The Hour of Code is Coming: December 8-14!

Sign up to participate during Computer Science Education Week

Computer Science Education Week

Every student in every school should have the opportunity to learn computer science. The Hour of Code is a global movement reaching tens of millions of students in 180+ countries. Anyone, anywhere can organize an Hour of Code event. One-hour tutorials are available in over 30 languages. No experience needed.
http://csedweek.org

https://www.youtube.com/watch?feature=player_embedded&v=rH7AjDMz_dc

Lemelson-MIT Program Announces 2014-15 InvenTeam Initiative

LEMELSON-MIT
Celebrating invention, inspiring youth

Created by the Lemelson-MIT Program, the InvenTeam initiative provides opportunities for high school students

to cultivate their creativity, curiosity, and problem-solving abilities and apply lessons from science, technology, engineering, and math (STEM) subjects to the invention of technological solutions to real-world problems.

Teams comprised of high school students, teachers, and mentors receive grants of up to $10,000 to invent technological solutions for a problem of their choice. Projects can range from assistive devices to environmental technologies and consumer goods. Applicants are encouraged to consider the needs of the world's poorest people (those earning $2 or less a day) when creating their projects.

STEM educators at high schools and nonprofit educational organizations that have not received an InvenTeam grant within the past three years are eligible to apply. Funds may be allocated for project-related research, materials, and learning experiences. Funds may not be used to purchase capital equipment or professional services.

http://lemelson.mit.edu/inventeams

[back to top]

NWO Hands-On STEM Activity

This month's hands-on activity is from Discovery Education's Siemens Science Day (http://www.siemensscienceday.com/activities/sun_power_ice_pop.cfm)

SUN! POWER! ICE! POP!

Kindergarten - 3rd grade

Summary
In this activity, students will assess solar power by comparing its effect on rain (water), sleet (ice), and snow (popsicles). Students will observe the temperature changes on these elements and compare the temperature of the elements in direct sunlight with the same elements out of sunlight.

Overview
Topic: Solar Energy and Temperature
Real World Science Topics:

- An evaluation of the sun and its properties: its large mass and gas make up, the distance from the sun to the Earth, and the ability of its energy to travel and heat the Earth and our Solar System
- An exploration of the three stages of matter and how the sun (a gas) alters the state of one object (solid) to another (liquid) as well as the sun's effects on the temperature of each
- An exploration of how heat changes the form of a substances and specifically, measures of temperature at which matter freezes, melts, or remains constant

Objective

After completing this activity, students should be able to explain how the sun distributes heat to Earth and make measurable comparisons of how the sun directly affects the melting and warming of an object. Students in grades 2-3 should also be able to describe the three states of matter and temperatures at which ice freezes and melts.

Download a pdf of the complete hands-on activity by clicking here!

[back to top]

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

Visit our STEM clearinghouse, nwostemresources.org, for more STEM activities, programs, and information.

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