



## The science of being successful

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**Schools around the county have invested in Science, Technology, Engineering and Mathematics (STEM) opportunities for their students.**

Warrenton High School is engineering underwater robots, quad copter drones and 3-D-printed miniaturizations. A leased digital press will have students at Jewell School running their own publishing, photography and graphics company.

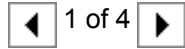
As the Science, Technology, Engineering and Mathematics (STEM) wave grows, Clatsop County districts are stocking up on hardware and adding innovative hands-on courses to get kids interested in the jobs of the future.

The acronym STEM, which originated in the 1990s by the National Science Foundation, represents the necessary parts of a comprehensive science education. It's is meant to address the lack of Americans skilled enough for many high-tech jobs.

Warrenton students sophomore Kody Kennedy, left, and freshman Trey Secord, right, receive help on a coding project from Science Instructor Josh Jannusch Oct. 1. Kennedy was working on creating a rock, paper, scissors program on his computer.

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Districts have added computers, tablets and other technology, along with courses in advanced science, mathematics, computer technology, design, robotics and other STEM fields. Two examples in point are Warrenton and Jewell, whose students topped Clatsop County's science performance on last year's Oregon Assessment of Knowledge and Skills (OAKS).

## **STEM class**

Warrenton science instructor Josh Jannusch said his district had seen the STEM wave coming for a while and decided to jump in. He was given the green light by WHS Principal Rod Heyen and grant funding from WHS Key Club students, WHS Scholarships Inc. and the Verizon Foundation to construct some new classes and incorporate STEM practices into others.

In his new dedicated STEM class, money raised by students last year bought 3-D printers his students use for modeling many of their assignments. The class will also have students building small quad copter drones.

"I've heard it looks good on college resumes, so that's why I'm taking it," said senior Shaden Moss last week in Jannusch's STEM class, which starts right after a computer-coding class done through educational website code.org.

Moss and his lab partner, sophomore Rachel Najera, had just finished engineering a chair made entirely of cardboard to hold Heyen. But first they'd designed it on a computer-aided drafting program and printed out a miniaturized plastic model.

The table behind them was covered with bilge pump motors, wiring and PVC piping, pieces of another future class project. Through a grant from the Verizon Foundation, Jannusch attended a conference for the SeaMATE (Marine Advanced Technology Education) program, which will have students at Warrenton building underwater work robots to compete regionally, similar to Clatsop Community College's Remotely Operated Vehicle (ROV) club. He hopes to use the 3-D printers to design and manufacture some of the parts.

Warrenton students often continue on to college at one of the higher rates in the county. Jannusch said the push for STEM opportunities, which reaches all the way down to Warrenton Grade School, goes beyond the classroom. "There's so many jobs out there, but they don't have enough people to fill those positions."

## **Jewell Publishing Co.**

Jewell School, a K-12 building that last year served 138 students, has gone all in on building its STEM opportunities. The small district has historically placed well academically, but often sends half or fewer of its students on to college after graduation.

Science and English instructor Don Anderson said recently hired Superintendent Alice Hunsaker, a biology major herself, has bought into the need for a robust STEM program.

“At the beginning of the summer,” said Anderson, “I said, ‘if we want to do this, we need to have an investment.’”

The investments run the gamut from a new forestry program and more than \$12,000 in lab equipment to the lease of a \$50,000 digital press. The press lease, said Anderson, is meant to pay for itself by having students produce yearbooks, calendars, student and team photos, graphics for other businesses and a campus magazine through their own company, Studio 119 Photography and Falcon Graphics.

The investments reach into the school’s science lab, where students are playing with a new centrifuges, a new distillation system, portable microscopes and other tools.

“It surprised me they had marine biology and chemistry,” said Junior Sage Didlake, an advanced placement chemistry student earning college credit while at high school. Didlake’s looking to continue her science studies in college. She and others have credited Dave Hiebert, the school’s former science instructor of 33 years who retired in 2012, with sparking their interest.

“It’s been a big task to try and fill his shoes,” said recently added physical, biological and environmental science instructor Margaret Johnson. It’s helped she added, having Hunsaker and Jewell’s new Principal Mike Scott totally on board.

## **Countywide**

“The best strategy for engaging students in science and math education is to show them the relevance of these fields to their futures,” said Principal Sheila Roley of Seaside High School, which offers several computer courses, design and photography and renewable energy. “We have some terrific mentors in the business and industry fields who work with our students, especially through robotics.”

The Astoria School District, meanwhile, recently designated four of its teachers STEM mentors to help other teachers incorporate STEM-based practices into their classrooms. Their effort is funded by a STEM Hub grant through Oregon State University, which Superintendent Craig Hoppes said has partnered with many coastal communities in the effort to strengthen science.

A driving force behind the reforms in education are the New Generation Science Standards, a rigorous new understanding of what students should be learning in science at each grade level.

The Oregon State Board of Education in March adopted the voluntary standards, and districts are now phasing them in as they implement changes in local curriculum, provide appropriate professional development for teachers and administrators and provide students with opportunities to learn the content. Students will start being tested on the new standards in 2018-19. For more information on the standards, visit <http://bit.ly/1qsAvRB>