



Vol. 9 Issue #3

March 2017

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SSOE Group ([www.ssoe.com](http://www.ssoe.com)), a Toledo-based global project delivery firm for architecture, engineering, and construction management, hosted nearly 40 students from local area high schools including Ayersville, Ida, Lake, and Start, in February as part of the annual "Engineers Week". Focused on promoting entry into the engineering profession, Engineers Week took place February 20 - 26, 2017 in locations across the United States of America. Engineering is one of the fastest-growing, best paid careers for recent college graduates and this growth is projected to continue into the future.

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Visiting students participated in a hands-on experience from a team of engineers when at SSOE's Toledo headquarters. While at SSOE, they had the opportunity to participate in team-building activities, gain insight on the different engineering disciplines, and learn what it takes to become an engineer-and potentially an employee of SSOE.



To kick-off the program, a presentation was given by SSOE's Global Virtual Design and Construction (VDC) Team, led by Lauren Collier, Doug Furia, Tony Hiss, Mark LaBell, Zach Lopez, and Mike Musgrave. The team then

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took the students through a high-level overview of VDC and wrapped-up with a collaborative LEGO® exercise.

Next, Senior Electrical Engineer, John Colley, Professional Engineer (PE), led a demonstration on electrical engineering titled, "Let's Build a Motor". The day concluded with Structural Engineer, Kyle Bosworth, PE, leading an activity titled, "Construct a Building Frame" that involved students working in teams to construct a building frame out of household products. The frames were then tested to resist both vertical and horizontal loads-measuring the students' creativity with various design options in a team environment, while managing a theoretical project budget and schedule.



During the program, students also learned about SSOE's student co-op / internship program. This program provides college students with resume-building experience, a competitive wage, and college credits. On average, SSOE employs 40 co-ops / interns at any given time.

SSOE is committed to preparing students for successful careers by generating interest and improving skills in the STEM fields, and is an active partner of NWO. In addition to their support of Engineers Week, they are a proud sponsor of the National Math and Science Initiative (NMSI).

## Community STEM in the NEWS

### Junior High STEM teacher Jackie Derr presents at National Conference

Jackie Derr, Perrysburg Junior High School (PJHS) STEM Teacher, recently presented: "3D Printing Across the Curriculum" at the Association for Career and Technical Education National Conference. Pitsco (the supplier for the PJHS lab) requested that she submit a proposal to present at the conference, in which 4,500 participants attended. Pitsco also supported Ms. Derr's participation.

Over 100 individuals attended Ms. Derr's session, where she walked the attendees through the design and production phase of 3D



printing in the classroom. She shared helpful tips, how to manage printing objects, and how to decipher various 3D printing design sites. She also shared a unit she created for 3D printing, which included actual models of student projects. Participant discussion revolved around how to use the printer to produce objects to use across the curriculum. She ended her presentation with a demonstration of 3D printing that included the design and prototype of a battery-powered car. This demonstration is part of a class unit that Ms. Derr teaches her 8th grade students.



Ms. Derr was also recently among the 22 educators selected from across the country to be part of Pitsco's Teacher Advisory Group to give insights on product development. She will be involved in a variety of projects, including development of curriculum, activities and products as well as the creation of product videos, web site and marketing content and blog posts.

"I teach the STEM classes at Perrysburg Junior High and recently had the opportunity to present at a National conference in Vegas on using a 3D printer across the curriculum," Ms. Derr stated. "I was also selected to be a part of Pitsco's Teacher Advisory Group, which is made up of 22 teachers from across the country." She will be involved in a variety of projects, including development of curriculum, activities and products as well as the creation of product videos, web site and marketing content and blog posts.

Ms. Derr stated, "3D printing is awesome! By the end of 2017 every classroom in China is supposed to have a 3D printer!" Ms. Derr is passionate about the use of 3D printing in K-12 classrooms and her work with Pitsco will help her continue to learn and grow in this new and emerging area of instruction.

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## STEM Opportunities

### Toledo Zoo Education Department Open House

The Toledo Zoo Education Department is sponsoring a teacher open house on **Wednesday, March 22** from 4:30-6:30pm. Zoo Education staff will host an evening of fun activities for area educators. In addition, the Education staff has a treasure trove of educational materials to give away. Materials include books, games, lesson plans, videos and more so registrants will need to bring a recyclable bag to haul goodies.



#### All of this for \$5!

Space is limited to the first 150 registrants

Register here: <https://www.toledo zoo.org/teacher-workshops>. Parking and entry information will be included in

the confirmation email sent upon registration.

For more information, potential registrants should contact **Peggy Coutcher**, the Education Department Administrative Assistant at **419.385.5721 x.2042**.

## Imagination Station Spring Offerings

### Power Up Lego Workshops

Every Saturday in March, 3pm

Register online now for Power Up LEGO® Workshops at:

<http://imaginationstationtoledo.org/visit/events/event/greater-toledo-lego-club-workshop>

Presented by the Greater Toledo LEGO® Club. Build a scale to weigh favorite candies, race marbles down a LEGO® track, catapult a marshmallow into the air or create your own NERF gun target.



### Adopt-a-School

*Excite. Inspire. Encourage*

In this time when science and math education are more important than ever, schools are being forced to tighten budgets and cancel field trips. Imagination Station believes that every child deserves the opportunity to experience the wonder of science-to help as many students as possible! 100% of Adopt-a-School funding is provided by corporations and foundations.

The Adopt-a-School program offers qualifying schools access to Imagination Station to bring students on a field trip. <http://imaginationstationtoledo.org/educator/adopt-a-school>

### Little Scientist Workshops

Thursdays, 11:30am - 12:15pm

March - May

These workshops are a series of programs that encourage families with young children, ages 3 - 5, to investigate the world around them. Your child will explore science through hands-on activities.

Registration is now open for Spring Workshops: <http://imaginationstationtoledo.org/workshops-camps/little-scientist-workshops>

## Science Everywhere Innovation Challenge

The Overdeck Family Foundation and the Simons Foundation launched Science Everywhere to challenge teachers across the country to submit ideas on the [DonorsChoose.org](http://DonorsChoose.org) platform for creative, hands-on projects that inspire students to explore math and science outside the classroom. The foundations are providing nearly half a million dollars to match every donation, with the aim of engaging the public to

collectively deliver nearly \$1 million of science and math supplies to classrooms nationwide. At the end of the challenge a panel of judges will award five \$5,000 prizes to the teachers who submit the best ideas. Submit your ideas today.

<https://help.donorschoose.org/hc/en-us/articles/115000854567>

## Xcite Learning STEM Professional Development Opportunity

**The GLOBE Program for Grades PreK - 12 Teachers & Informal Educators  
GLOBE - Atmosphere & Aerosols**

***\$100 SCHOLARSHIPS available to the first 20 participants to register ~ REGISTER TODAY!***

This program is aimed at helping young children be excellent sky watchers by observing clouds and the colors of the sky. Older students can study other atmospheric measurements such as temperature, precipitation, humidity, and pressure. Students can report their sky and weather observations as citizen scientists to projects that share student generated data with the world... including NASA!!

The program integrates literacy with science, and all teachers will get a classroom set of storybook readers and hands on materials to DO GLOBE back in the classroom. JOIN US and MAKE THIS HAPPEN FOR YOUR STUDENTS!



**Wednesday & Thursday, May 3rd and 4th**

The 577 Foundation, Perrysburg, OH

8:00 am - 3:00 pm

COST: \$175 [Regularly \$275/teacher, but Xcite Learning earned a grant from The GLOBE Program & NASA allowing us to offer a \$100 scholarship to the first 20 teachers!]

Contact: **Jodi Haney** at [jhaney@xcitelearning.com](mailto:jhaney@xcitelearning.com) or **419.350.8469** for more information or visit:

<http://www.xcitelearning.com>

**REGISTER TODAY @**

<https://goo.gl/forms/HURlqVB19QXdusUh1>



Are you a high school teacher who wants your students to master state science benchmarks? Do you want to gain a deeper understanding of core concepts and how to teach them in a meaningful and interesting way? If so, the 2017 STAMPS Modeling Institute at BGSU is the place to be!

The Modeling Institute will be peer-led. Science content will be reorganized around basic models to increase its structural coherence. Participants will be supplied with a complete set of course materials and work through activities alternately in the roles of student or teacher, as they practice techniques of guided inquiry and cooperative learning.

Modeling is one of two K-12 science programs designated by the U.S. Department of Education as EXEMPLARY. Visit <http://modelinginstruction.org/> for more details.

Please visit: <http://www.bgsu.edu/nwo/current-grant-projects/stamps.html> for more information on the program and to download an application or contact John Laird: [laird@bgsu.edu](mailto:laird@bgsu.edu), 419-372-7244.



## GLOBE Mission EARTH

*Fusing GLOBE with NASA Assets to Build Systemic Innovation in STEM Education*



**NASA / Mission Earth: Fusing GLOBE with NASA Assets to Build Systemic Innovation in STEM Education** will be providing teacher professional development this summer. One of the goals is to develop

K-12 vertical integration of GLOBE and NASA into science curriculum with a focus on Elementary Teachers (K-8) and Elementary GLOBE. Pairs of teachers from the same school or school district feeder pattern are welcome and may include a middle school teacher as one of the teachers as long as the other teacher is primarily elementary. The teachers will be trained in the GLOBE protocols and NASA resources.

GLOBE Mission EARTH (formerly known as SATELLITES) Professional Development

**When:** July 10-July 14, 2017, 8 am to 4:30 pm each day

**Where:** The University of Toledo, Main Campus

**Who:** Science, Mathematics or Technology Teachers (grades K-8)

<http://files.constantcontact.com/2fa10179001/0ba04018-773b-4d7d-9bda-482ecb4fdb21.pdf>

For questions, please contact **Janet Struble**

[Janet.struble2@utoledo.edu](mailto:Janet.struble2@utoledo.edu)

UT phone: 419-530-4120

Cell phone: 419-704-8033



**Attention Teachers!** Do you have a great hands-on activity or strategy that incorporates engineering into your STEM or literacy lessons? Are your students developing engineering habits of mind? Share them with engineering educators and classroom teachers at **ASEE's 2017 PreK-12 Workshop in Columbus, Ohio, on June 24.**

The theme for this year's workshop is "Inspiring the Next Generation to Take Flight with PreK-12 Engineering Education." Engineering educators and STEM teachers are invited to submit workshop proposals. In addition, all educators are invited to display their original ideas and innovative models that show how they integrate engineering and STEM at the PreK-12 Curriculum Showcase that concludes the workshop. We've also added a new Counselor's Connection - dedicated sessions for college counselors to learn strategies to support positive learning experiences and increase understanding of careers in engineering.

<https://goo.gl/tzqfEP>

**Lourdes University - Appold Planetarium**

A Solar Eclipse is coming this summer! Be prepared with special teacher resources from the Appold Planetarium

Visit the webpage: [www.lourdes.edu/Eclipse](http://www.lourdes.edu/Eclipse)

Coordinator of the Appold Planetarium

**Lourdes University**

419.517.8897

[www.lourdes.edu/planetarium](http://www.lourdes.edu/planetarium)

[www.facebook.com/AppoldPlanetarium](https://www.facebook.com/AppoldPlanetarium)



## Toshiba America Foundation

K-5 grade teachers are invited to apply on-line for a \$1,000 Toshiba America Foundation grant to help bring an innovative hands-on project into their own classroom.



With a Toshiba America Foundation grant, elementary teachers can bring their best new teaching ideas to life. Grant applications are due on OCTOBER 1st each year.

<http://www.toshiba.com/taf/k5.jsp>

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## NWO STEM Activity

This month's activity is from **Imagination Station** in Toledo. This and other free educator resources can be found on their website at: <http://imaginationstationtoledo.org/educator/activities>

## Iodine Clock Reaction

Two colorless liquids are mixed together and after a few moments the mixture turns a dark blue color. There are actually a couple of simple chemical reactions going on at the same time to make this "clock reaction" occur. This version of the classic "iodine clock reaction" uses safe household chemicals most people have on hand at home.





### What You Need:

- distilled water (tap water will work OK as well)
- a couple plastic cups
- 1000 mg vitamin C tablets
- tincture of iodine (2%)
- hydrogen peroxide (3%)
- liquid laundry starch



### What To Do:

1. Make a vitamin C solution by crushing a 1000 mg vitamin C tablet and dissolving it in 2 oz of water. Label this as "vitamin C stock solution".
2. Combine 1 tsp of the vitamin C stock solution with 1 tsp of iodine and 2 oz of water. Label this "solution A".
3. Prepare "solution B" by adding 2 oz of water to 3 tsp of hydrogen peroxide and 1/2 tsp of liquid starch solution.
4. Pour solution A into solution B, and pour the resulting solution back into the empty cup to mix them thoroughly. Keep pouring the liquid back and fourth between the cups.

### What's Going On?

There are actually two chemical reactions going on at the same time when you combine the solutions. During these reactions two forms of iodine created - the elemental form and the ion form. In Reaction # 1 iodide ions react with hydrogen peroxide to produce iodine element which is blue in the presence of starch. BUT, before that can actually happen, the Vitamin C quickly reacts and consumes the elemental iodine.

The net result, at least for part of the time is that the solution remains colorless with excess of iodide ions being present. Now after a short time as the reactions keep proceeding in this fashion, the Vitamin C gets gradually used up. Once the Vitamin C is used up, the solution turns blue, because now the iodine element and starch are present.

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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](mailto:nwo@bgsu.edu). We are always looking for great STEM education stories to feature in upcoming newsletters.

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