



Science | Technology | Engineering | Math

# STEM

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## **Publisher's Note**

STEM in the Columbia River Gorge is a fascinating work in progress and this section highlights some of the exciting things students, volunteers and others are accomplishing. A special thank you goes to Christy Christopher, whose effort in organizing the content for this section was invaluable. Also thanks to the staffs of the Hood River News, The Dalles Chronicle and White Salmon Enterprise.

Chelsea Marr, Publisher,  
Hood River News &  
The Dalles Chronicle

# **Table of Contents**

<b>What Is STEM? .....</b>	<b>4</b>
<b>Curiosity Counts .....</b>	<b>6</b>
<b>Rolling Study Hall.....</b>	<b>10</b>
<b>Making Makerspace.....</b>	<b>12</b>
<b>Mobile Learning .....</b>	<b>14</b>
<b>Program Directory .....</b>	<b>15</b>
<b>Go Explore!.....</b>	<b>20</b>
<b>Small school, big ideas .....</b>	<b>22</b>
<b>Innovation and Transformation.....</b>	<b>24</b>
<b>Makerspace .....</b>	<b>26</b>
<b>Flipped Instruction .....</b>	<b>28</b>



# What Is STEM?

*Advocates of project-based learning have a big ally in STEM*

By Christy Christopher

As an acronym, “STEM” stands for science, technology, engineering, and math. But that simplicity masks the real meaning of the term. STEM is all about understanding our world and solving complex problems in ever better ways. STEM connects what’s traditionally been taught in school to how discovery and development happen in the real world. When these components are inte-

grated together, STEM becomes far more than the sum of its parts.

Most people have thoughts on what the four STEM words mean and how they connect, but frequently those ideas are different. Here’s a way to understand STEM:

Math and science are inherently linked. Together they explain how things work. Math contains tools that let you look at a problem from multiple perspectives and make logical conclusions. Science involves making predictions and testing out those hypotheses. Scientific progress can’t really happen without math, and math has less significance without science. For instance, observations, models, hypotheses, statistics, and experiments were all needed together to discover how genes are inherited. And now that people understand inheritance better,



## STEM as you might not know it



There’s nothing quite like a fresh cherry. They’re like candy packaged in a healthy fruit. But just decades ago the only way to eat cherries more than a few days after picking was out of a can. That’s where STEM comes in.

By observing the best time to pick, experimenting with cold water processing, and engineering better sorting lines, farmers, scientific researchers, and processing experts have enabled cherries to stay fresh longer. With certain processes in place, cherries now can taste crisp and delicious for more than a week after picking. This leads to tastier food for people, less waste, and better profits for farmers.



treating and curing genetic diseases have become a real possibility.

Engineering and technology are similarly connected. Engineering is the process of solving problems that have physical limitations. Technology often helps us while doing engineering and can also be the result of the engineering process. Think about how older technologies (scissors, Velcro, and



absorbent chemicals) were surely used together to engineer a slightly newer technology (disposable diapers).

And these two sets of partners – math/science and engineering/technology – support and reinforce each other on the path of understanding and improving our world. This interconnectedness is inspirational while learning and mirrors how progress in STEM fields has occurred throughout history.

STEM is not a new idea. Doctors, researchers, inventors, farmers, engineers, mechanics, and so many others have always used STEM approaches to do their job. But with our world being ever more complex, technology-driven, and global, STEM is more important than ever (and that's unlikely to change). The fastest-growing and highest-paying jobs, at all education levels, rely on STEM. But, even for people in “non-STEM” jobs, having those skills helps them become better critical thinkers and more well-rounded. For instance, a hotel manager who can experiment with different offerings, analyze data about their bookings, and use technology to be more efficient will easily beat a hotel manager without those skills.

What does STEM look like in the classroom? Educators provide real-world context as students explore, investigate, and discover actual phenomena. At first it can be harder to teach this way. Lessons may take longer and be messier than a lecture on one topic. But through that extra effort by teachers, students get more inspired, are challenged to think more creatively, and learn deeper when these naturally integrated concepts are connected in school.

STEM engages our students in critical thinking, problem solving, and genuine exploration of topics that are crucial for understating today's world. Taking a STEM approach to education makes learning more authentic and better prepares our students for the jobs of the present and future.



*Christy Christopher leads the Columbia Gorge STEM Hub. Thanks also to Donna Rainboth, professor of STEM Education at Eastern Oregon University, and Dr. Jason Christopher, data scientist at Miya Labs, who provided valuable input for this article.*

# Curiosity Counts

*For all Georges alike, there is simply no age limit  
to introducing children to STEM*



**By Christa Rude**

**Y**oung children are amazing. For the first few years of their life, they are taking in massive amounts of information that become the building blocks for how they understand the world. Whether it's their first toy, meeting a sibling, seeing their own hand, learning how to smile, coo or make sounds, everything is new. Every experience is an adventure, guided and nurtured by the adults who love them.

Thinking about young children and science, technology, engineering and

math (STEM), may initially seem like a stretch. On the other hand, the first few years of life are where curiosity begins, which is the very foundation of STEM.

Most social scientists who try to understand the development of children

use a variety of domains to categorize the different kinds of growth. Domains are groups of information and knowledge that help us understand more about the whole. When it comes to the development of children, these are the most common domains:

## **Just one click away**

For more information about your child's development check out these websites:

[www.zerotothree.org](http://www.zerotothree.org)

[www.vroom.org](http://www.vroom.org)

[www.fourriversfamily.org](http://www.fourriversfamily.org)

[youththink.net/programs/t2t-parent/](http://youththink.net/programs/t2t-parent/)

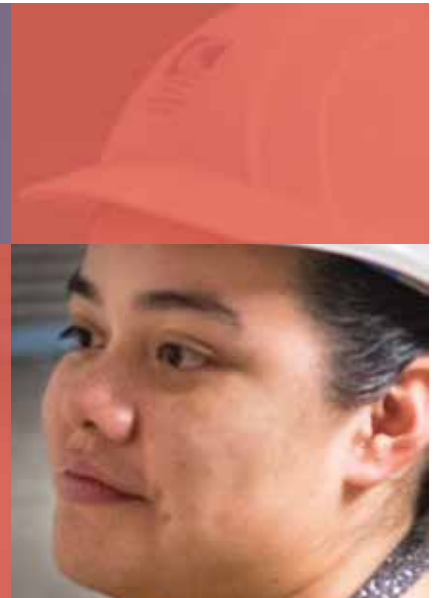


# Youth Success Program

Are you 16-24 and need help launching into a career or training? The CGCC Youth Success Program can help you every step of the way!

If you qualify, you may be eligible for the following services:

- Job placement assistance
- Resume writing and interview skills development
- Financial incentives
- Paid internships
- Occupational training
- Career planning
- Personal career advisors
- Mentoring and leadership development
- College transition support



## Contact:

Matt Fitzpatrick  
Pre-College Pathways  
and Transition Advisor  
(541) 506-6042  
mfitzpatrick@cgcc.edu



For eligibility information,  
please see  
[www.cgcc.edu/ysp](http://www.cgcc.edu/ysp)

Columbia Gorge Community College is an equal opportunity educator and employer. Support for the Youth Success Program is funded through the Workforce Innovation and Opportunity Act, the U.S. Department of Labor and Oregon's Higher Education Coordinating Commission and East Cascades Works.



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- Mountain to Valley: July 13-21
- MacGyver's of the Natural World: Aug 5-8
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Mt. Adams Institute is based in Trout Lake, WA.

[www.cascademountainschool.org](http://www.cascademountainschool.org) | [info@cascademountainschool.org](mailto:info@cascademountainschool.org)

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- **Cognitive Development:** the process of learning and processing information

- **Language Development:** learning how to express ourselves and communicate

- **Social/Emotional Development:** learning to like ourselves and get along with others

- **Physical Development** (this domain has two sections):

Fine motor skill development – learning how to use the small muscles of our fingers and hands in coordination with our eyes to do small things like reach, grasp, release and turning our hands at the wrist

Gross motor skill development – learning to use the bigger muscles in our arms and legs to do things like walk, and run, throw, lift, kick and jump.

These are the four big domains, and they branch into many different milestones and abilities that develop as children grow. One way to think about

it is like a tree. These big domains are like the biggest strongest roots of a tree. The stronger they become and the deeper they go into the ground, the bigger the tree can grow and the more branches it can have. It is the same with children; the more they get to explore and learn, the stronger they become and the more interests (branches) they develop. Recent science has helped us understand that the first years of life are when a lot of this growth happens.

As children develop, they become more and more curious about themselves, their family, their environment and their world. This curiosity is the key to supporting children and building the foundation for skills that support their joy and fulfillment in life. The big question is: What can adults who care for young children do to engage and support them?

1. Be curious yourself. Take time to watch your little one and imagine what it would be like to

## Starting STEM early



- Encourage experimentation – children learn about themselves and their world this way.
- Ask lots of questions and explore – help your child develop their own curiosity.
- Celebrate “mistakes” – that’s how we learn!
- Count, sort, compare sized, and put things in order. This helps children develop mathematical intuition.
- Use technology wisely and minimally, if at all. For children these years are all about bonding with loved ones, learning, language, and discovering themselves.



**As children develop, they become more and more curious about themselves, their family, their environment and their world. This curiosity is the key to supporting children and building the foundation for skills that support their joy and fulfillment in life.**

touch something cold (like an ice cube) for the first time. When you get curious about what your child is experiencing you open the way for them to be curious and learn more about their world.

2. Become a narrator. A narrator is someone who tells the story of what happened or what is happening. When you watch a football game, the sportscaster is narrating the game, telling you while you watch what is happening. Doing this for the young child in your life helps them begin to attach words with objects and experiences and this is how they learn to use words for themselves.
3. Invite your child to help you narrate. As your children grow and develop, they will be able to help you by using words they have learned and adding to the story. Encourage this by starting to tell a story and inviting them to finish it.
4. Make things and tinker. Putting things together, mixing things, creating something, building, and exploring how things work are all excellent ways to help a child develop. The best news is you already have what you need. Stacking plastic storage containers in different ways to see if they stand or fall, mixing a little

water with a little juice, turning an unfolded washcloth into a folded one and then letting it be unfolded again by your child are simple ways to turn normal activities into adventures in curiosity and play that is also learning. The simple and routine parts of each day are new and exciting to a child.

5. Enjoy! Taking the time to see things through a child's eyes helps you connect with the child and appreciate them and the world you share.

Understanding more about how children grow, and getting curious about how your child is seeing their world, will help you find new ways to talk about what is already around you. Using more words to describe the simple routines in your day will give your child strong roots as they learn how to use language. Exploring how simple things laying around your house can become new things expands a child's understanding of their world and feeds curiosity.



*Christa Rude  
is director of  
the Early Learning  
and Parenting Education Hub  
Director, Columbia Gorge  
Education Service District.*





# Rolling Study Hall

*Google program puts wi-fi, tutors on school buses*

Long bus rides for Dufur school students are a lot quieter these days, reports bus driver Josie Turner. That's thanks to a Google project which has installed wi-fi on three buses, given each student in the school a Chromebook, and even provided tutors for the bus rides to help with homework. Google's initiative is called Rolling Study Hall and has been implemented at 16 rural schools across the country that qualify based on the long commutes of students and a lack of internet connectivity for homework.

"It's amazing," said Turner, who is also the transportation supervisor for Dufur School. "There are 60-plus kids on that bus some days, so it can get really loud and rowdy sometimes. With Rolling Study Hall it's quiet." That's because "they're learning something," she said.

Carla Altaras of Google said, "coding isn't something only certain people do. It's something everyone can do."

Google spokesman Jacob Mader added, "Coding gives computers a set of instructions to follow that become programs used for work, fun and to save time."

Alex Sanchez, Google's program manager for the Rolling Study Hall project, said the wi-fi enabled buses only rarely lose connectivity. The eligible bus routes are those of about an hour or more, and the tutor is available for both the morning and afternoon bus routes. "If you think about having a tutor for those two

hours, isn't that amazing?"

About 85 students are reached daily on the wi-fi enabled buses, he said. To keep students on task, the Chromebooks are filtered to prevent access to YouTube, for example, and no streaming is allowed. "We try to keep it focused on academic stuff." The schools themselves can select what they want to filter out, he said.

There are also educational games on the Chromebooks for kids who don't have homework. The program has brought "really good feedback," Sanchez said.

Across the country, early results have shown students on Rolling Study Halls have "significantly" improved reading and math scores, as well as more confidence — and, in a perhaps surprising twist, school attendance has improved.

Isabelle Shaw, a sixth grader, has used the bus ride to do every type of homework she has except math. "I write down my notes and stuff that I have to do for a story."

She said, "I think it works really well, especially on sports bus rides. They can be really long ones.... It just helps get your stuff done because I have basketball practice and stuff and I don't have time to get anything done."

Now, she just hops on the bus.

## Fast Facts

High school students have a chance to explore career pathways, schools find a new way to engage students and connect post-secondary education with careers, and businesses are provided with a population of skilled workers to meet their needs.

See: <https://www.dol.gov/apprenticeship/high-school/>

## Fast Facts

The Naval Research Laboratory (NRL) partners with colleges and universities to provide summer internships to undergraduate students. Interns can undertake projects related to defense, including materials science and engineering, chemical and biochemical engineering, aerospace engineering, physics, synthetic chemistry, biochemistry, molecular biology, computer science, mathematics, mechanical engineering, and electrical engineering.

See: <https://www.nrl.navy.mil/careers/students/>

## Fast Facts

- Oregon dairies are programming robotics to milk and monitor the health of cows.
- Oregon vineyards are using drones to assess optimum harvest time.
- Oregon growers are planting crop varieties developed by genomic selection plant breeding.





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- Business of Babysitting
- 3-D Printing
- Protobot Mini Robot Camp

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[extension.oregonstate.edu/4h/wasco/camps-clinics](http://extension.oregonstate.edu/4h/wasco/camps-clinics)



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# Making Makerspace

*People are carving out physical spaces and pooling resources so they can tinker with hobbies and share ideas*

By Dylan T. McManus

“Makerspace,” you’ve probably heard the word mentioned in passing, described in a podcast, or discussed among peers, but what exactly does it mean? As a maker of such spaces, the most common question from the curious is: “What exactly is a Makerspace?” Simply put, a Makerspace - as the name suggests - is a space where people experiment with ideas or work toward making something. What is “made” is up to the user, but the space itself functions as the location to house the equipment and supplies, allowing individuals to explore the processes of creating something.

Born in the first years of the 21st Century, the Makerspace concept grew out of an agreement among tech industry professionals who needed physical spaces to tinker with technology and hobbies. With space being at a premium in urban environments, people pooled resources to build collective laboratories, providing an environment for users to come and work on projects. Past inventors may have had private basement labs, or hobbyists their own shops in garages. A Makerspace functions as a community laboratory. By pooling resources it’s possible to obtain the square feet and equipment necessary to build a new 3D printer or experiment with robotics.

The original members of this “Maker Movement” found these spaces - much like art studios of



the past - functioned as intellectual incubators. Users bounce ideas off one another, share skills, and provide encouragement resulting in better products (objects) and more innovative solutions. Technology

we’ve grown familiar with in recent years was born in such environments, including the desktop 3D printers, protective cases for cell phones, and soda dispensers that offer dozens of combinations of

cola simply by touching the screen. By building spaces where individuals have access to equipment and a community of knowledgeable colleagues, Makerspaces have become local sources for creativity, innovation and business incubation.

As Makerspaces evolved, so too did the world of education, as teachers and professors realized the physical and intellectual gaps in our nation's education system. Educators realized some students who were excelling in the areas of theory, memorization and repetition, were lacking in the areas of problem solving, creativity, innovation and hands-on experimentation. The push to modernize our education system resulted in a de-emphasis of individual creativity and risk taking - at the very time a new economy was demanding out-of-the-box thinkers.

The rush toward standardization and testing had pushed aside hands-on-learning environments. Education leaders realized it was equally important for a child to learn to count to 100 at age 5 as it was for that same child to experiment at making the best paper airplane; that while teen AP students should know the periodic table, they also should be empowered to



pick up a soldering iron and experiment with the act of making. Our nation's children were losing the ability to "make", and it adversely impacted those graduating into the global workforce. Memorization and class time are critical to educating our youth, just as the act of "learning by doing" is also an essential component of a student's education. Makerspaces and maker-based learning initiatives fill this hole by providing youth with an environment they can learn through play, experimentation and the act

of creation. Maker-based learning environments provide the space, equipment and community for this critical form of hands-on learning to take place.



*Dylan T. McManus is a fine artist and assistant director of The Dalles-Wasco County Public Library.*

## The making of one Gorge space



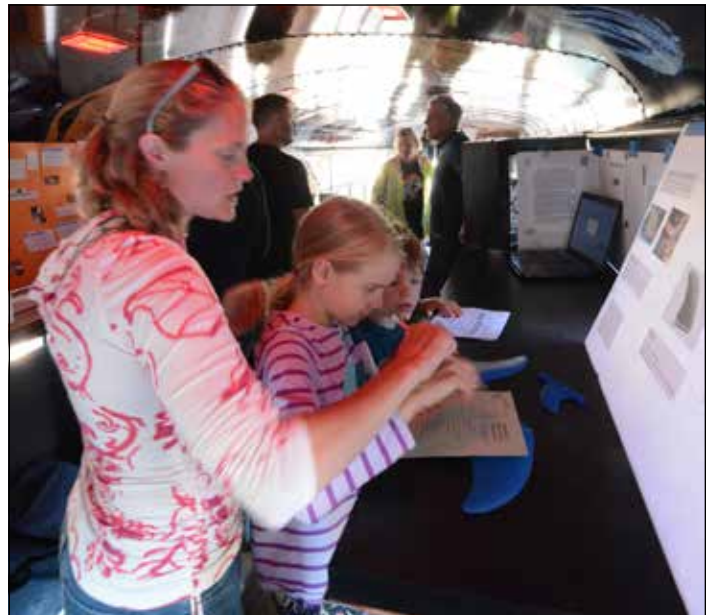
With a little more than a decade of history behind the Maker Movement, the benefits have been noticeable as spaces pop up on college campuses, in abandoned warehouses, at high schools and in local libraries. The importance of the movement was acknowledged on a national level in 2014, when the White House hosted its first-ever Maker Faire. This event hosted maker initiatives from throughout the country and gave birth to the U.S. 2020 initiative designed to support and acknowledge maker initiatives nationwide. Because of the hard work taking place in our community, in 2017 The Dalles was acknowledged as a U.S. 2020 award recipient. It is with this history in mind, and visions for an exciting future, that those of us at The Dalles-Wasco County Public Library are excited to see the completion of Wasco County's first public makerspace - The Gorge Forge. The space will be located the library's upper mezzanine and open to members of the community to come and learn about the maker movement.

The space will be open before the end of this academic year, thanks to funding from sponsors at Google, The Oregon Cultural Trust, and The Dalles Library Foundation, and with the dedicated support of partner agencies like the Gorge S.T.E.M. Hub, The Gorge Tech Alliance and Wasco County 4H. The plan is to continue to expand maker-based learning within our community, including growing our Maker in Residence, offering Women in Engineering days for young girls, and further developing our maker-based programming for both youth and adults.



# Mobile Learning

*The Gorge Fab Bus opens science and technology doors for young students from all backgrounds*



By Jimena Gonzaga

The Hood River County School District has transformed an old yellow school bus into the “HRCSD Gorge Fab Bus” - a light blue, mobile, hi-tech learning space where students from across the Gorge experiment with science, technology, engineering, mathematics and creative design.

The bus allows students throughout Hood River County to have access to curriculum in computer programming and robotics. Start-up grant funding was provided by the Oregon-based Mills-Davis Foundation. And roll-up-your-sleeves initiative was spearheaded by Hood River Valley High School engineering teacher Jeff Blackman, who led the transformation effort along with a dedicated number of engineering students.

The target of rolling out the HRCSD Gorge Fab Bus in the 2018-19 school year was kicked off this past summer with the infusion of the bus in the school district’s summer school programs. The goal for 2018-19 is to roll the Gorge Fab Bus - with its robots, laser and vinyl cutters, and 3D printers - to all HRCSD elementary schools. So far, the Gorge Fab Bus has brought introduction to programming, and building lessons to Parkdale Elementary, Mid Valley Elementary, May Street Elementary,

and Westside Elementary, clocking in more than 7,000 hours of student contact time.

A typical visit occurred at the Migrant Summer School program at Westside Elementary School this past summer for two weeks. Three bilingual students, Jimena Gonzaga, Fernando Rodriguez and Aunika Yasui, taught grades 2-6 about beginners programming and the engineering process.

## Get on the bus

To learn more about the Gorge Fab Bus, including lesson plans for elementary students, visit [www.hoodriver.k12.or.us/Page/8965](http://www.hoodriver.k12.or.us/Page/8965)

# STEM Spaces & Resources for Families

(NOTE: If an organization serves only certain counties, those are listed. Primary counties served are in bold.)

## **Bonneville Dam & Hatchery (Cascade Locks)**

Rangers and volunteer staff at the visitor centers offer tours and answer questions about hydroelectric power, dam construction, life-cycles of salmon, and more. Park ranger maintained educational geocaches.

Contact:

web: [www.nwp.usace.army.mil/bonneville/](http://www.nwp.usace.army.mil/bonneville/)  
phone: 541-374-8820

## **Columbia Gorge Discovery Center (The Dalles)**

Interpretive museum featuring cultural and natural history exhibits, native plant nature walks, and a live raptor program.

Contact:

web: [www.gorgediscovery.org](http://www.gorgediscovery.org)  
phone: 541-296-8600

## **Columbia Riverkeeper Nichols Natural Area: Photo Post Project (Hood River)**

### **Hood River County Library**

Makerspace with regular programming & STEM Family Kits available for checkout. Counties: **H** K Sh Sk

Contact:

web: [www.hoodriverlibrary.org](http://www.hoodriverlibrary.org)  
phone: 541-386-2535

### **Goldendale Observatory**

Free presentations include outdoor telescope viewing and indoor classroom sessions at Maryhill Stonehenge Visitor Center.

Contact:

web: [www.goldendaleobservatory.com](http://www.goldendaleobservatory.com)  
voicemail: 509-773-3141

### **Gorge Makerspace (White Salmon)**

Open studio time on Tuesdays and Thursdays and several topic-specific summer camps.

Contact:

web: [www.gorgemakerspace.com](http://www.gorgemakerspace.com)  
phone: 509-808-1781

### **National Forests:**

#### **Mt. Hood National Forest (Hood River County) and Gifford Pinchot National Forest (Klickitat, Skamania)**

Go camping, hiking, or visit a ranger station to learn more about nature and science.

Contact:

web: [www.fs.usda.gov/mthood](http://www.fs.usda.gov/mthood)  
web: [www.fs.usda.gov/giffordpinchot/](http://www.fs.usda.gov/giffordpinchot/)  
phone: 509-395-3400 (Mt Adams Ranger District in Trout Lake, WA)

### **The Dalles Dam**

Visitor center features a variety of interactive displays, a short film on the benefits and impacts of the dam.

Contact:

web: [www.nwp.usace.army.mil/The-Dalles/](http://www.nwp.usace.army.mil/The-Dalles/)  
phone: 541-296-9778

### **The Dalles-Wasco County Library**

Makerspace with digital fabrication tools including: laser printer, laser etcher, and more. Hands on ac-



tivities for young children and STEM programs for many ages. Numerous STEM Family Kits and technology resources for educators. Counties: H K Sh Sk **W**

Contact:

web: [www.wascocountylibrary.com/](http://www.wascocountylibrary.com/)  
phone: 541-296-2815

### **WAAAM (Hood River)**

Museum featuring one of the largest collections of still-flying antique aeroplanes and still-driving antique automobiles.

Contact:

web: [www.waaamuseum.org](http://www.waaamuseum.org)  
phone: 541-308-1600

### **Wonderworks Children's Museum (The Dalles)**

Exhibits and creative play spaces geared towards kids ages 0-8, but open to all ages.

Contact:

web: [www.wonderworkschildrensmuseum.org](http://www.wonderworkschildrensmuseum.org)  
phone: 541-980-5922



# STEM Summer & Out

(NOTE: If an organization serves only certain counties, those are listed. Primary counties served are in bold.)

## **Cascade Mountain School (Trout Lake & Hood River)**

Day and overnight summer camps in Trout Lake on topics including making and outdoor leadership.

Contact:  
web: [www.cascademountain-school.org](http://www.cascademountain-school.org)  
phone: 339-545-1841

## **Civil Air Patrol (Hood River)**

Cadet program for ages 12-20 includes aerospace education, leadership training, physical fitness, and character development.

Counties: **H** K Sh Sk W  
Contact:  
web: [www.gorgecap.org](http://www.gorgecap.org)

## **Columbia Gorge STEM Hub**

Collective impact organization devoted to expanding STEM opportunities in the Gorge. Key efforts include regional collaboration, student programs, and teacher support.

Counties: **H K Sh Sk W**  
Contact:

web: [www.gorgestem.org](http://www.gorgestem.org)  
phone: 541-296-2046

## **Community Youth Center (White Salmon)**

After school activities, workshops, opportunities to provide community service, and more. Youth also participate in maintaining a community garden.

Counties: H **K** Sh Sk W  
Contact:  
web: [www.wgap.ws/home/Youth-Center](http://www.wgap.ws/home/Youth-Center)  
phone: 509-493-4233

## **Gorge Ecology Institute (Hood River)**

Place-based and experiential summer camps and after-school programs for elementary students. High school students can apply to be mentors.

Counties: **H K Sh Sk W**  
Contact:  
web: [www.gorgeecology.org](http://www.gorgeecology.org)  
phone: 541-387-2274

## **Gorge Rocket Club**

Monthly model rocket launches in Parkdale. Interested adults or families can sign up through Hood River Community Education.

Counties: **H** K Sh Sk W  
Contact:  
web: [www.gorgerocketclub.com](http://www.gorgerocketclub.com)  
phone: 509-637-3992

## **Gorge Technology Alliance**

Leads several STEM efforts in the Gorge including: FIRST LEGO Robotics, Gorge Wind Challenge, STEM Career Day, monthly Geek Lunches, Women in STEM initiative and networking events.

Counties: **H K Sh Sk W**  
Contact:  
web: [crgta.org/](http://crgta.org/)  
phone: 541-296-2266

## **Gorge Works**

Paid summer internship program, including many roles in STEM fields.

Contact:  
web: [gorgeworks.com/](http://gorgeworks.com/)  
phone: 541-298-4148

## **Hood River Community Education (Hood River)**

Classes for youth and adults. Topics include: maker learning, rocketry, CAD and woodworking.

Counties: **H** K Sh Sk W  
Contact:  
web: [www.hrcommunityed.org](http://www.hrcommunityed.org)  
phone: 541-386-2055

## **FIRST Robotics**

Four levels of robotics teams and competitions, from kindergarten



# of School Programs

through high school. Many teams are school-affiliated, but they can also be coached independently.

Contact:

web: [gorgerobotics.org](http://gorgerobotics.org)

phone: 541-296-2266

## Let's Get Out (Hood River)

A project of Hood River Community Education offering adventure sports and outdoor exploration camps in the summer.

Counties: **H K Sh Sk W**



Contact:

web: [www.lets-get-out.com/camps/](http://www.lets-get-out.com/camps/)

## OSU Extension - Hood River

STEM-related programs include Master Gardeners, Small Farms, and 4-H. Other programs: Oregon Open Campus and Food Safety.

Counties: **H**

Contact:

web: extension.

[oregonstate.edu/hoodriver](http://oregonstate.edu/hoodriver)

phone: 541-386-3343

## OSU Extension - Wasco County

Programs include food safety, nutrition education, gardening, STEM Camps and afterschool, and 4-H.

Counties: **W**

Contact:

web: extension.

[oregonstate.edu/wasco](http://oregonstate.edu/wasco)

phone: 541-296-5494

## Wasco County 4-H STEM Programming

(Maupin, The Dalles)

Programs available throughout year and summer in several STEM topics including: robotics, computer coding, maker activities, career awareness, textiles, and more.

Counties: **H K Sh Sk W**

Contact:

web: [extension.oregonstate.edu/4h/wasco/stem](http://extension.oregonstate.edu/4h/wasco/stem)

[oregonstate.edu/4h/wasco/stem](http://oregonstate.edu/4h/wasco/stem)

phone: 541-296-5494

## VEX Robotics

Two robotics programs: IQ for grades 4-8 and EDR for high school. Kids work in teams throughout the fall and compete against others in the winter. Can be school-sponsored or independent teams. Currently teams in The Dalles and Klickitat County.

Contact:

web: [www.vexrobotics.com](http://www.vexrobotics.com)

email: [Lu.Seapy@oregonstate.edu](mailto:Lu.Seapy@oregonstate.edu)

phone: 541-296-5494

## Annual STEM Community Events

- Fall - Robotics season begins (FIRST & VEX, K-12)
- December - Regional FIRST and VEX Robotics Tournaments (Hood River & The Dalles)
- January - ROV Submersible robotics (The Dalles, White Salmon)
- February - Introduce a Girl to Engineering (Hood River, The Dalles, White Salmon)
- February - Lunch with a STEM Pro (Hood River)
- March - Gorge Wind Challenge (The Dalles, grades 6-12)
- March - March for Science (White Salmon)
- April - STEM Career Day (The Dalles, grade 7)
- June - Gorge STEM Fair (Hood River)
- June - Nichols Natural Area Work Party - Columbia River-keeper (Hood River)
- August - STEM Educator Symposium & Superquest training (The Dalles)
- Throughout - STEM Nights at local elementary schools, Maker clubs

Did we miss something?  
Please contact the Columbia Gorge STEM Hub to let us know:  
[gorgestem@cgesd.k12.or.us](mailto:gorgestem@cgesd.k12.or.us)



# STEM Programs at Local Schools

*All local schools have multiple STEM opportunities for students.*

*These include classes, clubs, and after-school programs. The following list gives a snapshot of STEM-related opportunities in each district. For more information, contact your local principal.*

## **Hood River County School District**

**Elementary schools:** Maker Clubs; ExCEL after school program; First Robotics clubs; STEM Nights.

**Middle schools:** FUSE Digital Design & Making classes in Engineering; FIRST FLL Robotics Teams, Chief Science Officers.

**High School:** Robotics courses; Career & Technical Education (CTE) courses; AP & dual credit science & math classes; numerous science & STEM-related clubs.

## **North Wasco County School District**

**Elementary schools:** Maker Clubs, school gardens/greenhouse, robotics.

**Middle school:** Science & engineering events, STEAM class elective, robotics.

**High School:** 4H, Gardening Club & school garden, Robotics, AP science & math classes.

## **Sherman County School District**

**Elementary school:** robotics; school garden/greenhouse; 4H

**Middle school & high school:** robotics; 4H & FFA; gaming club; maker/prototyping equipment

## **South Wasco County School District**

**Elementary:** STEM-related field trips

**High School:** robotics; school garden/greenhouse; science & engineering events

Did we miss something? Please contact the Columbia Gorge STEM Hub to let us know: [gorgestem@cgesd.k12.or.us](mailto:gorgestem@cgesd.k12.or.us)



Hood River Valley School District has two middle schools, each with unique STEM opportunities. Wy'east Middle School has additional after school STEM programs available due to a grant. Hood River Middle School has an additional STEM program focused on Environmental Science, called Food and Conservation Science. The program spends time on the Engineering Design process but focuses on the life sciences. Whereas, the school's engineering programs focus on applied physical sciences.

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*"When we are not out playing  
in the environment,  
we are working for the environment"*



# Go Explore!

*A Hood River Valley High School class offers an in-depth, relevant, fun study of computer science*

By Allison Thompson and Alexandra Buckles

**W**e were born into the age of technology. Ever since we can remember, there have been cell phones, flat screens and innovation. Social media is second nature. We're pros at finding information on the internet. But before this school year, we haven't known much about how technology works.

This year at HRV there is a new class, Exploring Computer Science. It is a fun, informational and inspiring look into the world of computer science, and what can be done with this amazingly mallea-



**Allison Thompson**

"Exploring Computer Science has been a very inspiring class. After I was introduced to concepts of computer science, I became interested in learning more on my own. This winter I began to teach myself C++ and Java, two common programming languages. I also recently joined FRC Robotics as a programmer. Learning to program is like infinite creative problem-solving. I like the challenge of starting off knowing next to nothing about what I want to accomplish. Now, I've decided to study computer science, as well as physics, in college. I am excited to learn more and become better at programming. I am not sure what I want to do as a career, but I would love to be in the creative realm of computer science, such as graphics, software engineering, or maybe even game design. I am glad that Exploring Computer Science has been here to inspire me; I hope the class and others like it inspire others in the coming years."

ble medium. Computer science can sound very intimidating to people. They hear those two words and think about nerds, calculus and boring details. However, the approach we take to learn computer science concepts in class is relevant and easy to grasp.

The class provides a very important foundation of computer science knowledge that most HRV students lack. We use technology constantly, however, students are rarely taught how it functions. It is fascinating to learn about how the things we use every day operate.

Computer science is also very valuable to young women like us. The STEM and computer science field has always been, and still is, very male-dominated and predominantly white. It can be intimidating for young women to pursue careers where they feel outnumbered. There are many stereotypes that need to be dispelled so women and people of color feel welcome in STEM fields. STEM is an option for everyone, but when people

**The creative freedom we have with projects is a very motivating environment. It allows every student to make computer science relevant in their lives.**

## Free is a good price

One of the best things about programming and computer science is the huge cache of information available for free online. If you learn the right places to look, it's possible to accomplish nearly anything you want with programming. Anyone can begin programming just by typing something as simple as "beginning Java tutorial" into Google and hitting search. The software is free, and so are many quality tutorials. Go explore!

think that an entire field doesn't apply to them, they likely will not pursue it as a career.

Classes like Exploring Computer Science cut down on exclusivity in computer science. The class creates a welcoming environment for students of all abilities and starts with foundational knowledge so that no one is left behind. Nothing is assumed to be known, and the class is focused on learning skills rather than memorization of facts. Everything becomes independent after a while, so students can focus on the areas that intrigue them. We were instantly enamored with how fun and creative computer science can be when class started back in September. Now, as seniors approaching our freshman year of college, we might be studying it!

We start class by discussing or journaling about a question related to what we are doing that day. So far this year we've learned to work with HTML and CSS to make web pages, as well as with a very basic programming language called Scratch. In our HTML unit, we learned the basics of HTML, then our teacher, Ms. Foley, let us get creative and make our own multi-page websites. The creative freedom we have with projects is a very motivating environment. It allows every student to make computer science relevant in their lives. With



*Allison Thompson and Alexandra Buckles, seniors at Hood River Valley High School, are newfound advocates of all things that are STEM.*

Scratch, we learn to tackle projects together, similar to a lot of work environments where programmers need to function as a team.

Fourth period is always something to look forward to. Whatever we're working on, it's always interesting. Exploring Computer Science has been fun and has given us direction. Technology has a guaranteed place in our future. People can use it in infinite creative and practical ways. Exploring Computer Science has begun to give us the tools to use computer science to explore the world around us, as well as introduced us to the field in a nonexclusive way. It's a class and a topic that is influential, and instrumental to our future - and super fun.



## Alexandra Buckles

"Computer science knowledge and skills will be useful in the business world of product design - the college program I plan to pursue next fall at the University of Oregon, if all goes right. By having a foundation of computer science, I already feel like I have an advantage. As a woman who wants to enter the world of small business and entrepreneurship, my knowledge of computer science is invaluable. I don't know what I'll be designing in the future, so knowing a variety of programming skills also is important. Being able to do things for oneself is empowering, and it can be cost-efficient."

## Tap these resources

Amy Foley and Kathryn Davis teach Exploring Computer Science at Hood River Valley High School. For more information about their classes you can contact them at [amy.foley@hoodriver.k12.or.us](mailto:amy.foley@hoodriver.k12.or.us) or [kathryn.davis@hoodriver.k12.or.us](mailto:kathryn.davis@hoodriver.k12.or.us). The class syllabus can be found on the Foley's homepage at: [www.hoodriver.k12.or.us/Page/914](http://www.hoodriver.k12.or.us/Page/914)



# Small school, big ideas

*Skamania School celebrates state award,  
presents student STEM activities*

**S**kamania is a small school with a big vision. That vision - to integrate STEM studies throughout its curriculum and to share strategies to support other small, rural schools statewide - was recognized recently by the Office of Superintendent of Public Instruction (OSPI). It awarded the district a \$20,000 STEM Lighthouse grant for the 2018-19 school year - one of only six awarded in the state - for Skamania's innovative practices and ability to inspire students to study STEM.

The Lighthouse grant was presented by OSPI STEM program supervisor Dan Tedor in a ceremony preceded by STEM activities - led by Skamania students. The student-led presentations included: Science,

grades 7-8, Circulation and the heart; Technology, grades 5-6, Air pressure; Engineering, grades 3-4, Wind and making an anemometer; and Math, grades K-2, Weather and climate.

Skamania School is surrounded by educational opportunities for staff and students to explore, enabling the study of natural resources and their interrelationships with Gorge residents. Staff have completed many hours of STEM training and are now creating a sustainable and integrated STEM program that gives students opportunities to work on real-world problems in their own back yards. These classroom and schoolwide project-based learning activities are integrated, career-connected, locally relevant

and field-focused. They develop students' skills as they collaborate, communicate, and think creatively and critically.

Plans include transforming a 38-acre tract of undeveloped land owned by the school district into an outdoor learning lab and possible outdoor school for use by students in Skamania and other districts, reflecting the school's motto, "The Gorge is our classroom—Ambassadors to the Gorge."

The success of the Skamania program is aided by the commitment of partner agencies, including U.S. Fish & Wildlife, Southwest Washington STEM Network, Pacific Education Institute, and the Department of Natural Resources.

## Fast Facts

America's STEM strategy for the next five years:

- Build Strong Foundations for STEM Literacy by ensuring that every American has the opportunity to master basic STEM concepts, including computational thinking, and to become digitally literate.
- Increase Diversity, Equity, and Inclusion in STEM and provide all Americans with lifelong access to high-quality STEM education, especially those historically underserved and underrepresented in STEM fields and employment.
- Prepare the STEM Workforce for the Future—both college-educated STEM practitioners and those working in skilled trades that do not require a four-year degree—by creating authentic learning experiences that encourage and prepare learners to pursue STEM careers

## Fast Facts

The U.S. Patent and Trademark Office offers a summer development experience to help K-12 educators become more knowledgeable about how the invention process works and the important role that intellectual property—patents, trademarks, copyrights, and trade secrets— plays in innovation and entrepreneurship. See: <https://www.uspto.gov/learning-and-resources/outreach->





# Innovation and Transformation

*Purposeful teamwork, trial and error help shape tomorrow's scientists and engineers*

By Lu Seapy

While Hollywood thrills us with automated robots taking over everything in our lives and individuals voice concern about mechanization and job loss, robotics education is steaming ahead and gaining in popularity each year. Individuals may question the role of robotics in education, but robotics and coding programs thrive in Hood River and Wasco counties.

If our global economy is advancing toward a fully mechanized and digital world, students need to be prepared to face those challenges with the skills and solid ethical foundation to use technology appropriately and in ways that will better the planet. The robotics revolution is happening, and it is important that our children understand and make the most of it.

Benefits of Teaching Robotics and Computer Science

Robotics introduces broad, multi-disciplinary concepts, including ways to think about technology and how it will continue to impact society. In Lego Robotics each year, students isolate a challenge facing their community. This year, students in The Dalles tackled subjects such as human depression, maximizing food production using hydroponics, and using technology to stay healthy and fit.

Robotics helps expose students to

skills necessary to thrive in a rapidly-changing world—including ways of thinking, questioning, and working together.

In studying robotics, students work together as teams with individuals serving a clear purpose. One person might work as an engineer, wiring technician, programmer, driver, coach or notebook editor. The specialized skills open doors for students and provide opportunities for college scholarships.

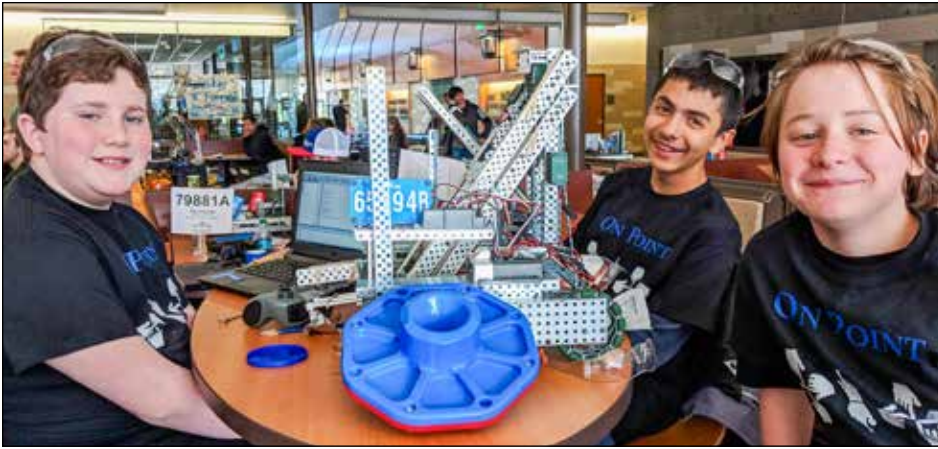
“I like being able to do a little of everything. I’ve rewired the robot, built a little, programmed a little and wrote the engineering notebook. Robotics

prepares you for jobs in science and engineering” said robotics student Frances Fuller.

Key to success in robotics is using computational thinking and problem solving. Computational thinking breaks down larger problems into smaller bits that can be tackled step-by-step. Students in robotics receive direct instruction in how to isolate problems and create systems for overcoming them - a key employability skill directly transferable to any job.

Finally, robotics teaches grit. Robotics student Cameron Dietz calls it a life lesson. “We hope for the best and plan for the worst. I’ve learned





that if something goes wrong, we have to fix it. We plan for power failures, battery issues, motor loss. You never know what could happen.”

When students have edited code multiple times or had difficulty with mechanisms failing repeatedly, the frustration is palpable. Pushing children to keep trying, failing, and learning is the process of improvement. It teaches students to identify problems and come up with unique solutions - essential traits for the future.

What does robotics education look like in the Columbia River Gorge?

Some Gorge schools feature in-school robotics classes for their students (Hood River Valley High, Wahtonka Charter School, Dufur, and The Dalles Middle School). Other students participate in robotics through after-school programming, such as at The Dalles High School, some middle schools and at elementary schools.

With FIRST LEGO™ League (FLL) Robotics, elementary and middle school students research, design, and program robots to complete missions based on a changing mission theme. To compete in the tournament, students must construct a unique robot using sound engineering principles complete with arms and attachments capable of moving levers, objects, and mission components around a set playing field.

In The Dalles and White Salmon, middle-school aged students can also

explore submersible robots through the Marine Advanced Technology Education (MATE) underwater ROV programs. These robots feature a PVC frame and bilge pump motors to create a robot capable of completing missions in an underwater environment. Students hand solder circuit boards, waterproof and wire motors, and study hydrodynamics.

Robotics difficulty increases as students move to the high school level with FIRST® Tech Challenge (FTC), FIRST® Robotics Challenge (FRC), and VEX Robotics. Some middle schools also participate in FTC robotics.

In these programs, participants build robots out of metal components, configure and solder wiring, and use a more complicated Java or C-based programming language. Electrical engineering and mechanical engineering skills are key to success as robots operate in a pre-programmed autonomous mode and a driver-controlled period using remotes.



*Lu Seapy  
is STEM*

*Outreach Program  
Coordinator for Wasco County  
4-H Youth Development, through  
the Oregon State University  
Extension Service.*



## How to get involved in Robotics

Volunteers are always welcome to help chaperone, mentor, or assist with the many tournaments and practices. People interested in learning more about robotics or sponsoring a team, can contact [lu.seapy@oregonstate.edu](mailto:lu.seapy@oregonstate.edu), or Jessica Metta ([jessica@mcedd.org](mailto:jessica@mcedd.org)) for more information.

If your child is interested in joining a competitive robotics program, parent volunteering is key as these programs are volunteer driven. No prior experience is necessary.

Contact:

- Lu Seapy, (Wasco County), [Lu.Seapy@oregonstate.edu](mailto:Lu.Seapy@oregonstate.edu), 541-296-5494.
- Jeff Blackman, (Hood River Valley High School), [jeff.blackman@hoodriver.k12.or.us](mailto:jeff.blackman@hoodriver.k12.or.us), 541-386-4500
- Jack Perrin, (White Salmon), [jack@gorgemakerspace.com](mailto:jack@gorgemakerspace.com), 509-808-1781
- Patrick Getchis, (Wy'East Middle School) [patrick.getchis@hoodriver.k12.or.us](mailto:patrick.getchis@hoodriver.k12.or.us)
- Jessica Metta of the Gorge Technology Alliance can help guide interested parents at other schools to the best likely first contact. [jessica@crgta.org](mailto:jessica@crgta.org) or 541-296-2266





# Makerspace

*Communities of creators and inventors energetically tinker at will in White Salmon*

By Jack Perrin

**A**t nine years old, Jaden is Gorge MakerSpace's most prolific, reliable and unpredictable member. You never know what Jaden is going to make when he comes to the makerspace. Often, he doesn't know either. And that's the beauty of the situation. He might convert old cross country skis into a sled, assemble a toy electric car, or invent a self-propelled skateboard for his cat, Emilio. Jaden comes to the makerspace because he thrives on having big chunks of time to deep-dive into projects that require a lot of engineering and fancy tools, like a 3D printer.

Meanwhile, Helen comes weekly to the MakerSpace knowing exactly what she wants to make and wastes no time assembling the needed materials and tools to execute her vision. She likes cutting finger-jointed wooden boxes on the laser cutter, designing a better claw for her underwater robot, and most of all: hacking. Thanks to one of our talented coaches, she knows how to remotely break into the computers at the makerspace. Her favorite trick is

to program them to play silly audio messages in an eerie computer-generated voice that startles everyone.

Jaden and Helen both thrive in an environment that supports and nurtures big projects. I taught physical science for years in middle and high school, utilizing project-based learning (PBL), but there was never enough time in the school schedule to fully reap all the benefits of PBL.

Then five years ago I attended my first Maker Faire, an outdoor event featuring hundreds of interactive demonstrations. Everywhere you turned, people were involved in making wickedly cool stuff, and all of it STEM related. I soon learned that a makerspace was where you got to do that all the time. I came home from the fair and decided that I would open the Columbia Gorge's first makerspace.

At our makerspace learners have from 2 hours to a week (or more, if needed) to complete their projects. With more time, makers are not just making more stuff. They're going through a cycle of imagining and building



known as the engineering-design process. Along the way they ask themselves “what, exactly, is the challenge I’m trying to solve?” They learn ways of illustrating their ideas to others, whether it be a rough hand sketch, or a 3D model produced with a CAD program.

Rarely do plans for amazing inventions go as planned: things break and fall apart with appalling regularity at the makerspace. These are moments for reflection and re-evaluation. With guidance, some invaluable life lessons can occur - makers learn to be resilient, to overcome failure. They (humbly) experience the benefits of starting over. The second and third tries often go faster and better than their first failure.

More importantly, makers take full ownership of the process and experience. They’re motivated less by the judgement of others and more by the satisfaction and pride they feel when they successfully bring a project to completion.

Makerspaces provide more than just tools and coaching. They host communities of creators and inventors. On some days ours is literally buzzing with energy: makers in small groups offering advice and inspiration to others. Innovations and breakthroughs are contagious, and participants are more likely to learn something new from a peer than from a how-to video or a even a live coach.

As a community makerspace we don’t separate people according to age or interests. The high school robotics team works right alongside the 6th grade team. Multi-generational families come and build birdhouses together. We like to mix media as well: LEDs on clothing, metal and wood for go-karts, and purple glitter paint for a finishing touch.

Elements of our program used to be called vo-tech or shop, but the genius of a makerspace is that it’s not just for people labelled as handy or crafty, but for the full range of intelligences and talents.

I invite you to come and see for yourself what a mak-



erspace can be, and to discover the maker in you. Our Open Studio on Tuesday and Thursdays from 3:30 p.m. to 5:30 p.m. is frequented mostly by kids. On March 20th, 6:00-8:00 p.m., we’re hosting an open house for adult makers and their families.

Gorge MakerSpace is a project of the WGAP, a 501 c 3, and welcomes donations of funds as well as working tools and equipment. For more info: [www.gorgemakerspace.com](http://www.gorgemakerspace.com)



*Jack Perrin, a licensed secondary school science teacher, started Gorge Makerspace in his basement.*



# Flipped Instruction

*Classrooms are hubs of activity-based learning, while more lectures are taking place online*

By Suzanne Burd

Jim Pytel, an instructor at Columbia Gorge Community College's (CGCC) Electro-Mechanical Technology program in The Dalles was looking for a way to streamline instructional delivery when he was encouraged to investigate the idea of a "flipped classroom." He now delivers most of his classes via online technical content disseminated on the free video-sharing service, YouTube, and all classroom time has been repurposed into hands-on lab activity.

The flipped classroom approach delivers instruction outside the classroom and activity-based learning inside. Students view free online lectures at the time and place of their choosing and at their own pace. This allows students to pause, rewind and review material as necessary. Concept engagement application happens in the classroom with an instructor's guidance. The flipped classroom model reaches incumbent workers, especially in the wind and power generation and transmission industries important to our region. The model also allows people working full time in other fields and rural high school



students interested in technology to access this in-demand skill set. Students at CGCC are asking for more hybrid classes using this model. This method reduces students' textbook and commuting expenses and provides them with more flexibility for balancing college, work, and family responsibilities.

Pytel's videos feature technical subjects like electronics, hydraulics, pneumatics and motor control.

After his work as a contractor for the National Science Foundation Center for Renewable Energy and Advanced Technological Education (CREATE) program center, he was invited to submit a grant to the National Science Foundation Advanced Technological Education program on behalf of CGCC. The college has now completed its first grant and applied for another. In the meantime, continues to work on developing modules that fit within the EM-Tech program (view some of Pytel's work online at BigBadTech).

F. Fleming Crim, chief operating officer at the National Science Foundation, said the Advanced Technological Education program is "having a moment because it is

## A timely career choice

Community college educators who have experience with Advanced Technological Education projects are being asked for their insights because National Science Foundation data indicate that one million U.S. jobs will go unfilled in the near future due to a lack of people with the skills to work with emerging technologies.

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so important to the nation.” He said the “ATE program has transformed the education of technicians in our country and created a culture that supports, strengthens and sustains STEM technician education programs, and grows and nurtures STEM leaders.”

CGCC’s technician training program has undergone a progression of transformations over the past 16 years as the college responds to workforce training needs in the region. In the late 1990s, the U.S. Army Corps of Engineers approached the college about the need to train new power plant operators, knowing that a wave of retirements would create a hole in the workforce that operates dams on the Columbia River. The Corps was able to work with the college on a customized power plant training program that led to a new Associate

of Applied Science degree. What started as the Electrical Engineering Technology (EET) program in 2001, evolved into the Renewable Energy Technology (RET) program in 2007, and most recently to the Electro-Mechanical Technology (EM-Tech) program in 2017. Continual evolution and modernization of the program has ensured it remains relevant.

This nationally-recognized program prepares students to work with automated electronic technologies in a variety of industries, including renewable energy, advanced manufacturing, unmanned aircraft systems and engineering. The electro-mechanical field is seeing rapid growth in technology, creating jobs which will require highly skilled workers over the next two decades. Building on a solid foundation in math, students learn in a

rigorous, hands-on environment and are well-prepared to tackle the challenges of technology-focused industries. EM-Tech graduates work for local agencies and companies such as the US Army Corps of Engineers, Bonneville Power Administration, Insitu, Cardinal Glass, Intel and Hewlett Packard, and a variety of industrial wind power operations and maintenance organizations including GE, Vestas, Siemens-Gameasa, Avangrid, EDF and PGE.



*Suzanne Burd is community education coordinator and EM-Tech Program coordinator at Columbia Gorge Community College.*

## MARKETING THE GORGE

Suzette Gehring, Nikki Bringman, Tom Peterson and Niki Piacente.  
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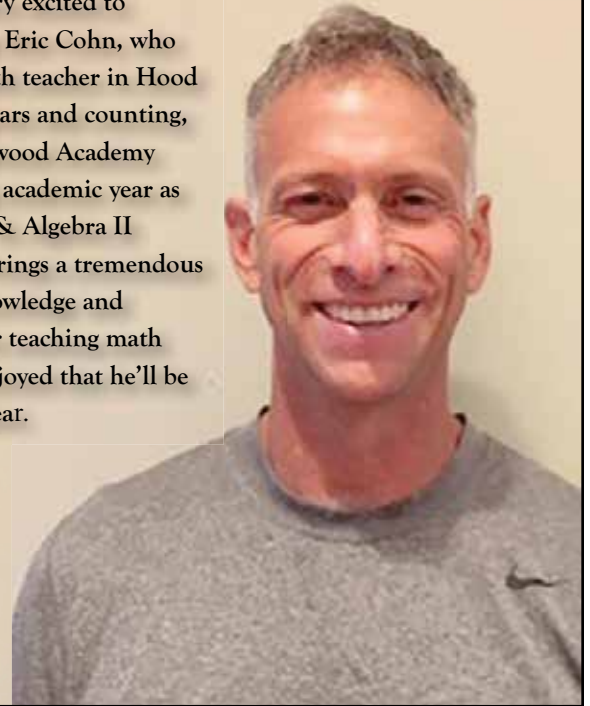
**F**rom our state winning Robotics Team to our Ground-Breaking Curriculum on Sustainable Energy, Wildwood Academy is dedicated to inspiring and challenging our students each day within each facet of STEM.

---



An independent Middle School in downtown Hood River. For more information please go to [www.wildwood-academy.org](http://www.wildwood-academy.org)

We are also very excited to announce that Eric Cohn, who has been a math teacher in Hood River for 29 years and counting, will join Wildwood Academy this upcoming academic year as our Algebra I & Algebra II teacher. Eric brings a tremendous amount of knowledge and enthusiasm for teaching math and we're overjoyed that he'll be with us next year.



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# Google in the Community

Here at Google, we're all about inspiring the next generation of leaders in STEM, and providing people with the skills they need to thrive in our digital world. It all starts with showing students just how fun things like coding and engineering can be.

In 2018, Wi-Fi enabled school buses rolled into Dufur as the latest community to be part of Google's Rolling Study Halls program. These buses enable students who have long commutes to school or athletic events to complete their schoolwork, with the help of an onboard educator.



**Rolling Study Halls**



**Wind Challenge**

Each year, Google's Wind Challenge blows into The Dalles for a day of wind turbine creation fun. For the past six years, teams of local middle and high school students have competed to design, build and test model wind turbines at this annual event, teaching them about what it takes to harness the power of the wind.

In 2018, Grow with Google descended on The Dalles, hosting more than 200 local small business owners, job seekers, students, educators and entrepreneurs for a day of workshops and training to improve their digital skills.



**Grow With Google**



**Wasco County Grants**

In 2018, Google announced \$100,000 to North Wasco County District 21 for technology upgrades, and an additional \$100,000 grant for computer science education in Wasco County Schools. These grants aim to inspire interest in STEM fields by bringing computer science education to students across Wasco County. Grants have also included \$250,000 to The Dalles-Wasco County Library for STEM programs and equipment, as well as mobile hotspot lending that allows residents to "check out" internet access, just like a book. To date, Google has awarded more than \$2 million to nonprofits and schools in Wasco County, and has invested over \$1.8B in The Dalles since the first data center opened in 2007.

Each year, Google sponsors The Dalles HS/Wasco 4-H Robotics program, and has invested more than \$200,000 to expand robotics classes in the region since 2010. This year, the Wasco County 4-H team has qualified and will once again represent The Dalles in the state tournament. Good luck to our local teams!



**The Dalles Robotics Partnership**