

GO·STEM

Greater Oregon Science Technology Engineering & Math

Manufacturing Day

How do students know what job they might take after school or what education is required to prepare for that job? If you ask most high school students about a career, their knowledge of STEM occupations is often delimited by the jobs of people they know or the more traditional positions like scientist, engineer, doctor, nurse, electrician, etc. How do we acquaint students with the array of STEM jobs for which they may have no awareness?



One powerful way is to take them to the job site where they can see people in these positions. Manufacturing Day in Boardman, Oregon, designed by Kalie Davis and the Blue Mountain Workforce Training Center, brought students from around the region to explore careers in industry. Starting at the Training Center, students dug into computers and learned what technicians do to keep the data center in Boardman running. They heard about the education they would need to do the job, how much they could expect to earn, and the job environment.

Students then boarded the bus and made a short hop to Lamb-Weston, the nation's largest potato processing company. Touring the facility they heard and saw people maintaining and repairing automated systems and gained an understanding of the degree of technology required in a modern plant.



Next on the tour was an electric power plant. Seems simple, right? Did you know that everyone at this facility is steeped in a knowledge of chemistry? Power production depends on water with very specific characteristics. Engineers and technicians check for water pH, mineral content, and purity at multiple points to assure that the massive boilers and valves do not either corrode or cake with deposits. The students learned first-hand from a power plant technician all of the various electrical and mechanical systems that were maintained and math and science required to keep pace with the learning. A final stop at the plant was the control room. Surrounded by dozens of screens and controls the technician demonstrated how the entire plant was run from this booth and how knowledge of software systems was required to know how to manipulate the plant.



Manufacturing Day was a taste of what is out there—a teaser to get students thinking about the future and about the variety of jobs and positions waiting for them. It gave the lure of challenging and interesting jobs, the carrot of a good income, and the road they need to take to get there.

You may not have the same range of manufacturing and industry like Boardman, but you can develop your own manufacturing day concept in your area by acquainting students with STEM careers they probably don't know exist. Kalie would be happy to help you get started. Contact her at: KalieD@portofmorrow.com



Need glassware? We have lots to give away: Pipettes, flasks, specialty items. Lots of interesting STEM stuff. Check out the page at: <http://go-stem.org/stem-classified-haveneed-materials-for-free/>

Career Story: Dallas Defrees



Do you like biology? Maybe you wonder what sort of STEM career you might have with a college degree in biology? Dallas Defrees is still wondering the same thing after having wandering about taking-on a variety of biologist jobs on the west and east side of the State. Here's her story:

Dallas always liked biology. Maybe it was the influence of her mother who taught biology or her interest in the outdoors, genetics and the construction of the human body, or just simply, how things work. After graduating from Baker High School, Dallas entered a pre-med, general biology track at OSU. She took all the required courses: Three terms of general biology, 3 terms of chemistry and physics, 3 terms of organic chemistry, microbiology, genetics, ecology, botany, plant physiology, and, of course general education courses. Being in the honors college at OSU she didn't have a great number of electives!

Her first real biology position while in college was working in a fruit fly lab. Her job was to empty traps, inspect, separate and count fruit fly species. Working for the principal investigator, she learned how to log data and report findings.

As part of the honors college requirements she did a thesis on dredge tailings and grazing. She collected data on soil pH, organic matter, and mineral content for test plots. Her mentor, a professor in rangeland science, guided her in the process. She found big differences between plots and the impact on using cattle to improve

the dredged rangeland area.

After college, she worked on the family ranch for a while and then took a position with OMSI as an outdoor educator. Her February to September position found her working with 4th grade through 12th grade students on STEM-related projects in western Oregon.

After OMSI she landed a job with a primate research lab at OHSU. It was here she worked with macaque monkeys studying obesity and diabetes. She learned about the protocols of medical testing and about how the personalities of the monkeys were exaggerated in captivity. The docile monkeys were easy to work with while the aggressive monkeys were mean and scratched and bit!

Longing to be back in Baker City, Dallas moved home and took a seasonal job at the forest service doing woodpecker surveys. This summer she is looking forward to her job as a range technician. She'll monitor soil conditions, take plant samples, count and measure certain plants, and identify them with taxonomic keys.

When not working in the field, she has been working on a master's degree in rangeland ecology. Dallas has added to her experiences with courses in ecology, botany, wildlife, forestry, and rangeland science. She will be graduating on May 25, 2018.

What's next for Dallas? She's not sure. She still loves biology and all its facets from monkeys, fruit flies, cattle, plants, woodpeckers and kids! She loves the outdoors. She wants to stay in eastern Oregon. With her work experience and her educational background, she has lots of options. Where do you think she will land?



GOSTEM Executive Director Search

Donna Rainboth, current GO-STEM Executive Director, is changing roles within GO-STEM. As Program Director, she will be responsible for several grants in the STEM arena. The role of the GOSTEM Executive Director is now open for search. Here is a synopsis of the position:

The STEM Hub is a Collective Impact Partnership that supports the increase of STEM learning and career opportunities for PK-20 students and builds relationships between educators and STEM professionals in seven counties in eastern Oregon — Baker, Grant, Harney, Morrow, Umatilla, Union and Wallowa. The GO STEM Executive Director supports the Greater Oregon STEM Hub (GO-STEM), by providing management and oversight to the Hub located at Eastern Oregon University (EOU) and ensures that all programming and communication needs of the Partnership are achieved. The ED works with stakeholders to meet the regional goals for GO STEM and collaborate to create initiatives to promote STEM programs in the region. The ED is responsible for grant writing to ensure sustainability of the Program.

If you know someone that might be interested in this position you can read the full description and how to apply at: <https://eou.peopleadmin.com/postings/1323> Applications will be reviewed starting June 1, 2018, so there is still time to consider the position and apply.

[STEM LAUNCH POINTS](#)

Each month GOSTEM will showcase a different **STEM Launch Point** and the connections that can be explored in each STEM discipline. These stories are quick summaries of interesting people and circumstances where using STEM was as an integrated way of thinking and necessary to solve the problem. The story we offer in this month's newsletter is *Water to Drink*.



Have you ever thought about pouring a glass of water out of a faucet—how we rarely consider the luxury of this essential? Most of us don't. We just expect the water is clean, free from toxins or bacteria, and looks and tastes good. This is not the case for most of the world, however. Some 4000

children die each day as a result of lack of adequate or drinkable water. Underdeveloped countries primarily use rivers, lakes and rain run-off as their water supplies. These become contaminated with bacteria, parasites, and other pathogens. This STEM story starts with personal descriptions of people working with these contaminated water supplies and the challenge to convert what they have to something that won't harm or kill.

In this STEM unit, students learn about the problems of adequate drinking supply and then learn that they can use some basic chemistry to help solve the problem. Students use baking soda and cream of tartar to make CO₂ bubbles. They add this mixture to plaster of Paris to make a porous mud. They mold the plaster mud into the shape of a filter and then use their filter to test different aspects of "dirty" water. A complete curriculum *Water to Drink* can be found at <https://sites.google.com/a/eou.edu/stem-stories/water-for-africawater-filtration>

STEM Launch Points are archived on the GOSTEM home page at <http://go-stem.org/stem-launch-page/> GOSTEM would like to collect your stories and contexts that connect young people to explorations in STEM. Send us your ideas! Contact mjaeger@eou.edu

UPCOMING EVENTS

- **May 28, 2018:** Applications Due for Renewable Energy Leadership Lab. See more [here](#)
- **June 15, 2018:** Registration deadline for Engineering Workshops: The daVinci Project. More information [here](#) See Donna Rainboth about how GOSTEM can help get you there! drainbot@eou.edu
- **June 17 – June 22, 2018:** [Cottonwood Crossing Summer Institute](#), is now accepting applications from regional high school students and teachers to attend the week-long residential field studies program held June 17-22, 2018 at Cottonwood Canyon State Park. CCSI began in 2015 as a collaborative project with partners from Oregon State Parks, Greater Eastern Regional Solutions and Eastern Oregon University. Beginning this year, EOU has taken a lead role in coordinating the program. Check out the website (eou.edu/cottonwood-crossing) to learn more about the projects that will take place this year and to access the application portal. Please forward this opportunity to any students or teachers who would be interested
- **June 18-22:** [MedQuest Camp](#)
- **June 25-28: Inviting Students • Entering Grade 8 through High School to explore..A Two-Dimensional Plotter Model:** Solder a battery power supply; Test Motors: Test DC motors for torque/determine operational voltage. Read current draw; Build an Arduino-controlled simple plotter model. Speed Control: How to use a transistor to control a motor Timer Circuits: Using the 555 Resistance/Capacitance: Dynamic impact of R/C on 555 pulse Ohmmeter: Measuring resistance Counting/Decoding circuits: 4017 CMOS Counter/Driver. Testing Actuators: Using CD/VCR

actuators Stepper motors: Testing and identification Sequencing: Understand how to drive stepper motors with microprocessors Software: C++ programming basics to control Arduino outputs. 1D, 2D and 3D Systems, Take apart a printer and test the motor/driver 3D Printing: Learn the mechanics, electronics and software. Print your design. [Life in 3D flyer](#) . **If you are having trouble signing-up, email mjaeger@eou.edu . Only 4 slots remain!**

- **July 23 - July 27, 2018** . Nuts, Bolts and Thingamajigs - Summer Camp



2018 **The Foundation of the Fabricators & Manufacturers Association, Intl.**

[Nuts, Bolts and Thingamajigs Flyer Information](#) . [Nuts, Bolts and Thingamajigs Camp](#)

[Application](#) Nuts, Bolts and Thingamajigs CAMP and SPONSORS offer educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status.. If you have a disability that requires special considerations in order for you to attend this event contact the NBT CAMP Coordinator, Kalie Davis, at KalieD@portofmorrow.com.

- **August 6-8. Join GO-Healthcare Professionals!**

Northeast Oregon Area Health Education Center, in partnership with GO-STEM and Eastern Oregon University, will host an immersive three-day workshop from **August 6th-8th** to prepare 10 regional high school educators to teach our collegiate-level online health careers course at their schools.

Teachers will collaborate with faculty at Eastern Oregon University to become familiarized with Future Health Professionals of Oregon (FHPO) curriculum, make a plan to deliver the course during the upcoming school year, synergize with other health educators, and join the GO-Healthcare Professionals PLC (Professional Learning Community).

Applicant must have a master's degree to qualify.

*However, if no other master's-prepared instructor is available to teach a health careers course at your school, ample teaching experience in health sciences could potentially substitute for this requirement (upon Eastern Oregon University's discretion).

Contact bhargrove@neoahec.org if you have any questions, or to request a copy of the FHPO syllabus to learn more about the online curriculum.

Apply by June 30th!

<https://docs.google.com/forms/d/e/1FAIpQLSf8p1iSI5BmOcOkkXCuUFJ9BZQZZub-lzGD5P45vbkl7RmjSw/viewform>

More Info: <https://www.neoahec.org/programs/go-healthcare-professionals>

- **October 13:** Share your expertise with educators around the state! OSTA is accepting proposals for Sessions on Friday, October 12 and Workshops on Saturday, October 13th. For details on the strand

descriptions and to submit your proposal, check out their conference webpage at <http://oregonscience.org/OSTA18>.