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K-16 STEM in the NEWS**All-Girl STEM Club is Filled with Superstars**

Tucked into a busy day teaching physics to upperclasswomen at St. Ursula Academy, Jackie Kane meets with and fosters a genuine interest in STEM fields in her 60 students' STEM club. The fact that there are 60 students participating in a STEM club at an all-girls academy is remarkable. "I began in 1999 with a very small group of girls to help them prepare for standardized math tests which then evolved into a science club and now it has morphed into a STEM club. Problem solving and critical thinking are very important, especially for girls, and the activities in our club help with that," said Mrs. Kane, who is the STEM club advisor.



Over the course of the last ten years, the STEM club has grown steadily and is designed to ignite the interest of girls in the STEM fields - fields that are traditionally dominated by males. "Last year a team of students entered an engineering competition that would eventually give them the chance to go all the way to MIT in Boston to present. In previous years, students have also gone to Washington, D.C., a NASA testing site, and other exciting locations, all in the name of science. With 60 members this year, we can't wait to see where the STEM Club goes," Mrs. Kane enthusiastically stated.

The STEM club successfully competed in The Lemelson MIT program - this is an initiative designed to excite high students about invention, empower students to problem solve, and encourage an inventive culture in schools and communities. But schools can only enter every four years, designed to give other schools' teams a chance. The students received a \$6,600 grant from Lemelson-MIT to develop a Pill Dispensing Organization Device.

Most recently, Mrs. Kane had four teams of four girls each competing at The

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University of Toledo engineering design competition. All area high schools are invited to participate and this was the tenth year they competed. Teams are given a small case of materials and within a certain time frame, must discern how to build a product from it. "What drives students it seems is competition, for better or worse. They are thirsty to explore, to have fun competing and to allow their career direction to be based on what they have done, rather than what they have 'thought'", she explained.



The girls meet almost daily and a small "core" group came up with the idea to enter the "Lexus Eco Challenge" environment program, as they wanted to complete a project which has a positive effect on the environment, as well as the community. The girls' project, which involved building and maintaining their own rain garden, constructed on the campus of the school, earned a \$10,000 award from the competition. Their rain garden, designed to filter pollutants from entering

waterways, placed in the top sixteen in the nation among hundreds of entries, and St. Ursula was one of 10 high schools and six middle schools nationwide to receive the award. The funds were divided among the core group to use for college tuition costs and/or other STEM projects, with \$2,000 going to the school, and \$1,000 to the STEM Club.

Mrs. Kane also has plans for the STEM Club to work together on inventions such as a Rube Goldberg machine, equation-based art models, and possibly even a roller coaster. But what Mrs. Kane finds really gratifying, is when her students go on to study in STEM fields in college. She smiled when she said, "Currently there are St. Ursula students who were members of the STEM club studying diverse engineering careers at Carnegie Mellon, Duke, Dayton, University of Michigan, The Ohio State University, George Washington, and Georgia Tech, to name a few."

Community STEM in the NEWS

BEST Robotics Regional Competition Update

Traveling to frigid Fargo, North Dakota in December as part of the BEST Robotics Competition held last month, four teams from the Falcon BEST hub in northwest Ohio competed in the Northern Plains BEST Regional Championships held December 6-8. These teams represented Vanguard Technology Center (Fremont), Elmwood Local Schools, Findlay City Schools, and Sylvania Schools. The competition was hosted by North Dakota State University, and is comprised of eight hubs in the northern plains of the U.S.

Vanguard Technology Center earned the "BEST Simulink Design Award"



and placed second in the "YouTube Video Award". Sylvania Schools earned second place for the "Team Website" Award. These teams fared very well for their first time competing at a BEST regional. "It's not how you start, its how you finish," stated Tonya Breidenbach, Design Engineering &

Architecture Instructor at Vanguard-Sentinel Career & Technology Centers. She and another teacher took twenty-eight students to compete and were thrilled with the aspects of presenting with other teams, and having their students exposed to the high pressures of competing with the best of the best. All of the teams of students vigorously worked on their presentations and benefited from the invaluable interaction with each



other. Vanguard's BEST team won five of the six categories to qualify for regionals and thrilled with the awards they brought home. The students were passionate about their work as evidenced by the enthusiasm displayed throughout, and what Tonya also noticed is all of the students were appreciative of such an opportunity.

BGSU established the Falcon BEST Robotics Hub in early 2013 and it is the first and only BEST Robotics hub in the state of Ohio. The next competition will be announced in early 2014.



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STEM Opportunities

NSTA's Exploravision /The Science of A-Ha!

Today's young minds drive tomorrow's innovation!

The world's largest K-12 science Competition for students of all interest, skill and ability levels, encourages students to combine their imaginations with the tools of science to create and explore a vision of future technology.



Deadline: January 31, 2014

More info: <http://www.exploravision.org>

Akron STEM Hub Learning Opportunities

Sessions offered on the following topics:

- Problem based learning communities
- Problem based learning trainings for educators
- Understanding the basics of a STEM school program
- Professional learning community workshop for educators

- Digital literacies, web 2.0 skills and research strategies in a STEM school setting workshop for educators
- STEM platform school visits
- STEM school leadership mentoring and workshops
- Partnership development consulting
- Whole STEM school design coaching

Please inquire for registration and complete information on all of these programs: <http://www.akronstem.org>

NWO STEM Education Inquiry Series

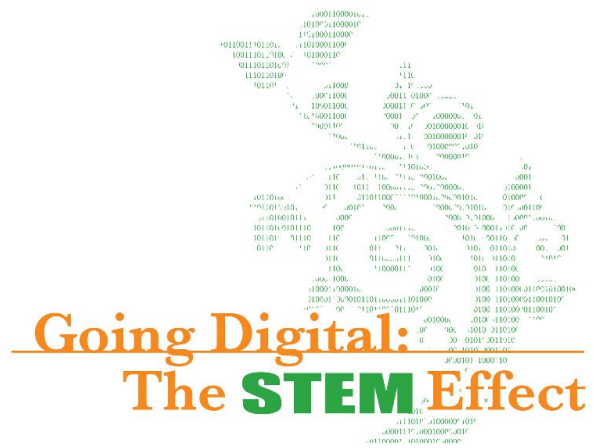
The theme of this year's series is: **Going Digital, The STEM Effect** and focuses on incorporating digital tools and technology into the preK-12 STEM classroom.

January 14, 2014 - Betsy Hood: Connect, Communicate, and Collaborate with Web 2.0

February 11, 2014 - Savilla Banister: Embrace the Chaos! Using Digital Resources to Empower Learning

March 4, 2014 - Carrie Rathsack: Using Creativity Tools for Active & Engaged STEM Learning

Registration information is available at: <http://cosmos.bgsu.edu/inquiryseries>



Elementary STEM Course for Educators

Bob Claymier of STEM is Elementary will be offering an online elementary STEM course through Miami (OH) University beginning in January. The course is worth 2 semester hours of credit for \$150. It is designed to offer Ohio teachers currently involved with STEM integration in their preK-6 classroom a chance to dialog about current topics and concerns pertaining to elementary STEM. There is a 3 hour orientation on January 11 in Delaware, OH and the course will run January thru May 2014.

Deadline to enroll: December 20 - <http://www.stemiselementary.com>

To register, contact Bob at bob@stemiselementary.com

FREE Science Tools & Resources for Your Classroom

Discovery Education and the Siemens Foundation proudly offers programs for K-12 educators and students with FREE resources and multiple opportunities to win prizes: Siemens We Can Change the World Challenge.

WHO: K-12 Students

WHAT: The nation's premier sustainability competition where students create solutions to environmental problems and compete for over \$300,000 in prizes.

Enter the Challenge! [Register today](#) to get started. The deadline is March 4, 2014.

Siemens STEM Academy

WHO: K-12 Educators

WHAT: The leading online educator community is offering FREE resources, a monthly virtual event series and professional development opportunities designed exclusively to foster achievement in STEM disciplines.



Apply for free STEM professional development! Start your Siemens Summer of Learning Application and submit by February 4, 2014!

<http://www.siemensstemacademy.com/>

Edweb.net - Purposeful eBooks Free Webinar

Thursday, December 19th at 5pm ET

[REGISTER HERE](#)

Just what is the purpose of eBooks in education? Are they mainly for research and information? Is the demand bigger for eBooks that are fiction and used for recreational reading? Or, does the truth lie somewhere in the middle? Join Edweb.net to search out the answer.



Ohio Resource Center

Common Core Toolkit for Mathematics Educators

To support the transition to the Common Core State Standards for Mathematics in 2013-2014, ORC has created a Common Core Toolkit for Mathematics Educators. The toolkit offers a wealth of materials designed to assist with the interpretation and implementation of the Common Core, all of which are free of charge. More info: <http://ohiorc.org/for/math/commoncore/>

Lemelson-MIT InvenTeam Grants

InvenTeams are teams of high school students, teachers, and mentors that receive grants up to \$10,000 each to invent technological solutions to real-world problems.



Each **InvenTeam** chooses its own problem to solve. Science, mathematics, and technology teachers from public, private, and vocational high schools may apply. Interschool collaborations, like the integration of **InvenTeam** projects with school programs and classes, are encouraged. The initial application opens each fall and is due the following spring. **The deadline is February 28, 2014.**

For more information: <http://web.mit.edu/inventeams/apply.html>

Christopher Columbus Awards

Call for Middle school students' entries for Christopher Columbus Awards!

Sponsored by the Christopher Columbus Fellowship Foundation, the Christopher Columbus Award program is a national, community-based science, technology, engineering, and math contest for middle school students. The program challenges students in grades six to eight, working in teams of three to four with an adult coach, to identify a problem in their community and apply the scientific method to create a solution to that problem. The program can be implemented in science or social studies classes, for cross-curricular use in team teaching or block-scheduled classes, or as an afterschool program.

Eight finalist teams and their coaches will receive an all-expense-paid trip to Walt Disney World to attend National Championship Week and compete for valuable scholarships and the \$25,000 Columbus Foundation Community Grant, plus a \$200 development grant to further refine their idea. **The deadline is February 3, 2014.**

Visit: <http://www.christophercolumbusawards.com>

OHIO STATE'S STONE LABORATORY

Summer 2014 Courses at Ohio State's Stone Lab Now Open for Applications

Courses at Stone Lab, Ohio State's Island Campus on Lake Erie, get students out into the field and onto the lake to experience science first-hand while earning college credit that is transferable to most colleges and universities.

Advanced high school students have a choice of six introductory science classes and earn two college semester credits in a week; college and graduate students can earn two credits in a week or four credits in five-week upper-level courses. Small class sizes and interaction with some of the country's leading researchers give students the opportunity to learn science from the experts, and to make connections that could last a lifetime. In five different one-week courses, classroom teachers and informal educators can earn credit toward their Highly Qualified Teacher certification while networking with fellow education professionals. Teachers participate in hands-on, project-based learning, providing new ideas they can transfer to the classroom.

This summer's courses are listed at: stonelab.osu.edu/courses

Applications are available at: stonelab.osu.edu/applynow

Courses are filled on a first-come, first-served basis so all students and educators are encouraged to submit their application by **March 18, 2014**.

Contact Arleen Pineda, stonelab@osu.edu, 614-292-8949

I Am a Digital Learner Video Contest

Do you have students looking for their directorial debut? Are they digital learners? Then tell them about Digital Learning Day's

I Am a Digital Learner video contest. Any Ohio K-12 student or team of students can create a 1-3 minute video for the contest. Finalists will be debuted at the Ohio Education Technology Conference January 27-29, 2014. The final winner will be announced on Digital Learning Day, February 5, 2014. **Deadline for entry is January 6, 2014.** For more information, review the student rules web page and information for teachers and parents. <http://www.digitallearningday.org/>





Applications are now being accepted for **Lowe's Toolbox for Education grant program**. Lowe's Charitable and Educational Foundation (LCEF) is dedicated to helping parent-teacher groups achieve even more for their schools. Apply for the Toolbox for Education Grant, up to \$5,000.

Now in its 9th year of helping build better schools and communities, the Lowe's Toolbox for Education program has provided over \$35 million to more than 8,000 schools across the country.

More info: <http://www.toolboxforeducation.com>

Next Generation Assessments: Technology Preparation and Readiness

Lunch and Learn For District Leadership Teams

Featured Speaker:

Sam Orth
Chief Technical Officer
Management Council
Ohio Education Computer Network

January 10, 2014

10:00 A.M. -12:30 P.M.

ESC of Lake Erie West



The morning's full agenda includes the follow topics:

- 3 Key Online Assessment Technology Components
- Readiness Steps
- Deployment Models & Rotation Cycles
- Client Computing Assets
- WAN/LAN
- PARCC Accessibility and Accommodation Resources
- Questions/Discussion

\$25/person for non-ESCLEW-aligned districts or \$100 for 5 people

Free to ESCLEW-aligned districts

Register by January 5 at: <http://tinyurl.com/pfuy85w>

[Click here](#) to download a pdf flyer about the event.

NIST Summer Institute for Middle School Science Teachers Program

National Institute of Standards and Technology is seeking applications nominating middle school science teachers to participate in the NIST Summer Institute Program. The NIST Summer Institute Program will provide selected teachers hands-on activities, lectures, tours, and visits with NIST scientists and engineers at the NIST Campus in Gaithersburg, Maryland.

Applications are due March 12, 2014. Approximately \$78,000 is available to support 22 teachers. Public school districts and accredited private educational institutions in the U.S. and its territories that offer science classes at grade levels 6-8 are invited to apply.

CONTACT: Susan Heller-Zeisler, 301/975-3111. Email: susan.heller-zeisler@nist.gov
<http://www.nist.gov/iaao/teachlearn/upload/2014-NIST-Summer-InstituteFINAL.pdf>

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NWO Hands-On STEM Activity

Pine Needle Discovery Bottles

This activity is suitable for preK - grade 2

Collect or have students bring in different sizes and shapes of clear, empty, water or other bottles to make their own pine needle discovery bottles.

Take a nature walk outside (if appropriate) and have students gather pine needle branches. If this is not possible, collect from home or visit to nature park.

Have each student add one or more pine needle branches to their water bottle and then fill up the bottle with water almost to the top. Add glitter for effect.



Using glue gun, glue bottle cap in place. This idea is borrowed from <http://www.teachpreschool.org/2012/12/a-pine-needle-in-a-bottle/>

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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

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

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