

# Career and Technical Education

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## What is CTE?

Career and Technical Education (CTE) is an educational program for high school and community college students based on industry needs. CTE includes coursework in areas such as business, health care, law enforcement and manufacturing. CTE prepares and supports students in acquiring the technical skills and academic knowledge needed for success in the highly skilled careers of the 21st century.

CTE is good for business because it equips potential employees with certifications, technical and problem solving skills, and the ability to succeed in the modern workplace.

CTE is good for schools, students, and parents because the hands-on, relevant, and engaging learning experiences are incredibly motivating:

- Motivated students choose to be in school.
- Motivated students choose to participate.
- Motivated students choose to learn.

CTE increases the student's marketable skills and thus their ability to compete for jobs. Their educational experience is practical and affordable. CTE is the shortest path to a student's first dollar.

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## Career Technical Education promises an unrelenting commitment to:

- Continually improve the relevance and value of a student's educational experience;
  - Prepare students for success in both career and college, by employing the Oregon Skill Sets and the Common Career Technical Core to ensure contextual learning and academic standards that reflect the goals and interests of all learners;
  - Provide Oregon business and industry with a highly skilled, sustainable workforce;
  - Provide dynamic, innovative leadership for the nation's educational system; and
  - Serve as a strategic partner with secondary and postsecondary educators, along with business and industry, in order to strengthen Oregon's competitive position in the global economy.
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## Five Core Principles of Career Technical Education:

1. CTE is critical to ensuring that the United States leads in global competitiveness.
2. CTE actively partners with employers to design and provide high-quality, dynamic programs.
3. CTE prepares student to succeed in further education and careers.
4. CTE is delivered through comprehensive programs of study aligned to The National Career Clusters Framework.
5. CTE is a results driven system that demonstrates a positive return on investment.



# Arts Education for the Digital Age: Bold New Visual and Graphic Design Curriculum Launches in Bethel



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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When the faculty at Willamette High School in Lane County undertook their new Visual and Graphic Arts Design program, they committed to a fundamental shift in the way they presented arts education. An essential part of a well-rounded curriculum, arts education has traditionally looked backward, covering classical art techniques and history. As art instructor Kate Doyle puts it, “students have been using outdated technology and our arts program has been limited to paper/pencil, ceramics, and standard photography.” So Willamette HS made the bold decision to look forward—and develop a rigorous visual and graphic arts program that would enable students to experience authentic career-related learning opportunities.

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## **Demanding High School Curriculum Earns College Credit**

With the backing of its CTE Revitalization Grant, Willamette’s new program set a goal of enrolling approximately 100 additional students in a demanding professional design curriculum. The two-year program includes newly developed coursework in Graphic Design (I & II), Digital Photography (I and II), and Digital Design (I and II). Three courses will be articulated with Lane Community College (LCC) enabling students to enter post-secondary programs having already earned college credit. Additionally, the program is flexible and will allow for advanced learning beyond Years I and II.

Every daring new plan needs a visionary to execute it—and at Willamette HS, that individual is current art instructor Kate Doyle. With 20+ years of graphic design industry experience (which she still pursues in addition to her instructor role), Doyle’s exceptionally strong background laid a powerful foundation. This allows Willamette to immediately integrate visual and graphic design instruction in the fields of architecture, green industry components, and marketing. Susan Lowdermilk of Lane Community College provides instructor mentorship in visual and graphic design to create a seamless bridge between coursework in High School and Community College.

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## **Career Ready Design Software**

To launch the project, over the summer a brand-new computer lab was installed with Mac computers (presenting a bit of a challenge for this PC-based district) and up-to-the-minute design software. This addition—which would not have been possible without the CTE Revitalization Grant—laid the technical groundwork for this ambitious program. But it was just the beginning.

The new curriculum, incorporating the Oregon Skill Sets, graduation requirements, and 12 “Graphic Design Competencies” (based on LCC, University of Oregon, and industry standards), covers more than just design software. Visual and graphic design students learn about aesthetics; different ways they can present ideas and information (including translating the concepts of others); and relationship skills (designer/client interaction). All of these areas add up to a comprehensive preparation for a career in design.



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## Students Create Professional Quality Products

Already, student participation has far exceeded the original goal, with approximately 240 students currently enrolled. Every seat is full. Students are engaged in their work—says one Willamette freshman, “I have loved this class and I’m glad that we have it,” while a senior shares that the program “has made a difference personally by expanding my imagination and creativity...I’m planning on minoring in graphic design at UO.” Students are also beginning to connect this program to others (e.g., Business & Management, Manufacturing Technology).

Each student is developing a portfolio of work, a foundation for his or her foray into the working world. First year projects have included logo design; creating a program for the school band concert; and designing illustrated recipes. “Students are currently creating professional quality graphics which are being turned into album covers and are designing cover materials for school groups and eventually, the local community,” says Doyle. Local business partners are also becoming more engaged, realizing the level of graphic design possible at the high school level. Continues Doyle, “Students are getting amazing instruction from an industry professional and they are also teaching each other new skills as they explore advanced technical skills via online tutorials.”

The true-to-life, hands-on tasks they are completing are comparable to professional-level design work. Says Willamette HS assistant principal Andrew Van Fleet, “Our digital photography and graphic design course has state of the art technology that allows students to create professional quality products and is led by a compassionate instructor with fantastic industry knowledge. This program is infusing students with the artistic skills to adapt to any digital career.”

From incorporating advanced industry knowledge and innovative educational strategies to implementing an integrated approach that doesn’t just teach, but trains—Willamette is truly equipping students with a valuable, marketable 21<sup>st</sup> century skillset in visual and graphic design.

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# Building Pathways from Classroom to Career: Canby Takes SMART Steps Toward CTE Internships



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For more than a decade, Canby High School has been building a strong record of providing top-notch CTE education. Programs include Construction Technology, Marketing, Accounting, Graphic Design, Early Childhood Education, and Agriculture. A state-of-the-art CTE facility was also constructed in 2003. But faculty and administrators wanted to do more to bridge the gap between classroom and career. As Canby building construction instructor Darren Monen puts it, Canby wanted “to enhance students’ educational experiences through internships, working with local community and business partners to allow students an opportunity to work outside the traditional classroom setting.”

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## Career and College Success

Because of this dedication to excellent CTE education, when Canby was awarded its CTE Revitalization Grant, administrators were ready to get to work on the Multiple Pathways to Career and College Success project. The primary goal of the project is expanding and further developing student internships using the existing partnership between Canby High School and Clackamas Community College’s SMART Internship Program, linking internships to each of the existing programs of study and expanding their job shadow program. The internships are required to meet certain standards and students can earn 1 college credit for every 30 hours of documented internship time.

As evidenced by its long-term commitment to CTE education, Canby has a strong focus on career readiness. All sophomores are required to participate in the course Future Focus, where they explore careers, participate in mock job interviews, create a portfolio and resume, and participate in job shadowing. The CTE Revitalization Grant is being used to expand existing structures such as Future Focus to create increasing levels of student opportunity to participate in increasingly rigorous career experiences.

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## Job Shadowing and Internships

Since the launch of the project, the total number of job shadow sites has expanded from 500 to 800, and internship sites have grown from 45 to 70. Teachers now have an expanded network of business and industry partners, too. “We have had a great response in our community,” says Monen. These new relationships are enabling teachers to gain a more thorough understanding of business and industry needs for new employees.

The focus of instruction is shifting to help students develop the academic and other qualities necessary to succeed. Recognizing that some students may learn, through their internships, that they ultimately do not want to pursue a particular career, teachers are focused on the importance of “transferable skills.” These skills can be used no matter what career the student chooses.

But the biggest innovation at Canby has been expanding the scope and purpose of internships. The teachers and school are thinking beyond the traditional internship programs at a business, and creating a range of opportunities for students that provide these young adults with responsibility and accountability beyond grades. Teachers are looking not only at the community outside of the school, but within the school to create trainable opportunities for students.



School counselors are also using the internships to help encourage students to stay through their senior year. Many would consider leaving school early because they have met diploma requirements; instead, they gain marketable job skills that leave them better prepared to segue to continued studies or a career. Some examples of student-led projects include a self-sustaining construction program where students build a house every 2 to 3 years; an agriculture program where students are responsible for the town's flower boxes; and the manufacturing shop, where students produce toys for a Kiwanis club.

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## **Mentors, Job Market Understanding, and Next Steps**

One student interested in firefighting learned through his internship at a firehouse that he would need to receive EMT training before he would even be considered for employment. He is changing his plan to take the classes he needs to complete the training as soon as possible. As a result of his internship, he has mentors in the community and has a better understanding of the job market. Another Canby student, a sophomore who is studying Early Childhood Education, says, "Having the chance to take an in-depth look at children's development has broadened my perspective on how children function. These new skills that I have attained will help me all throughout life...when dealing with my own children and when taking care of others' children."

In future, Canby hopes to share their successful program with more schools. The model and system Canby has created for connecting their school to local businesses and industry can definitely be replicated, and there is hope that they can connect with nearby schools districts like Silverton and Woodburn, where many of Canby's business partners have sites. Additionally, Canby has plans to present at the Oregon Association for Career & Technical Education conference.

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# Better Than Ever: Bringing Quality Manufacturing Engineering Instruction Back to Crook County



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Crook County High School (CCHS) is located in beautiful Prineville, OR, which has been hit hard by economic challenges, including the highest unemployment rate in the state. At the end of the 2008/2009 school year, Crook County High School's popular Manufacturing Engineering program was cut, along with two manufacturing instructors.

Demand for the program never went away. "Since the original Manufacturing Program was eliminated, this program has been highly requested by students and members of the community," says CCHS's school-to-work coordinator, Leslie Waetjen. Students reacted by choosing to attend school elsewhere; many students left the district for others nearby. The long-term impact would mean fewer technically trained graduates—and fewer trained engineers and technicians working in Crook County.

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## Bringing Back a Needed Program

But now, four years later, the program has been resurrected through the CTE Revitalization Grant—and even better, it has been expanded to include Crook County and Paulina middle school students. In its first year, 275 students will benefit.

It's an auspicious start for the Revitalization of Crook County School District Manufacturing Engineering Program. And although CCSD's previous model was successful, administrators and faculty are seizing the opportunity to not only bring back the program, but make it better than ever.

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## Collaboration with Business, Students, and School Create "Phenomenal" Programs

This means updating and expanding the current facility to include hands-on workspace and design rooms with new equipment and cutting-edge technology. Administrators also met with industry partners to identify the desired outcome from graduating students. The message was that they not only needed graduates with manufacturing skills, but they also needed candidates with "soft skills" that would apply to any business.

Collaboration is key in the Revitalization program, between students and faculty. All of the CTE classes in the school work together on projects. For example, the CTE culinary arts students prepared a community Thanksgiving dinner. The manufacturing and business classes helped in the planning and delivery. The teachers from the business manufacturing programs even carpool together, allowing them time to plan for program intersections. This has helped produce a collaborative environment that all of the CTE classes have benefitted from.

From the beginning, students have remained in the course, and more want in—in fact, more students than CCHS can take. CCHS's school counselor refers to it as "phenomenal." Feedback from students ranges from "amazing," "super fun," and "cool," and they say they are more "hard-working," "responsible," and "eager" than before. One senior rather eloquently shared that, "I honestly enjoy this class very much and hope that children in the future will get the chance to use and operate all the necessities that are presented to me and maybe more."

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## Career and College Ready Students

Beyond the scope of the original program, Crook County is also pursuing opportunities for students to complete internships with local businesses. “At least two manufacturing businesses, Integrated Communications Inc. and Contact Industries, are currently developing internship programs where our students will develop and practice their skills,” says Leslie Waetjen. There are also opportunities for middle school students to visit the high school to view hands-on applications of the curriculum and via video link with CCHS; and opportunities for regional and state colleges and businesses to use the high school facility to train students and employees.

Already, “this project has had great impact,” says Michelle Jonas, assistant principal at CCHS. “These added classes have really filled a need at our school for both students and our community. Businesses have played an active role in what things they see needing to be taught so that our students are career and college ready.” Case in point: Faculty report that more seniors are involved in classes all day, rather than just the minimally required coursework.

Additionally, a new VEX robotics program will be debuting early this year, much to the excitement of students and faculty alike. CCHS will be home to the program, but more students will be plugging in when the K-8 school in Paulina begins to teach with the VEX robotics kits, too.

Thanks to the CTE Revitalization Grant, Crook County’s manufacturing engineering program is back—and better than ever. And a new crop of fired-up, well-equipped future engineers and technicians are (almost) ready to help revive their community.

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# Career Success STEMs From New Investment: Eugene Reinvigorates CTE Curriculum



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In order for STEM education to fulfill its purpose of equipping students for emerging career fields it must do more than just cover math and science. That's why the Eugene school district's Relevance and Rigor in New STEM Career Paths project at Churchill High School does so much more. Utilizing its Career Technical Education Revitalization Grant, Eugene increased rigor in foundational math and science curriculum, developed a new "Engineering & Design" CTE program of study, and enhanced two existing CTE programs.

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## Relevance and Rigor

From the outset, Eugene zeroed in on two core areas: First, collaborating with engineers to ensure relevance—aligning curriculum and assessments to industry standards and workplace needs; hosting teachers in worksite immersion programs; and developing and co-teaching STEM activities. Second, involving postsecondary faculty to ensure rigor—aligning curriculum to meet admission requirements in college STEM programs. Eugene faculty also committed to making sure the STEM curriculum will meet or exceed standards for two- and four-year college readiness.

The goals of the program are ambitious—but achievable. Part of the picture is having the right educators in place, and equipping them with the resources they need. To that end, Eugene has added two new staff—one more focused on strategies in math, one more focused on science—and invested in new professional development for teachers and staff. This includes training in ThinkReady, Smarter Balanced Assessment, and the Advancement Via Individual Determination (AVID) college readiness system for use in CTE classrooms.

Faculty have increased the rigor of coursework—both within the STEM program and school wide—and are focusing on assigning tasks that are relevant to the career field, not just “seat work.” As Churchill engineering teacher Marty Wilder puts it, “students create real solutions to real problems. We give them the skills and materials they need and then support them in taking risks, trying things out and then making improvements and trying again... [it’s] student-directed learning.”

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## Bridging the Gap Between Curriculum and Career

This is what sets Eugene's Relevance & Rigor program apart: Bridging the gap between curriculum and career. By providing opportunities for hands-on learning, this program enables students to engage in authentic, problem-based engineering projects that are connected with working professionals in the community. Teachers also coach students on how to transition from student to successful worker, problem solving, deeper thinking, and guided inquiry—all part of the ThinkReady approach. A new STEM studio, equipped with state-of-the-art engineering technology, will give students the chance to develop and hone up-to-the-minute skills that are immediately applicable upon graduation.

While the Relevance & Rigor program is still in its early stages, the revamp is already reaping better results in terms of faculty enthusiasm, community investment, and perhaps most importantly, student engagement. “This has been huge in making school more meaningful,” says Theresa Hilkey, Churchill's STEM coach and math teacher. “Our enrollment has increased because students have a desire to learn about engineering. They have had field trips, guest speakers, and connections with colleges.”



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## Empowering and Engaging Students

Says Marty Wilder, “Even at this stage, I see these courses capturing the attention of students who have disengaged from their mainstream academic experience (on both ends of the performance scale). For some, this is the first time they have gotten recognition for talents and skills in mechanical aptitude and spatial relations. For others, it is one of the few opportunities they have had to follow their curiosity and shape their own curriculum.”

In total, Eugene has already made changes in 11 key areas—including new training, new hires, and new staff activities—due to the CTE Revitalization Grant. But Relevance & Rigor doesn’t stop here. Eugene administrators hope to get more freshman and sophomore students involved, possibly through Mathematics and Science Partnership grants or other funding sources. And to further equip students to continue their education, faculty are working on elevating the focus on college and Federal Application for Student Aid (FAFSA) applications—with a goal to reach 80% FAFSA submission.

All this serves to empower and engage students—and show them their full potential. One Churchill junior calls the classwork “interactive, interesting, and new,” while a freshman says it “really gets your brain thinking.” Most exciting is the fact that some students are already appreciating the long-term impact, like another Churchill junior who says, “It is really helpful to me because I want to become an engineer when I graduate.”

Thanks to Eugene’s commitment to rigor and relevance, that is more than just a student’s dream—it can become reality.

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# Brave New Schools: Pine Eagle Launches Innovative CTE Curriculum with Smart Classrooms



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Pine Eagle Charter School and Eagle Cap Innovative High School had a vision to graduate students who are highly qualified for employment in the growing career fields of industrial automation and control systems. Their goal was to provide innovative CTE opportunities that incorporate classroom instruction, project-based learning and on-the-job training for careers in these fields. But providing students with preparatory CTE instruction posed a problem due to the high costs and logistical challenges of sourcing the equipment and training faculty.

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## Giving Students Great Opportunities

Pine Eagle's Career and Technical Education Revitalization Grant got the ball rolling. Says Joe Denig, Pine Eagle's agricultural science and technology instructor, "The CTE grant has provided the option for students to get hands on learning and training. Learning how control systems function, how to control them, and how to design them gives students great opportunities."

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## Dual Enrollment, Work Experience, and Pre-Apprenticeship

The Industrial Automation and Control Systems Technology (IACST) program uses dual enrollment instruction (with two college partners), work experience and pre-apprenticeship opportunities that lead to entry-level employment or advanced training for licensing, certification, or an advanced degree. Instruction focuses on electrical engineering and electrical maintenance technician skill sets, while still incorporating the Oregon Skill Sets and the content standards.

The logistical challenges of giving hands-on instruction in robotics and control systems have been overcome in part through a collaborative effort involving three local companies, two college partners, and local individual partners. Business partners ensure curriculum is inline with workforce needs; provide internships and job shadows; provide technical support; and provide equipment. Says Cammie deCastro, principal of Pine Eagle, "Our students...are now exposed to hands-on career-related experiences. The program incorporates instruction from community partners, tying classroom work to real-world careers. The program also brings relevance to math, science and technology classes."

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## Smart Classrooms Sharing with Other Schools in the Region

Both schools are also incorporating "smart classrooms" where instruction may be updated as needed and transmitted and shared with other small schools in the region. Industry partners plan to connect with students directly in the classroom through broadcast "field trips" and classroom visits. "This type of program would not have been possible without this type of grant," says Denig. "The control systems and technology that students are working with were not normally found in our districts supplies, nor was there the funding available to develop this comprehensive instruction."

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To ramp up for the new program, faculty attended summer professional development with Project Lead The Way at Oregon Tech and a session with Idaho Power to learn about the use of Programmable Logic Controllers (PLCs). That knowledge has been transferred to the classroom, where students are learning how to use the same PLCs and develop a control system for Pine Eagle's on-campus green house.

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## Programming Robots Piques Student Interest

Students are enthusiastic—due in no small part to how the curriculum is presented. “To start to pique student interest, the first steps are working with programmable robots,” says Denig. “This has definitely enhanced student interest in the curriculum.” One Pine Eagle freshman shared that “it was amazing to watch the robots move to our commands. Knowing that this is how many of our common appliances work is totally mind-blowing.”

The coursework builds upon this early “cool factor,” reaching professional-level instruction. Understanding PLCs has been key; says one Pine Eagle freshman, “After learning about the PLCs, I found that many things we rely on daily run this way. For example, fire alarms are run this way. This provides many jobs, and it interests me.” Concur a Pine Eagle junior, “I have never taken a class like this before...I have enjoyed the opportunity of learning so many new and very different things,” and a senior recognizes that “learning to write programs is useful in many different fields.”

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## Job Shadows and Internships

Feedback from industry partners—and potential employers—is also positive. One representative from Idaho Power described how a job shadow student quickly began to understand the possibilities open to him when he applies himself in school. A representative from Pine Phone said the projects that interns worked on have helped them understand the needs of the workforce (deadlines, producing quality work, getting along with others, etc.).

Looking forward, Pine Eagle seeks to replicate coursework at Eagle Cap Innovative High School and additional schools—the smart classroom approach makes it possible—and will continue to expand on postsecondary opportunities, including working with LBCC and their collaborative mechatronics program with TVCC. It's a brave new world of CTE instruction, and Pine Eagle is forging a path worth following.

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# The Power of We: Students Maximize Their Career Potential Through Lebanon's Unique Academy Project



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The power of effective collaboration is the standout lesson from the CTE Revitalization Grant project in the Lebanon Community School District. Says Eric Frazier, teacher and project coordinator for Lebanon, the top takeaway “is the ability of schools, administrators, teachers, and school district employees to break through barriers and obstacles. The idea of, ‘What would be best for students?’ has been the guiding thought for decision making with this grant.”

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## Technical Career Fields Expanding Student Potential

Through the establishment of the Linn County Regional Trades Academy (LCRTA), which encompasses South Albany, West Albany and Lebanon High Schools, students are benefiting from a forward-thinking curriculum; a classroom environment that stimulates and engages; and an introduction to technical career fields that has opened their eyes to their own potential. As one Lebanon junior put it, “I now have more options for what I want to do in the future with a career. Some of which I wouldn't have even thought of doing.”

One of the most significant breakthroughs in the LCRTA project to date is the strong interdistrict collaboration that has emerged. The CTE Revitalization Grant has enabled the sharing of resources between schools and districts, introducing an academy approach that is very different than the CTE classes that each of the participating schools has offered previously. According to Candy Baker, Lebanon's Grant Project Director, “students are expanding their world by having to work in new environments and systems with different school climates, cultures, and expectations.”

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## Hands On Exploration of Trades

In this unique academy structure, students begin their two-year career occupations project with hands-on experiences in the trade areas of electrical, woods manufacturing, building construction, masonry, welding and automotive technology.

The curriculum track begins with a three-week introductory session to give students an overview of the career field, including skills and knowledge required, applied use of tools and equipment, and employment potential/salaries. In the remaining three semesters, students choose one career field in which to develop apprentice-level skills.

The course sequence allows students the opportunity to explore six different trades through three-week rotations in the first semester, before pursuing more in-depth training and work experience in a particular area. Two off-campus Apprenticeship Training Centers specializing in electrical and carpentry training provide additional opportunities. The regional approach involves coordinating and intermingling students and staff from different high schools, as well as providing students the opportunity to gain stronger technical skills through stronger technical programs.

“I believe this project has had an amazing impact. We see students grasping concepts they would not get in any other classrooms. Students are engaged in their work and they want to learn more,” says Jessica Ramsey, a welding instructor.



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## Traditional Instruction Embedded in CTE Curriculum

Teachers have also embedded traditional academic instruction (including reading, writing and math instruction) within the CTE curriculum. LCRTA students' academic progress is monitored regularly and weekly sessions have been introduced to provide additional academic support for those who are not doing well in their classes.

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## Student Contact with Teachers, Trade Organizations, Business, and Industry

The LCRTA has led to much stronger partnerships with trades organizations and industry leadership, and access to regional industry training centers. Teachers, trades organizations, and business and industry leaders have formed a Partnership Council to develop, coordinate and improve project content and instruction. As a result, students "have direct contact with trade unions, and business and industry representatives. Teachers also have the opportunity to develop and deliver applied learning that represents current industry standards and practices," says Candy Baker.

The two-year program culminates with student participation in community-based projects or pre-apprenticeship programs.

Through instruction and active participation by private and government partnership members—including the International Brotherhood of Electrical Workers, NW Laborers/Employers Training Trust, National Frozen Foods, Oregon Freeze Dry, Oregon Bureau of Labor and Industries and Linn-Benton Community College—students are able to tap directly into the leading industries in this region, which means their acquired skills in their chosen trade is directly applicable to current employment needs. This isn't typical "by the book" education, but real-world, on-the-job training.

The result? Empowered, engaged students looking forward to a brighter future—like this Lebanon senior: "Personally this class has turned 'have to go to school' into 'want to go to school.' It has provided incentive to succeed academically in my schoolwork. Also this class has personally helped me realize that I can excel in trades related working fields. It has helped me realize my interests and set future goals for myself."

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# From Project-Based Learning to Profession: Mt. Angel and Silver Falls Create a Pipeline to CTE Careers



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Recognizing the need to offer CTE education to more students, Mt. Angel and Silver Falls School Districts worked together to creatively expand their CTE program. There are four different project-based learning programs including engineering, biomedical, agricultural science and business courses. The goal was to offer the programs at Kennedy High School and Silverton High School before expanding to all 27 member schools in the Mid-Willamette Education Consortium (MWEC) region. Mt. Angel Middle School students would also be offered pre-engineering courses and students from Mark Twain Middle School would be offered an agriculture class at Silverton High School.

With the support of the CTE Revitalization Grant, Mt. Angel and Silver Falls were able to launch the Building a Pipeline Through Project-Based Learning project. They have the support of an impressive line-up of educational partners including Chemeketa Community College, Oregon Tech and Oregon State University. Industry partners from local government agencies, health care providers, construction firms, and agriculture also are participating. One partner, Dr. Cote of Cote Chiropractic and Vice President of the Oregon Board of Chiropractic Examiners, said “the school district has a low percentage of students moving on to post-secondary studies, so programs like this are imperative to prepare the majority of the students for their lives beyond high school.”

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## STEM Related Careers and Curriculum

Enacting a curriculum that runs vertically (between middle and high schools) and horizontally (across the Mt. Angel and Silver Falls school districts) has been an ambitious undertaking. Transportation was a challenge, but Mt. Angel decided it was important enough to take on the expense of buses. Upgrades to classrooms have made all the difference—says Mt. Angel science teacher Carlie Harris, “Major improvements to our CTE/Science classrooms help us implement the curriculum, which better prepares our students for STEM related careers.”

Teachers have pursued extensive professional development to enable them to meet more rigorous curriculum requirements, with training from Project Lead the Way, the Curriculum for Agricultural Science Education, and the Perry Initiative. Industry partners have also enhanced the quality of instruction with increased access to essential equipment—such as agricultural equipment from partner NORPAC Foods, Inc.—and real-life work experiences, such as a hospital externship that demonstrated STEM needs in the medical industry.

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## High School and Middle School Connections

One of the hallmarks of this innovative Pipeline project is reaching out to middle school students so they can get an idea of their options once they enter high school, and learn where their coursework could lead in terms of career opportunities. The early stages of these programs have met with success. Says Silverton agriculture teacher Daniel James, “This has developed an early interest and nice partnership with the high school before they are actually enrolled in their freshman year.” The middle schools truly feel like a partner with the high schools.

High school students are enthusiastic, too. One Kennedy High School junior said, “I feel more confident about the engineering field. I think it is a good fit for my skill sets.” Another junior at Kennedy commented on the value of the project-based learning, “I have never before been able to experience competitions and real life



opportunities [before]...I really like school now!" For now, the middle school course in Silverton is only offered for one semester of the year, but students have expressed a desire to take the classes year round and/or sample other CTE areas as well.

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## More Highly Skilled Candidates for Employment

Teachers have also been pleased with the number of girls signing up for the welding course and the health and robotics programs. Silverton High School welding instructor Scott Towery said that the Pipeline program enabled him to offer an all-girl welding class that "has helped female students develop an interest in this CTE area, which is traditionally dominated by men. In past years, only one or two girls would enroll in the class. I believe [my] class filled up with non-traditional students because it sparked an interest with our girls at Silverton." One senior shared her thoughts, saying, "It is the best class of the day. It is fun, energetic and I enjoy the hard work. I like welding with other girls, it feels safe and comfortable."

Mt. Angel and Silver Falls School District's Pipeline program is already reaping results beyond the classroom, strengthening partnerships horizontally between districts and vertically between the middle schools, high schools, and Chemeketa Community College. The outcome will be more students in the CTE programs at all four schools; more articulated credits awarded with an increased likelihood of students enrolling in Chemeketa in these programs; and perhaps most crucially, more job prospects for graduates and more highly skilled candidates for local employers.

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# A Fresh CROP of Information Technology Professionals: Bringing Cutting-Edge Career Options to Wallowa

*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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Rural Oregon may seem like an unlikely place to find jobs in information technology—but in the northeastern part of the state, the need is keen and the opportunities are real. Case in point: IT staff employed by the Wallowa Education Service District (ESD) also function as the IT support staff for local government. The result is that despite the logistical challenges in these geographically large, rural “Frontiers,” the Wallowa ESD was perfectly poised to offer high-quality and highly- marketable IT education to its students through its IT Careers in Rural Oregon Project (IT CROP).

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## Growing a Local Workforce

Says Wallowa Superintendent Karen Patton: “The long-term impact to our region will be a skilled workforce to draw from when hiring for IT support positions. It has been a challenge to attract applicants. Many are not native to the region and desire to work in a less rural setting. By providing this opportunity, we hope to grow a local work force. Students will acquire a set of portable industry recognizable skills and certifications that will allow them to pursue paths in recession-proof careers available in rural and urban settings alike.”

IT CROP is a 15-month pilot program involving three (3) high schools (Arlington, Joseph and Grant Union) and the IT support staff from Grant, North Central and Wallowa ESDs. Teachers, IT staff and CS staff from Treasure Valley Community College (TVCC) collaborated to provide college-level courses through Moodle (an open-source tool to create virtual learning environments). The three courses matriculate to TVCC programs in Computer Information Systems (CIS) Support Specialist Career-Pathways Certificates and 1- and 2-year programs. Students completing the courses this year will be eligible to take the first part of CompTIA’s A+ Certification.

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## College and Career Ready Students

Utilizing effective collaboration, the faculty familiarized themselves with the new instructional content and are consistently working together to meet students’ needs while remaining committed to college-level standards. Two (2) new CIS courses (110 and 111) were developed and added to the curriculum. Not only do the students like the subject matter, they also really like the fact that they get to earn college credits. What makes the IT CROP curriculum different is that it is “interesting and challenging,” says one Joseph Charter junior, while another says, “This class has made a difference to me personally because I now have a better understanding of computers, so when I go to college I can use the things that I have learned.”

To cap off the program, student internships—including work-for-pay opportunities—will be made available through local government agencies, companies and hospitals. Each student will participate in the job application and interview process as well as complete a minimum of 16 hours of formal job shadowing.

Further highlighting the district’s long-term goal of growing a strong IT workforce, a Pearson testing center has been set up in each of the 3 ESD regions to allow students to earn national IT certifications. This center is also available to the community, and may be expanded to include medical certification.



IT CROP's early accomplishments prove that, as Wallowa Superintendent Karen Patton describes, despite the logistical challenges, "small remote rural schools are able [to provide] relevant, alternative and sustainable learning opportunities in a setting where providing varied options has become a significant challenge."

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### **Schools Working Together to Provide Opportunities**

Starting in spring 2013, each of the 15 school districts will have access to the courses and teacher professional development. Josh Kesecker, Technology Coordinator for Wallowa ESD, sees great potential for IT CROP. "It's not very common for rural schools to be able to offer these sorts of programs, as there often aren't enough [resources] to make it pencil out," says Kesecker. "However, it certainly is inspiring to see schools from all over Eastern Oregon work together to pool their students and resources into a great, sustainable program."

As Karen Patton puts it, "A small group of dedicated teachers, IT staff, ESD superintendents, and college staff have come together to build a program that truly meets the dual need of building a skilled workforce for communities and offering varied educational opportunities for students in remote small schools."

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# Arts Education for the Digital Age: Bold New Visual and Graphic Design Curriculum Launches in Bethel



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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When the faculty at Willamette High School in Lane County undertook their new Visual and Graphic Arts Design program, they committed to a fundamental shift in the way they presented arts education. An essential part of a well-rounded curriculum, arts education has traditionally looked backward, covering classical art techniques and history. As art instructor Kate Doyle puts it, “students have been using outdated technology and our arts program has been limited to paper/pencil, ceramics, and standard photography.” So Willamette HS made the bold decision to look forward—and develop a rigorous visual and graphic arts program that would enable students to experience authentic career-related learning opportunities.

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## **Demanding High School Curriculum Earns College Credit**

With the backing of its CTE Revitalization Grant, Willamette’s new program set a goal of enrolling approximately 100 additional students in a demanding professional design curriculum. The two-year program includes newly developed coursework in Graphic Design (I & II), Digital Photography (I and II), and Digital Design (I and II). Three courses will be articulated with Lane Community College (LCC) enabling students to enter post-secondary programs having already earned college credit. Additionally, the program is flexible and will allow for advanced learning beyond Years I and II.

Every daring new plan needs a visionary to execute it—and at Willamette HS, that individual is current art instructor Kate Doyle. With 20+ years of graphic design industry experience (which she still pursues in addition to her instructor role), Doyle’s exceptionally strong background laid a powerful foundation. This allows Willamette to immediately integrate visual and graphic design instruction in the fields of architecture, green industry components, and marketing. Susan Lowdermilk of Lane Community College provides instructor mentorship in visual and graphic design to create a seamless bridge between coursework in High School and Community College.

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## **Career Ready Design Software**

To launch the project, over the summer a brand-new computer lab was installed with Mac computers (presenting a bit of a challenge for this PC-based district) and up-to-the-minute design software. This addition—which would not have been possible without the CTE Revitalization Grant—laid the technical groundwork for this ambitious program. But it was just the beginning.

The new curriculum, incorporating the Oregon Skill Sets, graduation requirements, and 12 “Graphic Design Competencies” (based on LCC, University of Oregon, and industry standards), covers more than just design software. Visual and graphic design students learn about aesthetics; different ways they can present ideas and information (including translating the concepts of others); and relationship skills (designer/client interaction). All of these areas add up to a comprehensive preparation for a career in design.



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## Students Create Professional Quality Products

Already, student participation has far exceeded the original goal, with approximately 240 students currently enrolled. Every seat is full. Students are engaged in their work—says one Willamette freshman, “I have loved this class and I’m glad that we have it,” while a senior shares that the program “has made a difference personally by expanding my imagination and creativity...I’m planning on minoring in graphic design at UO.” Students are also beginning to connect this program to others (e.g., Business & Management, Manufacturing Technology).

Each student is developing a portfolio of work, a foundation for his or her foray into the working world. First year projects have included logo design; creating a program for the school band concert; and designing illustrated recipes. “Students are currently creating professional quality graphics which are being turned into album covers and are designing cover materials for school groups and eventually, the local community,” says Doyle. Local business partners are also becoming more engaged, realizing the level of graphic design possible at the high school level. Continues Doyle, “Students are getting amazing instruction from an industry professional and they are also teaching each other new skills as they explore advanced technical skills via online tutorials.”

The true-to-life, hands-on tasks they are completing are comparable to professional-level design work. Says Willamette HS assistant principal Andrew Van Fleet, “Our digital photography and graphic design course has state of the art technology that allows students to create professional quality products and is led by a passionate instructor with fantastic industry knowledge. This program is infusing students with the artistic skills to adapt to any digital career.”

From incorporating advanced industry knowledge and innovative educational strategies to implementing an integrated approach that doesn’t just teach, but trains—Willamette is truly equipping students with a valuable, marketable 21<sup>st</sup> century skillset in visual and graphic design.

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# Building Pathways from Classroom to Career: Canby Takes SMART Steps Toward CTE Internships



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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For more than a decade, Canby High School has been building a strong record of providing top-notch CTE education. Programs include Construction Technology, Marketing, Accounting, Graphic Design, Early Childhood Education, and Agriculture. A state-of-the-art CTE facility was also constructed in 2003. But faculty and administrators wanted to do more to bridge the gap between classroom and career. As Canby building construction instructor Darren Monen puts it, Canby wanted “to enhance students’ educational experiences through internships, working with local community and business partners to allow students an opportunity to work outside the traditional classroom setting.”

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## Career and College Success

Because of this dedication to excellent CTE education, when Canby was awarded its CTE Revitalization Grant, administrators were ready to get to work on the Multiple Pathways to Career and College Success project. The primary goal of the project is expanding and further developing student internships using the existing partnership between Canby High School and Clackamas Community College’s SMART Internship Program, linking internships to each of the existing programs of study and expanding their job shadow program. The internships are required to meet certain standards and students can earn 1 college credit for every 30 hours of documented internship time.

As evidenced by its long-term commitment to CTE education, Canby has a strong focus on career readiness. All sophomores are required to participate in the course Future Focus, where they explore careers, participate in mock job interviews, create a portfolio and resume, and participate in job shadowing. The CTE Revitalization Grant is being used to expand existing structures such as Future Focus to create increasing levels of student opportunity to participate in increasingly rigorous career experiences.

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## Job Shadowing and Internships

Since the launch of the project, the total number of job shadow sites has expanded from 500 to 800, and internship sites have grown from 45 to 70. Teachers now have an expanded network of business and industry partners, too. “We have had a great response in our community,” says Monen. These new relationships are enabling teachers to gain a more thorough understanding of business and industry needs for new employees.

The focus of instruction is shifting to help students develop the academic and other qualities necessary to succeed. Recognizing that some students may learn, through their internships, that they ultimately do not want to pursue a particular career, teachers are focused on the importance of “transferable skills.” These skills can be used no matter what career the student chooses.

But the biggest innovation at Canby has been expanding the scope and purpose of internships. The teachers and school are thinking beyond the traditional internship programs at a business, and creating a range of opportunities for students that provide these young adults with responsibility and accountability beyond grades. Teachers are looking not only at the community outside of the school, but within the school to create trainable opportunities for students.



School counselors are also using the internships to help encourage students to stay through their senior year. Many would consider leaving school early because they have met diploma requirements; instead, they gain marketable job skills that leave them better prepared to segue to continued studies or a career. Some examples of student-led projects include a self-sustaining construction program where students build a house every 2 to 3 years; an agriculture program where students are responsible for the town's flower boxes; and the manufacturing shop, where students produce toys for a Kiwanis club.

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## **Mentors, Job Market Understanding, and Next Steps**

One student interested in firefighting learned through his internship at a firehouse that he would need to receive EMT training before he would even be considered for employment. He is changing his plan to take the classes he needs to complete the training as soon as possible. As a result of his internship, he has mentors in the community and has a better understanding of the job market. Another Canby student, a sophomore who is studying Early Childhood Education, says, "Having the chance to take an in-depth look at children's development has broadened my perspective on how children function. These new skills that I have attained will help me all throughout life...when dealing with my own children and when taking care of others' children."

In future, Canby hopes to share their successful program with more schools. The model and system Canby has created for connecting their school to local businesses and industry can definitely be replicated, and there is hope that they can connect with nearby schools districts like Silverton and Woodburn, where many of Canby's business partners have sites. Additionally, Canby has plans to present at the Oregon Association for Career & Technical Education conference.

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# Better Than Ever: Bringing Quality Manufacturing Engineering Instruction Back to Crook County



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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Crook County High School (CCHS) is located in beautiful Prineville, OR, which has been hit hard by economic challenges, including the highest unemployment rate in the state. At the end of the 2008/2009 school year, Crook County High School's popular Manufacturing Engineering program was cut, along with two manufacturing instructors.

Demand for the program never went away. "Since the original Manufacturing Program was eliminated, this program has been highly requested by students and members of the community," says CCHS's school-to-work coordinator, Leslie Waetjen. Students reacted by choosing to attend school elsewhere; many students left the district for others nearby. The long-term impact would mean fewer technically trained graduates—and fewer trained engineers and technicians working in Crook County.

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## **Bringing Back a Needed Program**

But now, four years later, the program has been resurrected through the CTE Revitalization Grant—and even better, it has been expanded to include Crook County and Paulina middle school students. In its first year, 275 students will benefit.

It's an auspicious start for the Revitalization of Crook County School District Manufacturing Engineering Program. And although CCSD's previous model was successful, administrators and faculty are seizing the opportunity to not only bring back the program, but make it better than ever.

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## **Collaboration with Business, Students, and School Create "Phenomenal" Programs**

This means updating and expanding the current facility to include hands-on workspace and design rooms with new equipment and cutting-edge technology. Administrators also met with industry partners to identify the desired outcome from graduating students. The message was that they not only needed graduates with manufacturing skills, but they also needed candidates with "soft skills" that would apply to any business.

Collaboration is key in the Revitalization program, between students and faculty. All of the CTE classes in the school work together on projects. For example, the CTE culinary arts students prepared a community Thanksgiving dinner. The manufacturing and business classes helped in the planning and delivery. The teachers from the business manufacturing programs even carpool together, allowing them time to plan for program intersections. This has helped produce a collaborative environment that all of the CTE classes have benefitted from.

From the beginning, students have remained in the course, and more want in—in fact, more students than CCHS can take. CCHS's school counselor refers to it as "phenomenal." Feedback from students ranges from "amazing," "super fun," and "cool," and they say they are more "hard-working," "responsible," and "eager" than before. One senior rather eloquently shared that, "I honestly enjoy this class very much and hope that children in the future will get the chance to use and operate all the necessities that are presented to me and maybe more."

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## Career and College Ready Students

Beyond the scope of the original program, Crook County is also pursuing opportunities for students to complete internships with local businesses. “At least two manufacturing businesses, Integrated Communications Inc. and Contact Industries, are currently developing internship programs where our students will develop and practice their skills,” says Leslie Waetjen. There are also opportunities for middle school students to visit the high school to view hands-on applications of the curriculum and via video link with CCHS; and opportunities for regional and state colleges and businesses to use the high school facility to train students and employees.

Already, “this project has had great impact,” says Michelle Jonas, assistant principal at CCHS. “These added classes have really filled a need at our school for both students and our community. Businesses have played an active role in what things they see needing to be taught so that our students are career and college ready.” Case in point: Faculty report that more seniors are involved in classes all day, rather than just the minimally required coursework.

Additionally, a new VEX robotics program will be debuting early this year, much to the excitement of students and faculty alike. CCHS will be home to the program, but more students will be plugging in when the K-8 school in Paulina begins to teach with the VEX robotics kits, too.

Thanks to the CTE Revitalization Grant, Crook County’s manufacturing engineering program is back—and better than ever. And a new crop of fired-up, well-equipped future engineers and technicians are (almost) ready to help revive their community.

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# Career Success STEMs From New Investment: Eugene Reinvigorates CTE Curriculum



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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In order for STEM education to fulfill its purpose of equipping students for emerging career fields it must do more than just cover math and science. That's why the Eugene school district's Relevance and Rigor in New STEM Career Paths project at Churchill High School does so much more. Utilizing its Career Technical Education Revitalization Grant, Eugene increased rigor in foundational math and science curriculum, developed a new "Engineering & Design" CTE program of study, and enhanced two existing CTE programs.

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## Relevance and Rigor

From the outset, Eugene zeroed in on two core areas: First, collaborating with engineers to ensure relevance—aligning curriculum and assessments to industry standards and workplace needs; hosting teachers in worksite immersion programs; and developing and co-teaching STEM activities. Second, involving postsecondary faculty to ensure rigor—aligning curriculum to meet admission requirements in college STEM programs. Eugene faculty also committed to making sure the STEM curriculum will meet or exceed standards for two- and four-year college readiness.

The goals of the program are ambitious—but achievable. Part of the picture is having the right educators in place, and equipping them with the resources they need. To that end, Eugene has added two new staff—one more focused on strategies in math, one more focused on science—and invested in new professional development for teachers and staff. This includes training in ThinkReady, Smarter Balanced Assessment, and the Advancement Via Individual Determination (AVID) college readiness system for use in CTE classrooms.

Faculty have increased the rigor of coursework—both within the STEM program and school wide—and are focusing on assigning tasks that are relevant to the career field, not just “seat work.” As Churchill engineering teacher Marty Wilder puts it, “students create real solutions to real problems. We give them the skills and materials they need and then support them in taking risks, trying things out and then making improvements and trying again... [it's] student-directed learning.”

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## Bridging the Gap Between Curriculum and Career

This is what sets Eugene's Relevance & Rigor program apart: Bridging the gap between curriculum and career. By providing opportunities for hands-on learning, this program enables students to engage in authentic, problem-based engineering projects that are connected with working professionals in the community. Teachers also coach students on how to transition from student to successful worker, problem solving, deeper thinking, and guided inquiry—all part of the ThinkReady approach. A new STEM studio, equipped with state-of-the-art engineering technology, will give students the chance to develop and hone up-to-the-minute skills that are immediately applicable upon graduation.

While the Relevance & Rigor program is still in its early stages, the revamp is already reaping better results in terms of faculty enthusiasm, community investment, and perhaps most importantly, student engagement. “This has been huge in making school more meaningful,” says Theresa Hilkey, Churchill's STEM coach and math teacher. “Our enrollment has increased because students have a desire to learn about engineering. They have had field trips, guest speakers, and connections with colleges.”



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## Empowering and Engaging Students

Says Marty Wilder, “Even at this stage, I see these courses capturing the attention of students who have disengaged from their mainstream academic experience (on both ends of the performance scale). For some, this is the first time they have gotten recognition for talents and skills in mechanical aptitude and spatial relations. For others, it is one of the few opportunities they have had to follow their curiosity and shape their own curriculum.”

In total, Eugene has already made changes in 11 key areas—including new training, new hires, and new staff activities—due to the CTE Revitalization Grant. But Relevance & Rigor doesn’t stop here. Eugene administrators hope to get more freshman and sophomore students involved, possibly through Mathematics and Science Partnership grants or other funding sources. And to further equip students to continue their education, faculty are working on elevating the focus on college and Federal Application for Student Aid (FAFSA) applications—with a goal to reach 80% FAFSA submission.

All this serves to empower and engage students—and show them their full potential. One Churchill junior calls the classwork “interactive, interesting, and new,” while a freshman says it “really gets your brain thinking.” Most exciting is the fact that some students are already appreciating the long-term impact, like another Churchill junior who says, “It is really helpful to me because I want to become an engineer when I graduate.”

Thanks to Eugene’s commitment to rigor and relevance, that is more than just a student’s dream—it can become reality.

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# Brave New Schools: Pine Eagle Launches Innovative CTE Curriculum with Smart Classrooms



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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Pine Eagle Charter School and Eagle Cap Innovative High School had a vision to graduate students who are highly qualified for employment in the growing career fields of industrial automation and control systems. Their goal was to provide innovative CTE opportunities that incorporate classroom instruction, project-based learning and on-the-job training for careers in these fields. But providing students with preparatory CTE instruction posed a problem due to the high costs and logistical challenges of sourcing the equipment and training faculty.

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## **Giving Students Great Opportunities**

Pine Eagle's Career and Technical Education Revitalization Grant got the ball rolling. Says Joe Denig, Pine Eagle's agricultural science and technology instructor, "The CTE grant has provided the option for students to get hands on learning and training. Learning how control systems function, how to control them, and how to design them gives students great opportunities."

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## **Dual Enrollment, Work Experience, and Pre-Apprenticeship**

The Industrial Automation and Control Systems Technology (IACST) program uses dual enrollment instruction (with two college partners), work experience and pre-apprenticeship opportunities that lead to entry-level employment or advanced training for licensing, certification, or an advanced degree. Instruction focuses on electrical engineering and electrical maintenance technician skill sets, while still incorporating the Oregon Skill Sets and the content standards.

The logistical challenges of giving hands-on instruction in robotics and control systems have been overcome in part through a collaborative effort involving three local companies, two college partners, and local individual partners. Business partners ensure curriculum is inline with workforce needs; provide internships and job shadows; provide technical support; and provide equipment. Says Cammie deCastro, principal of Pine Eagle, "Our students...are now exposed to hands-on career-related experiences. The program incorporates instruction from community partners, tying classroom work to real-world careers. The program also brings relevance to math, science and technology classes."

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## **Smart Classrooms Sharing with Other Schools in the Region**

Both schools are also incorporating "smart classrooms" where instruction may be updated as needed and transmitted and shared with other small schools in the region. Industry partners plan to connect with students directly in the classroom through broadcast "field trips" and classroom visits. "This type of program would not have been possible without this type of grant," says Denig. "The control systems and technology that students are working with were not normally found in our districts supplies, nor was there the funding available to develop this comprehensive instruction."

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To ramp up for the new program, faculty attended summer professional development with Project Lead The Way at Oregon Tech and a session with Idaho Power to learn about the use of Programmable Logic Controllers (PLCs). That knowledge has been transferred to the classroom, where students are learning how to use the same PLCs and develop a control system for Pine Eagle's on-campus green house.

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## Programming Robots Piques Student Interest

Students are enthusiastic—due in no small part to how the curriculum is presented. “To start to pique student interest, the first steps are working with programmable robots,” says Denig. “This has definitely enhanced student interest in the curriculum.” One Pine Eagle freshman shared that “it was amazing to watch the robots move to our commands. Knowing that this is how many of our common appliances work is totally mind-blowing.”

The coursework builds upon this early “cool factor,” reaching professional-level instruction. Understanding PLCs has been key; says one Pine Eagle freshman, “After learning about the PLCs, I found that many things we rely on daily run this way. For example, fire alarms are run this way. This provides many jobs, and it interests me.” Concur a Pine Eagle junior, “I have never taken a class like this before...I have enjoyed the opportunity of learning so many new and very different things,” and a senior recognizes that “learning to write programs is useful in many different fields.”

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## Job Shadows and Internships

Feedback from industry partners—and potential employers—is also positive. One representative from Idaho Power described how a job shadow student quickly began to understand the possibilities open to him when he applies himself in school. A representative from Pine Phone said the projects that interns worked on have helped them understand the needs of the workforce (deadlines, producing quality work, getting along with others, etc.).

Looking forward, Pine Eagle seeks to replicate coursework at Eagle Cap Innovative High School and additional schools—the smart classroom approach makes it possible—and will continue to expand on postsecondary opportunities, including working with LBCC and their collaborative mechatronics program with TVCC. It's a brave new world of CTE instruction, and Pine Eagle is forging a path worth following.

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# The Power of We: Students Maximize Their Career Potential Through Lebanon's Unique Academy Project



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The power of effective collaboration is the standout lesson from the CTE Revitalization Grant project in the Lebanon Community School District. Says Eric Frazier, teacher and project coordinator for Lebanon, the top takeaway “is the ability of schools, administrators, teachers, and school district employees to break through barriers and obstacles. The idea of, ‘What would be best for students?’ has been the guiding thought for decision making with this grant.”

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## Technical Career Fields Expanding Student Potential

Through the establishment of the Linn County Regional Trades Academy (LCRTA), which encompasses South Albany, West Albany and Lebanon High Schools, students are benefiting from a forward-thinking curriculum; a classroom environment that stimulates and engages; and an introduction to technical career fields that has opened their eyes to their own potential. As one Lebanon junior put it, “I now have more options for what I want to do in the future with a career. Some of which I wouldn't have even thought of doing.”

One of the most significant breakthroughs in the LCRTA project to date is the strong interdistrict collaboration that has emerged. The CTE Revitalization Grant has enabled the sharing of resources between schools and districts, introducing an academy approach that is very different than the CTE classes that each of the participating schools has offered previously. According to Candy Baker, Lebanon's Grant Project Director, “students are expanding their world by having to work in new environments and systems with different school climates, cultures, and expectations.”

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## Hands On Exploration of Trades

In this unique academy structure, students begin their two-year career occupations project with hands-on experiences in the trade areas of electrical, woods manufacturing, building construction, masonry, welding and automotive technology.

The curriculum track begins with a three-week introductory session to give students an overview of the career field, including skills and knowledge required, applied use of tools and equipment, and employment potential/salaries. In the remaining three semesters, students choose one career field in which to develop apprentice-level skills.

The course sequence allows students the opportunity to explore six different trades through three-week rotations in the first semester, before pursuing more in-depth training and work experience in a particular area. Two off-campus Apprentice Training Centers specializing in electrical and carpentry training provide additional opportunities. The regional approach involves coordinating and intermingling students and staff from different high schools, as well as providing students the opportunity to gain stronger technical skills through stronger technical programs.

“I believe this project has had an amazing impact. We see students grasping concepts they would not get in any other classrooms. Students are engaged in their work and they want to learn more,” says Jessica Ramsey, a welding instructor.



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## Traditional Instruction Embedded in CTE Curriculum

Teachers have also embedded traditional academic instruction (including reading, writing and math instruction) within the CTE curriculum. LCRTA students' academic progress is monitored regularly and weekly sessions have been introduced to provide additional academic support for those who are not doing well in their classes.

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## Student Contact with Teachers, Trade Organizations, Business, and Industry

The LCRTA has led to much stronger partnerships with trades organizations and industry leadership, and access to regional industry training centers. Teachers, trades organizations, and business and industry leaders have formed a Partnership Council to develop, coordinate and improve project content and instruction. As a result, students "have direct contact with trade unions, and business and industry representatives. Teachers also have the opportunity to develop and deliver applied learning that represents current industry standards and practices," says Candy Baker.

The two-year program culminates with student participation in community-based projects or pre-apprenticeship programs.

Through instruction and active participation by private and government partnership members—including the International Brotherhood of Electrical Workers, NW Laborers/Employers Training Trust, National Frozen Foods, Oregon Freeze Dry, Oregon Bureau of Labor and Industries and Linn-Benton Community College—students are able to tap directly into the leading industries in this region, which means their acquired skills in their chosen trade is directly applicable to current employment needs. This isn't typical "by the book" education, but real-world, on-the-job training.

The result? Empowered, engaged students looking forward to a brighter future—like this Lebanon senior: "Personally this class has turned 'have to go to school' into 'want to go to school.' It has provided incentive to succeed academically in my schoolwork. Also this class has personally helped me realize that I can excel in trades related working fields. It has helped me realize my interests and set future goals for myself."

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# From Project-Based Learning to Profession: Mt. Angel and Silver Falls Create a Pipeline to CTE Careers



*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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Recognizing the need to offer CTE education to more students, Mt. Angel and Silver Falls School Districts worked together to creatively expand their CTE program. There are four different project-based learning programs including engineering, biomedical, agricultural science and business courses. The goal was to offer the programs at Kennedy High School and Silverton High School before expanding to all 27 member schools in the Mid-Willamette Education Consortium (MWEC) region. Mt. Angel Middle School students would also be offered pre-engineering courses and students from Mark Twain Middle School would be offered an agriculture class at Silverton High School.

With the support of the CTE Revitalization Grant, Mt. Angel and Silver Falls were able to launch the Building a Pipeline Through Project-Based Learning project. They have the support of an impressive line-up of educational partners including Chemeketa Community College, Oregon Tech and Oregon State University. Industry partners from local government agencies, health care providers, construction firms, and agriculture also are participating. One partner, Dr. Cote of Cote Chiropractic and Vice President of the Oregon Board of Chiropractic Examiners, said “the school district has a low percentage of students moving on to post-secondary studies, so programs like this are imperative to prepare the majority of the students for their lives beyond high school.”

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## STEM Related Careers and Curriculum

Enacting a curriculum that runs vertically (between middle and high schools) and horizontally (across the Mt. Angel and Silver Falls school districts) has been an ambitious undertaking. Transportation was a challenge, but Mt. Angel decided it was important enough to take on the expense of buses. Upgrades to classrooms have made all the difference—says Mt. Angel science teacher Carlie Harris, “Major improvements to our CTE/Science classrooms help us implement the curriculum, which better prepares our students for STEM related careers.”

Teachers have pursued extensive professional development to enable them to meet more rigorous curriculum requirements, with training from Project Lead the Way, the Curriculum for Agricultural Science Education, and the Perry Initiative. Industry partners have also enhanced the quality of instruction with increased access to essential equipment—such as agricultural equipment from partner NORPAC Foods, Inc.—and real-life work experiences, such as a hospital externship that demonstrated STEM needs in the medical industry.

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## High School and Middle School Connections

One of the hallmarks of this innovative Pipeline project is reaching out to middle school students so they can get an idea of their options once they enter high school, and learn where their coursework could lead in terms of career opportunities. The early stages of these programs have met with success. Says Silverton agriculture teacher Daniel James, “This has developed an early interest and nice partnership with the high school before they are actually enrolled in their freshman year.” The middle schools truly feel like a partner with the high schools.

High school students are enthusiastic, too. One Kennedy High School junior said, “I feel more confident about the engineering field. I think it is a good fit for my skill sets.” Another junior at Kennedy commented on the value of the project-based learning, “I have never before been able to experience competitions and real life



opportunities [before]...I really like school now!" For now, the middle school course in Silverton is only offered for one semester of the year, but students have expressed a desire to take the classes year round and/or sample other CTE areas as well.

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## More Highly Skilled Candidates for Employment

Teachers have also been pleased with the number of girls signing up for the welding course and the health and robotics programs. Silverton High School welding instructor Scott Towery said that the Pipeline program enabled him to offer an all-girl welding class that "has helped female students develop an interest in this CTE area, which is traditionally dominated by men. In past years, only one or two girls would enroll in the class. I believe [my] class filled up with non-traditional students because it sparked an interest with our girls at Silverton." One senior shared her thoughts, saying, "It is the best class of the day. It is fun, energetic and I enjoy the hard work. I like welding with other girls, it feels safe and comfortable."

Mt. Angel and Silver Falls School District's Pipeline program is already reaping results beyond the classroom, strengthening partnerships horizontally between districts and vertically between the middle schools, high schools, and Chemeketa Community College. The outcome will be more students in the CTE programs at all four schools; more articulated credits awarded with an increased likelihood of students enrolling in Chemeketa in these programs; and perhaps most crucially, more job prospects for graduates and more highly skilled candidates for local employers.

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# A Fresh CROP of Information Technology Professionals: Bringing Cutting-Edge Career Options to Wallowa

*The following narrative is a summary of a CTE Revitalization Grant Report. It represents a compilation of interviews, visits, and grant documentation developed through collaboration between the Secondary/Postsecondary Transitions Team and Kate Coppin.*

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Rural Oregon may seem like an unlikely place to find jobs in information technology—but in the northeastern part of the state, the need is keen and the opportunities are real. Case in point: IT staff employed by the Wallowa Education Service District (ESD) also function as the IT support staff for local government. The result is that despite the logistical challenges in these geographically large, rural “Frontiers,” the Wallowa ESD was perfectly poised to offer high-quality and highly-marketable IT education to its students through its IT Careers in Rural Oregon Project (IT CROP).

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## Growing a Local Workforce

Says Wallowa Superintendent Karen Patton: “The long-term impact to our region will be a skilled workforce to draw from when hiring for IT support positions. It has been a challenge to attract applicants. Many are not native to the region and desire to work in a less rural setting. By providing this opportunity, we hope to grow a local work force. Students will acquire a set of portable industry recognizable skills and certifications that will allow them to pursue paths in recession-proof careers available in rural and urban settings alike.”

IT CROP is a 15-month pilot program involving three (3) high schools (Arlington, Joseph and Grant Union) and the IT support staff from Grant, North Central and Wallowa ESDs. Teachers, IT staff and CS staff from Treasure Valley Community College (TVCC) collaborated to provide college-level courses through Moodle (an open-source tool to create virtual learning environments). The three courses matriculate to TVCC programs in Computer Information Systems (CIS) Support Specialist Career-Pathways Certificates and 1- and 2-year programs. Students completing the courses this year will be eligible to take the first part of CompTIA’s A+ Certification.

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## College and Career Ready Students

Utilizing effective collaboration, the faculty familiarized themselves with the new instructional content and are consistently working together to meet students’ needs while remaining committed to college-level standards. Two (2) new CIS courses (110 and 111) were developed and added to the curriculum. Not only do the students like the subject matter, they also really like the fact that they get to earn college credits. What makes the IT CROP curriculum different is that it is “interesting and challenging,” says one Joseph Charter junior, while another says, “This class has made a difference to me personally because I now have a better understanding of computers, so when I go to college I can use the things that I have learned.”

To cap off the program, student internships—including work-for-pay opportunities—will be made available through local government agencies, companies and hospitals. Each student will participate in the job application and interview process as well as complete a minimum of 16 hours of formal job shadowing.

Further highlighting the district’s long-term goal of growing a strong IT workforce, a Pearson testing center has been set up in each of the 3 ESD regions to allow students to earn national IT certifications. This center is also available to the community, and may be expanded to include medical certification.



IT CROP's early accomplishments prove that, as Wallowa Superintendent Karen Patton describes, despite the logistical challenges, "small remote rural schools are able [to provide] relevant, alternative and sustainable learning opportunities in a setting where providing varied options has become a significant challenge."

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## Schools Working Together to Provide Opportunities

Starting in spring 2013, each of the 15 school districts will have access to the courses and teacher professional development. Josh Kesecker, Technology Coordinator for Wallowa ESD, sees great potential for IT CROP. "It's not very common for rural schools to be able to offer these sorts of programs, as there often aren't enough [resources] to make it pencil out," says Kesecker. "However, it certainly is inspiring to see schools from all over Eastern Oregon work together to pool their students and resources into a great, sustainable program."

As Karen Patton puts it, "A small group of dedicated teachers, IT staff, ESD superintendents, and college staff have come together to build a program that truly meets the dual need of building a skilled workforce for communities and offering varied educational opportunities for students in remote small schools."

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