GO·STEM

Greater Oregon Science Technology Engineering & Math

A SUMMER OF STEM

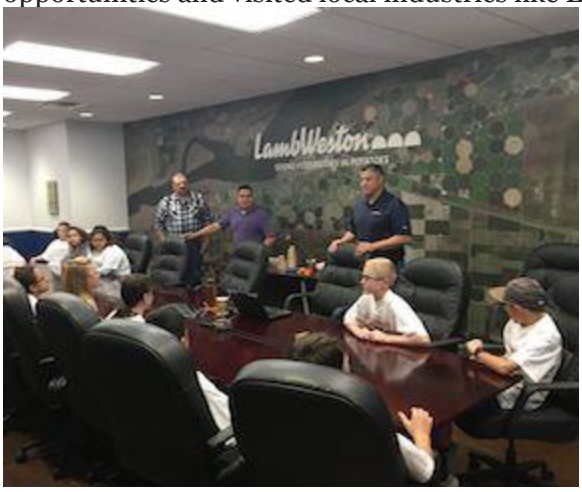
It was a hot summer and not just in terms of temperature! STEM workshops and institutes warmed up students' and teachers' enthusiasm for career and work force skills and knowledge. Here are four stories to give you a taste of the amazing accomplishments of our STEM students and teachers.

Nuts, Bolts and Thingamagigs

Twenty middle school students spent five days at the Workforce Training Center in Boardman learning to do applied STEM work. From concept, design, manufacture and application, students used shop tools, applied electronics equipment, and computer design to build a pallet tray and a speaker amplifier.

Instructors gave campers an opportunity to learn aspects of mechanical control using sophisticated hydraulic, pneumatic and electrical equipment.

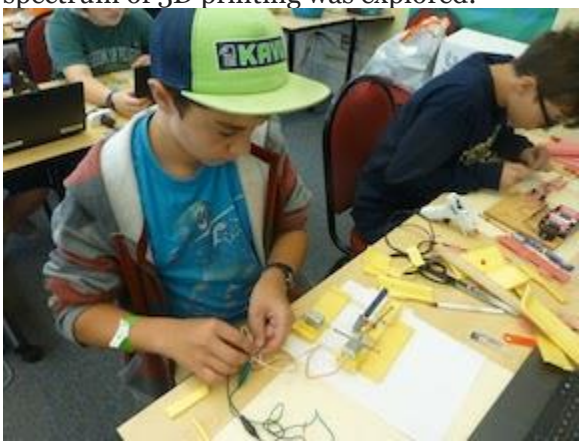
Not only did students learn about the manufacturing process, they also listened to career opportunities and visited local industries like Lamb-Weston and Amazon Web Services.



The completed projects!

Life in 3D

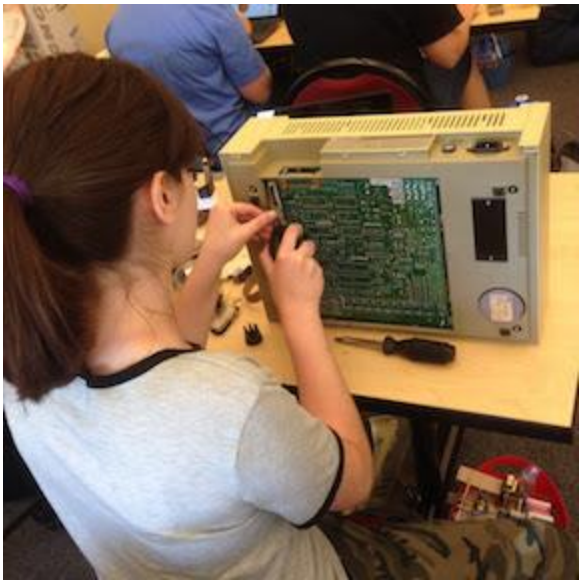
19 High school students from Union and Umatilla County spent a week at Eastern Oregon University learning about 3D printing. From the mechanical and electrical systems that control the hardware to the programming language and software used to design a product, the full spectrum of 3D printing was explored.



Using a simple two-motor model, students recreated a plotter by soldering a power supply, assembling a DIY foam system, and then connecting it with electronic controls.

Attaching a microprocessor to the plotter and changing the variables on the Arduino skectch allowed different designs to be drawn automatically.

Students learned the basics of C++ programming so they could modify their Arduino instructions.



Each student had an opportunity to disassemble a recycled printer to examine how mechanical systems move print heads.

By the end of the workshop students designed their own plastic model using a CAD software system. The culmination was printing their idea on a 3D printer.

Harney County Fair Time!

This September, the High Desert Partnership connected with the Baker Technical Institute to provide fair goers with interactive experiences in STEM careers at the county fair. What might usually be found at the fair would be a booth with brochures, but this experience was something else!

Baker Technical Institute brought its mobile simulation lab for young and old to explore the workings of a front loader, backhoe and excavator. The computer simulators are used to train workers to run the equipment. BTI offers certificates to qualify for operators. Participants at the fair got a chance to dig a simulated hole or move some dirt. Dave Frazey, Heavy Equipment Instructor at BTI made the trip to the fair to run the booth. Maybe this could be a career!

In another area of the booth participants could manipulate a drone and see the possibilities for industrial and agricultural applications.

The younger crowd even got a chance to explore some agricultural technology by assembling dirt babies from nylons, seeds and potting soil. Just add water and it sprouts.

Over 100 kids participated in the simulator and other booths with many return customers. The

popularity of the experience may lead BTI and local school districts to partner in providing additional training for equipment operators.

Summer Institute Prepares High School Educators to Teach Health Careers Course

August 6th-8th marked NEOAHEC's Second Annual GO-Healthcare Professionals Summer Institute at Eastern Oregon University, hosted in partnership with EOU, GO-STEM, and InterMountain ESD. Despite its lengthy name, the institute's purpose is simple: To train regional high school instructors to teach Future Health Professionals of Oregon (FHPO) curriculum in their schools. This exploratory online, dual-credit course

is offered through the Eastern Promise early college program at EOU with a goal of exposing high school students to the world of possibilities in the healthcare industry.

Kyle Pfaffenbach, PhD—an assistant professor with EOU's Physical Activity & Health Department—led the immersive three-day workshop. Dedicating the first two days to onboarding new instructors from La Grande, Joseph, Hood River, The Dalles, and Ione, he oriented them on FHPO's curriculum and showed them the ins and outs of the intuitive online Canvas platform. On Wednesday, seven returning instructors also joined in the mix for the "All-Teacher" session. This included an overview of the latest curriculum and registration updates, along with a special networking lunch to acquaint newbies and veterans.

According to Pfaffenbach, the unique institute "creates a bridge between high school and college that isn't always there." He said it provides an essential opportunity to coach high school teachers on the critical conversations they should be having with students who are interested in health professions before they embark on their higher education journeys.

Kendall Hayes of Joseph Charter School was among the five new teachers who attended this year's institute. She plans to offer FHPO during the upcoming school year, and noted that the workshop was well worth her time investment:

"[The training] will not only help my students make better, informed choices about the paths they will be taking after high school, but also help me as their guidance counselor to stay current on what professional schools are really looking for in terms of applicants."

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 is ***"Oops! I Used the Wrong Resistor!"*** *The unit may be found at: https://sites.google.com/a/eou.edu/stem-stories/greatbach-story)*

Sometimes inventors discover something they weren't intending. That was the case with Wilson Greatbach. He was doing an experiment with an electronic oscillator and used a wrong component. The plans called for a 10,000 ohm resistor and he accidentally used a 1,000,000 ohm resistor. Instead of a tone he had expected, the circuit made a "blip" noise ever second of so. From this accident the idea of a pacemaker was born. Thereafter Wilson's circuit became the mainstay of all implanted pacemakers for decades. In this series of explorations students experiment with Wilson's circuit, learn about resistance in electronics, make circuits with liquid conductors, and are invited into the world of electronics technology

In this STEM unit, Students use a cardboard diagram, springs and components to assemble a circuit like Greatbatch's. They can create the original sounds with a 10,000 ohm resistor and

then insert a 1,000,000 ohm resistor to make a pacemaker. Students make their own resistors by using a pencil lead or with by drawing a resistor on a piece of card stock. By combining graphite, rubbing alcohol, and white glue, a conductor can be made and various values of resistance can be painted onto card stock and then tested. Students are invited to make circuit boards using foil that is lightly glued to card stock. The unwanted material can be cut and peeled to make a circuit trace. Components such as resistors, leds, and switches can be added by using a liquid conductor to make working circuits. Students design boards, construct circuits, and test their creations.

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

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UPCOMING EVENTS

September 26; October 4, 25; and November 15 Climate Change Lecture Series. 7 PM, Natural History Discovery Center, Joseph. See flyer at: http://go-stem.org/professional-development-for-educators/
October 3 GOSTEM Advisory Board Meeting 2-4PM
October 4 & 5 – The statewide STEM Hub Directors and regional CTE coordinators convening in Salem.
October 5 – Renewable Energy Workshop See: Renewable Energy Inquiry and Engineering
October 5 – Manufacturing Day. 8:00- 1:00 Port of Morrow. High School Students welcome (25 maximum). Registration and flyer: Fall 2018 Manufacturing Day Flyer To register visit: https://www.workforceportal.org/students
October 9 – Work begins on the Elementary Science Collaborative year of professional development. The project focuses on increasing time on science in elementary schools and the Next Generation Science Standards. This workshop is open to all elementary teachers. It will be held in La Grande. Substitute reimbursement will be available. The workshop will be the beginning of a one year project. Contact Donna Rainboth for more information. drainbot@eou.edu
October 11 – Chief Science Officers and their mentors are on campus for more

leadership and STEM work. Students and teachers will stay and attend the Dinner with a STEM Pro event that evening.
October 11 – Dinner with a STEM Professional. Watch for your E-Invite coming soon. Greg Barreto, from Barreto Manufacturing will be the keynote speaker this year.
October 12 – Inquiry Outside the Cube conference on statewide inservice day. This event will be held at La Grande HS with K-12 teachers attending from up to seven counties. Multiple concurrent sessions are planned. Flyer and Registration: Registration to IOC
October 11 & 12 – ODE site visit to GO STEM
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.

October 24 – Outdoor School Professional Development. This event is funded through a grant from Grey Family Foundation. It will be held at the Cove Ascension School. There are funds available to cover substitute reimbursement. Teacher who teach Outdoor School are encouraged to attend to receive pre and post Outdoor School lessons and for a view of the Ascension School facilities. Sign up is available on the Ascension School website – http://www.coveascensionschool.com/outdoor-school/

October 25 – Josh Davies Chief Executive Officer, The Center for Work Ethic Development presents: Bring Your 'A' Game, an engaging curriculum for building the seven foundational workplace skills of Work Ethic. Unlike boring online training programs, this curriculum is instructor-led, interactive, and consistently delivers lasting impact. Sage Center, Boardman. Flyer: Fall 2018 Business Education Flyer

October 27- Girls in Science. See http://go-stem.org/7-14-programs/ or the website for Girls in Science at: https://www.neoahec.org/programs/girls-in-science/

View All Events

You are receiving this newsletter because you are a participant in STEM learning in the Greater Oregon STEM Hub region.

Our mailing address is:
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