

APPLICATION COVER PAGE
(Please Print or Type – All Fields Must Be Completed)

Project Name: Full STEAM Ahead
Amount Requested: \$393,848

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	Participating High School or Middle School Name (add additional rows as needed)	Lead Contact Name	Grade Levels	Student Enrollment
1.	Waldport High School	Diana Mackenzie	9-12	175
2.	Crestview Heights K-8	Kelly Beaudry	7-8	100
3.				
4.				
5.				
6.				
7.				

Full STEAM Ahead:

Revitalizing Waldport High School through Career and Technical Education

A. Abstract

Waldport High School expands its CTE Program with a new Materials Technology Career Pathway in Manufacturing and Fabrication, and enhances it through the development of new Community Response and Tourism and Marketing Career Pathways. The Revitalized CTE Program will dramatically increase engagement, rigor, and essential skills for students. Creation of a new STEAM (Science, Technology, Engineering, Art, and Math) model integrates STEAM into CTE, and CTE across all academic areas. The *Full STEAM Ahead* project highlights a vision to improve education through authentic, experiential learning. Students will design and manufacture products for local scientific research, and by the port and city for tourism. They will also achieve certification in emergency response, firefighting, and boating. Newly established partnerships will provide internships, mentoring, and job-shadowing. Through a revitalized CTE program, students will receive experiential training and mentoring that will prepare them for college and high demand, high wage occupations. *Full STEAM Ahead* will improve future prospects for our many, historically underserved students and will contribute to improving the economy of our coastal communities.

B. Full STEAM Ahead Grant Vision

Innovation: Waldport High School’s (WHS) vision is that a **revitalized** Career and Technical Education program will serve as a strong foundation to **revitalize the entire school and community**. A small high school of 175 students in a rural, coastal community, students and Waldport residents have been challenged by dramatic shifts in the employment landscape. Economic conditions continue to decline as family wage jobs in timber and fishing vanish and are replaced by lower-paying service industry jobs. Poverty rates are high and college attendance rates are low among our students.

WHS teachers are passionate about increasing high school and post-high school student success. We recognized that we need an innovative way to reach our students; to motivate them by engaging their passions and developing their interests through relevant, community and globally-based projects. A core group of teachers formed *The STEAM Team* out of a shared vision for our school, students and community. We envision a school that provides each student with challenging opportunities in a culture of creativity, respect, and an authentic enthusiasm for learning. *Full STEAM Ahead* (Appendix A) is a long-term vision for integrating Science, Technology, Engineering, Art, and Math to develop a variety of career pathways that will provide opportunities for our students to graduate with the skills and training to succeed in the workforce, prepare for high wage careers, or matriculate successfully to college. We will develop or expand three pathways: 1) Manufacturing and Fabrication, 2) Community Response, and 3) Coastal Tourism and Marketing. Our CTE program is based on 1) applied, authentic, project-based learning, 2) interaction with community, 3) teaching through modeling in real-world practice, 3) Design Thinking to solve problems, 4) developing essential ‘Habits of Mind’, and 5) developing students’ self-initiative, perseverance, and “out-of-the-box thinking.”

Integration: The primary goal of the *Full STEAM Ahead* Project is to develop Career Pathways that support students gaining the necessary skills to successfully build careers in high wage, high demand fields, while improving the economy of our coastal communities. The project **expands existing and develops new CTE Programs** that **integrate** authentic, **experiential** learning, work-based learning, rigorous academic standards, and industry-level certification at graduation. Student manufacturing projects fit the needs of industry partners, internships help students gain valuable work experience in industry and public service, and student-run businesses provide opportunities to incorporate STEAM learning and critical thinking skills.

Expansion and Growth: *Full STEAM Ahead* expands partnerships with higher education, industry, and a wide range of scientists. CTE at WHS is a small but vital program that engages students in **experiential** learning in the Manufacturing and Fabrication (MF) program of study. Materials Technology (in the MF POS) students work on authentic projects, such as engineering, fabricating, and launching Ocean Drifters to track currents. Material Technology II students will collaborate with AP Environmental Science (APES) students, to build an Ocean Lander that will be deployed at the edge of the Cascadia Subduction Zone. The CTE students will design and build the Lander, while the APES students will plan data collection and determine the necessary sensors. Both student groups will test sensors in our local estuary prior to mounting them on the lander for launch by Oregon State University.

Expansion of the MF Career Pathway will integrate workplace learning through internships with local industry partners. It will generate new income for the school and community as students manufacture high technology equipment for marine scientists, such as the Ocean Lander, and design and build a prototype “Tiny Home” for the Port of Alsea. This program will also extend MF to middle school students, preparing them for entry into WHS Career Pathways.

The development of a second Career Pathway, Community Response (CR), integrates internships, experiential learning, health, science, and engineering into an academic strand that will result in several possible certifications: Teen Community Emergency Response Team (CERT), Firefighter 1, and Emergency Medical Technician. Students may also earn dual credit for classes such as Anatomy & Physiology. The Community Response Career Pathway is a **high demand** occupation on the Oregon coast, as our rural communities have a difficult time attracting medical and health care workers.

The third Career Pathway being developed is Coastal Tourism & Marketing (CTM). Students graduating in this strand will earn industry certification, learn to manage a business in ecotourism (kayak tours), create nature podcasts for the public, collaborate with Environmental Science students in restoring wetland habitat and creating nature stations, and manage environmentally friendly vacation rentals (Tiny Homes) created by the students in the MF Career Pathway. This Pathway integrates internships, experiential work in business and tourism, and rigorous academic standards in environmental science, oceanography, and public service.

Experiential Learning: To gain maximum educational benefit for students, the *Full STEAM Ahead* Project is primarily authentic and **experiential**. Through internships and Project-Based Learning (PBL), students “learn by doing,” developing their own projects that are in high demand by partners. PBL and authentic work experiences are effective strategies for preparing for **high demand** occupations. Students in the CR Pathway will initially be trained in Teen CERT through a combination of classroom and community activities. Further coursework will pair them with our local Fire Department, where they will train and ride with firefighters and EMTs as they respond to emergencies. CTM engages students in a completely student run, ecotourism business. The Kayak Shack provides kayak rentals and kayak tours in the Alsea Bay

area and students manage the financial, logistical, and safety training ends of the business in partnership with the Port of Alsea.

The primary **outcomes** of *Full STEAM Ahead* are the enhancement and development of three Career Pathways/Programs of Study under the CTE umbrella. These will engage our underserved students and result in training for high demand/high wage occupations. Specifically, *Full STEAM Ahead* will 1) Enhance MF Pathway by redesigning it through the STEAM framework, where it is **integrated** across curriculum, while growing roots into the middle school grades, 2) Develop the CR Pathway, in which students earn Teen CERT certification, and Firefighter 1 certification through coursework and internships with the Fire Department, and 3) Develop the Coastal Tourism and Marketing Strand, in which students run an ecotourism business and develop tourist opportunities in the community.

C. Partnerships

Partnerships are the foundation and strength of the *Full STEAM Ahead* project. Numerous potential partners have approached us as they learn of our vision and plans. Our community, business, industry, and higher education partners played a significant role in the development of this proposal. Last year, staff engaged in a variety of meetings with our partners to solicit input regarding new career pathways programs, and potential certifications for our students.

Experiential learning opportunities within local industry, commerce, and higher education were developed with our partners. A complete list of partners and their contributions to the Career Pathways can be found in **Appendix B**. *Full STEAM Ahead* will build and strengthen partnerships within our three strands by developing and providing 1) internships, 2) on-the-job training, and 3) training at the school in the three Career Pathways of Manufacturing & Fabrication, Community Response, and Coastal Tourism & Marketing. A recent matching grant

allowed the purchase of a van to transport students to partner locations, and to transport materials used by partners and students to build prototypes and projects, particularly in Manufacturing and Fabrication.

D. and E. Project Outcomes, Progress Markers, and Evaluation

Area 1 - Improved and sustainable partnerships with business, industry, labor, and educational providers.		
Project Outcome	Progress Markers	Expected Results
1.1 Partner commitments will continue and expand at the end of the Project.	Quarterly meetings with partners.	Letters of commitment from current and new partners on board.
1.2 Five students complete internships with partners by the end of the project with three students identified to follow up during the following year.	Letters or certificates for students who satisfactorily complete internships.	Student internship participation leads to higher graduation rates, jobs, or college attendance.
Area 2 – Improved student access to CTE programs of study with particular attention to historically underserved students.		
Project Outcome	Progress Markers	Expected Results
2.1 More female students will enter CTE programs due to new courses and certification in Public Service and Hospitality and Tourism, as well as participation in Women in Trades Conference.	Increased enrollment of female students in relevant CTE and STEM courses.	More female students entering STEM/CTE occupations and/or college majors.
2.2 Authentic projects implemented, thereby engaging economically disadvantaged and other underserved students to increase access to CTE/STEAM programs.	<p>Student declaration of participation in the 3 Career Pathways.</p> <p>Quarterly progress reports will analyze attendance and grades of CTE students and compare these to prior years.</p>	<p>Short-term: Attendance and grades of economically disadvantaged CTE students will improve in 2016-17.</p> <p>Higher graduation, work, and/or college entrance for economically disadvantaged students.</p>
Area 3 – Increased rigor in technical and academic content align to diploma requirements, industry-recognized technical standards such as the Oregon Skill Sets, and employability skills.		

Project Outcome	Progress Markers	Expected Results
3.1 Two new and one expanded career pathways that include coursework relying on diploma requirements, CTE standards, and Essential Skills.	Partners collaborate in development of project plans to incorporate industry standards and essential skills for employability. Career Pathways include dual credit and CTE-standard-aligned coursework and experiences. Student Portfolios include student progress in standards.	Improved student achievement based on partner evaluations, post-graduation jobs secured, graduation rates, and college acceptance.
3.2 Students will demonstrate mastery and/or proficiency in all Fire and Emergency Skill Sets while completing the classroom portions of Firefighter 1 Certification.	Student portfolios demonstrate achievement of each skill set. Students enrolled in this Career pathway attain certification from the Fire Department.	More students in this pathway are employed or attend college than is currently the case. Students in this Pathway will choose emergency or health-related careers.
Area 4 – Increased student awareness of career opportunities through exposure to employers.		
Project Outcome	Progress Markers	Expected Results
4.1 Through internships, career fairs, and working with partners, students will experience many career opportunities with our partners. This expanded understanding will be demonstrated in a survey of student career interests.	Surveys of CTE/STEAM students show increase in number of CTE/STEAM careers being considered. Increased number of students attending Career Fairs. Students completing internships with employers.	Improvement in number of underserved students expressing interest in post-secondary careers with local employers. Increased number of students select CTE/STEAM post-secondary education/training.
Area 5 – Improved ability to meet workforce needs in the region with a focus on high wage and high demand occupations.		
Project Outcome	Progress Markers	Expected Results

5.1 Increased student achievement and entry into Health and Emergency professions, which are high demand occupations on the central Oregon Coast.	Increase in student enrollment in CR pathway courses. Partner surveys expressing satisfaction with interns and student performance.	Students will be certified as Firefighter 1 and/or Emergency Medical Responders for the local area.
5.2 Manufacturing and Fabrication of authentic products for our partners, based on the current, scientific needs of the industry.	Students successfully build Tiny Home in conjunction with industry, community, and academic partners. Manufacturing & Fabrication students successfully build Ocean Lander and sensors for OSU.	Student built Tiny Home in use/ projects increase revenue for community and STEAM program. Post-graduation employment rates in high demand/high wage occupations increase for CTE/STEAM students. OSU deploys Ocean Lander.

F. Activities and Timeline

Activity	Outcome(s) addressed	Timeline	Person(s) responsible
STEAM Team Meetings	2.2, 3.1, 5.1, 5.2	Monthly from Jan 2016 – June 2017	Middle and High School STEAM Teachers
Professional Development: PBL Leadership Training, Tiny Homes Building Training, MATE ROV training for MS Teacher	2.1, 2.2, 3.1, 5.2	June 2016 – June 2017	STEAM Teachers
Meetings with Partners	1.1, 1.2, 3.2, 4.1, 5.2	Jan 2016 – June 2017	Project Coordinator
Increased student internships	1.2, 4.1, 5.1	Jan 2016 – June 2017	Project Coordinator, Students, Partners
Women in Trades Fair attendance	2.1	May 2016, 2017	Steinman or Almasi
Enrollment of students in 3 Career	2.1, 2.2, 3.1, 3.2	Jan 2016 – June	STEAM Teachers

Pathways		2017	
Rollout of 2 new pathways	2.1, 3.1, 3.2, 5.1	Fall 2016	STEAM Teachers
Presentation of certificates at graduation	2.2, 4.1, 4.2	June 2016, 2017	STEAM Teachers
Certification of Cadet Firefighters	3.2	June 2016 – 2017	COCFD, Steinman, Student Interns
Pre- and Post-Surveys of Career Interests	4.1, 4.2	Jan 2016 – June 2017	STEAM Team
Authentic projects completed by students for STEAM courses	5.2	June 2016; June 2017	STEAM Team, Students
Sustainability and Communication	1.1, 5.2	Jan 2016 – June 2017	WHS, LCSD
Middle School student participation in ROV Competition	2.2, 5.2	Spring 2017	MS Science Teacher
Community Night – partners share value of students and academics in their fields	4.1	Spring 2017	Partners, STEAM Team, Students
Continued partnership commitments	1.1	Spring 2017	Partners, Project Coordinator

G. CTE Program of Study Design

Waldport High School’s program design is centered on infusing CTE with rigorous, STEAM-based curriculum, partnerships, and authentic projects that align with the Oregon State CTE Standards for Manufacturing, Hospitality & Tourism, and Fire & Emergency Services Programs of Study. Purchased materials will support students in the manufacture of authentic, high-technology products that can be marketed and sold. Newly developed internships will prepare students for high demand jobs, such as Emergency Responders. The CTE space will be transformed into a “Maker Space” (Appendix D) that will improve safety in the CTE lab and

allow partners to work with students at our facility. This will help students meet Manufacturing Standards while creating products such as the **Ocean Lander** and a **prototype Tiny Home**. Students in the Coastal Tourism and Marketing program will manage the Kayak Shack at the Port of Alsea.

A Project Coordinator/Community Liaison is key to our success. STEM teacher Melissa Steinman will a CTE endorsement in the Public Services. She has developed numerous partnerships and excels at outreach and authentic teaching. She will coordinate student internship and job shadows, teach the CERT and Ocean Engineering classes, and work with community partners to ensure *Full STEAM Ahead* is truly a school-community partnership.

Full STEAM Ahead will prepare students for **emerging career opportunities** in our region, such as ecotourism, design and manufacture of environmentally friendly vacation rentals, disaster response, and manufacture of high tech marine exploration equipment. It will generate new **career and economic pathways** for students and the community. Our middle school students will enter our high school STEAM programs prepared and excited to learn, as described in the Bonus Narrative, Middle School Component.

Collaborative teaching among STEAM Team teachers will enhance student development of Essential Skills needed for the Oregon Diploma, as well as for successful and productive life beyond high school. Students will use Design Thinking to design, prototype, and build marketable products. The Digital Design course will be co-taught by our CTE and Art teachers in Spring, 2016. Students will build their prototypes in Material Technology 1 and 2, both of which are Manufacturing and Fabrication classes. Once successful prototypes are built and approved by our community partners, students will build and market their products. Two examples are: 1) An **Ocean Lander**, designed by MF and APES students with a goal of deploying it in spring or

summer of 2016, in partnership with OSU/NOAA Cooperative Institute for Marine Resource Studies (CIMRS), and 2) A prototype of an eco-friendly, **Tiny Home** (Appendix C), to be used by partners at the City of Waldport or the Port of Alsea. This project is a collaboration between MF and CTM students.

Internships and close collaboration between partners, students, and teachers allows students to gain workforce skills and provides a basis for further education. For example, students who work with the Central Oregon Coast Fire Department will develop Firefighting and Emergency Response skills. For many, we expect this work experience to be a jumpstart to health care fields, all of which are high demand occupations on the central coast. Local students who maintain a higher grade point average can attend community college free of charge. Internships that allow students to develop confidence and skills that prepare them for post-secondary education and the workplace will aid our underserved students and our community.

H. High Wage and High Demand Occupations

All of the target careers addressed in the *Full STEAM Ahead* project are high demand occupations on the Oregon Coast. Our community partnerships strongly correlate with local, regional, and state high wage and high demand occupations. According to the Oregon Department of Education, Health Sciences, Engineering & Construction, and Advanced Manufacturing are all high demand jobs. In particular, the STEM fields have been identified as high demand/high wage jobs at the international, as well as state level. Our partners will assist students in developing the skills and knowledge necessary to excel in STEM careers and post-secondary study in STEM fields. MF students will design and manufacture high tech, state-of-the-art, marine exploratory equipment and Tiny Homes equipped with renewable energy sources. Internships will train students in such high demand occupations as disaster response,

environmental consultation, renewable energy engineers, business ownership, emergency responders, and health care.

Further, many of the careers we have targeted have a marine or ocean component. The new Ocean Observing Initiative off our coast and OSU Marine Studies program in Newport will add to the local demand for STEM jobs. Most of these careers are also high wage careers and demand specialization. Students involved in marine-related projects, such as leading kayak tours or deploying ocean landers and drifters, will obtain **Oregon State Boater Education Certification**. This is intrinsically tied to both the CTM and CR Career pathways, as Central Oregon Coast Fire and Rescue district includes **water rescue**. This is one example of a specialization that is rarely offered to high school students and will improve self-confidence, specialized skills, and the potential for attending college.

I. Equity

Despite research and models that suggest higher effectiveness of more engaging, individualized approaches to education, America has had a difficult time moving away from older, traditional models. This has led to inequity in education, particularly for low achievers, who are disproportionately underserved and economically disadvantaged, as well as a high degree of disengagement in the classroom. These students are the primary target of the *Full STEAM Ahead Project*. Increasing true engagement and passion for learning will require us to move education in a direction that provides constant challenge and meaningful decision making for students. **Student engagement is the method by which the STEAM Team plans to tackle inequity in education.** Our project aims to challenge students to plan, design, build, manage, think, and solve problems. Not only are the projects authentic and community-based, but they are inquiry-based (and, therefore, individualized), exciting, and designed to build confidence and

maturity. Through these non-traditional pathways we will engage our **underserved** populations, including economically disadvantaged, disabled, and cultural, ethnic, and gender minorities.

With the combination of peer and mentor help, the *STEAM* program will support students as they improve their communication and math abilities in core academic courses.

The community of Waldport has a high rate of underserved students, primarily economically disadvantaged, Native Americans, and young women. Our Vision specifically targets students in poverty by dramatically raising the experiential, authentic learning opportunities, and partnering these students with community organizations to improve their access to academic and workforce success. Traditionally, these students have not been high academic achievers. They have lower graduation rates, lower college attendance rates, and face significant obstacles in seeking careers, since they have not been mentored through the job seeking and work-skill building processes. *Full STEAM Ahead* intends to retain these underserved students by incorporating individualized help with portfolio and resume development, opportunities to meet with a faculty advisor, peer mentors, and partners., and by integrating experiential projects with academic content.

To improve graduation and post-graduation success for our underserved populations, student internships with partners will help students develop the background and skills to forge work relationships with potential employers. The *Full STEAM Ahead Project* will provide engaging, large-scale projects to help students build mental and physical stamina necessary to lead healthy, productive lives. We strongly believe these will improve engagement and achievement for our many **historically underserved** students.

To increase student post-high school success, WHS now offers dual credit classes. CTE students can currently gain college credit through English, Math, and Social Studies courses needed for graduation. They can also obtain college credit from either APES, which ties closely

to two of the Career Pathways, or from Anatomy & Physiology, which integrates well with the CR Pathway. Advanced classes at WHS tend to attract higher achieving, college-bound students, while economically disadvantaged students tend to steer towards courses they see as achievable or easier to master. We aim to change this pattern by adding college credit CTE courses. As the community and students become more familiar with the STEAM Project, we expect higher **recruitment** and **retention** of our students, especially among those who would have dropped out or transferred to another school for behavior issues and dissatisfaction.

J. Diploma Connections

CTE programs of study should support the 40/40/20 goal by helping students progress toward the diploma. The STEAM Program goals are nearly identical to those of the 40/40/20 Plan. We see a strong need in our community to reach out to our underserved populations of youth to increase their post-secondary achievement, whether it is college, vocational school, or entering the work force at higher paying and higher skills jobs. Our program has a heavy emphasis on reading, writing, math, and STEM skills. Several of the STEAM teachers are actually General Ed teachers whose primary role is to support our STEAM students in communication, math, and science. While the General Ed teachers have implemented Advanced Placement and Dual Credit courses this year in ELA, Social Studies, and Science, the STEAM/CTE teachers will be focusing on the “middle 40” and the “remaining 20”; namely, helping the 60% graduate high school with certification, essential skills, and the confidence to seek and hold a skilled job.

Support is also provided for this 60% by team building. When teams of students work together with a community or teacher mentor, they can accomplish much more than when working in isolation. Teamwork will support students in learning math and science skills as they

manufacture products or operate a business. “Doing” the activities will help them understand the relevance of communication and math to daily life.

An innovative CTE program is an ideal forum through which to teach **Essential Skills**. Beyond technology, a project-based CTE program incorporates reading, writing, communication with experts and the community (civic and community engagement), critical and analytical thought, and even global literacy, as Ocean Literacy and Renewable Energy projects incorporate local, regional, and global challenges. Teamwork is an essential part of any large-scale project, and it has been heavily incorporated into the CTE program since its inception. In all current and planned projects, significant use of math and problem-solving skills is required of students. In the Material Technology courses, students develop **essential skills** needed in the high skill workforce, through the incorporation of PBL with ambitious, useful, complex projects.

In the MF Pathway, students build products that will be used in industry or the community. They will be providing a service to the partners, community, and potentially to economically disadvantaged community members. Students will use analysis and problem-solving skills in all projects. Students earning certification in the CR Pathway will develop critical thinking skills, as they are required to react immediately in a disaster or life-threatening situations. Students graduating in this strand may earn either Firefighter 1 certification, which involves attending emergencies with firefighters and EMTs, or Teen CERT certification, giving them license to be first responders after a natural disaster, such as a great earthquake or tsunami. These events are real threats in our community and our Teen CERT volunteers are noticeably more confident and capable when they graduate from the program. Central Oregon Coast Fire Department tests students at the end of their course, administering a rigorous set of tests. Students must pass all tests to attain certification.

Coastal Marketing and Tourism also involves student problem-solving, as potential business and tour leaders. This strand prepares students for a business career that also helps the environment and the community. Students develop math and communication skills, as well as water safety and rescue skills that build confidence in participants. Students starting this strand learn to appreciate nature, communicate ecotourism information through podcasts, and operate a kayak tour business. All of Oregon's Essential Skills are embedded in this strand. Students managing the business and leading kayak tours must develop confidence in their decision making abilities as well as the ability to brainstorm solutions and make split-second safety decisions. Students in this strand develop the ability to communicate as tour leaders, remain patient with tour participants, communicate about natural areas and the central coast community, and complete business transactions.

K. Sustainability

A wide variety of community partnerships will allow us to remove barriers between students and life after high school. Once partnerships are established, we do not anticipate a strong need for funding from external sources. Successful partnerships are expected to develop into long-term relationships as partners will assume some of the costs associated with interns and projects. Our partnerships allow true collaboration between local and regional leaders, business owners, student leaders, and educators. Our Project Coordinator will serve as Community Liaison, working closely with partners to maintain and sustain strong partnerships, providing outreach to the local and regional community to build new partnerships, and generating interest and support in the *Full STEAM Ahead* program.

Increasing the number of students enrolled at WHS and participating in the STEAM Project is integral to the sustainability of the program. These objectives will be accomplished through

recruitment of middle school students, increasing student engagement, and using the PBL approach, in which students work in teams to accomplish their goals.

An important component of sustainability is the **community-wide recognition** of the value of partnerships. During the past year, student leaders in internships and STEM contests, such as the MATE ROV competition, have been recognized through school awards, local newspaper articles, school district media releases, and the Oregon Coast STEM Hub website, Facebook page, and blog. Our Project Coordinator has been interviewed on the radio and engages in outreach activities to local businesses. She has also taken students to present their STEM and CTE Projects and our program at Marine Science Day at Hatfield Marine Science Center. Female student leaders went to the May, 2015 Women in Trades Career Fair in Portland, and STEM students attended the Marine Technology Summit in Newport, Oregon in Fall, 2014, allowing for exposure to a variety of marine research projects, marine related careers, and marine scientists. These experiences led several organizations and businesses to contact us requesting partnerships.

Full STEAM Ahead is also engaged in national and regional outreach. We have been selected to present at the 2016 National Science Teachers Association (NSTA) meeting in Nashville, TN to discuss the changes in our programming and observed outcomes. We plan to present at the regional NSTA meeting in Portland in October, 2016, to discuss outcomes and network with other CTE and STEM professionals in the state.

We will offer special recognition of students in the CTE Pathways at graduation, including certification for finishing a Career Pathway or achieving industry certification, such as Firefighter 1. We will continue to celebrate student achievements through announcements, newsletters, school district website, and regional scientific and technical meetings.

The Lincoln County School District strongly supports the STEAM vision and program enhancement/expansion. We have received matching funds for STEAM teachers to teach collaboratively, thus improving the integrated and PBL nature of our STEAM classes. We have received district-level support for the project. Policy and programmatic changes that have been instituted for the *Full STEAM Ahead Project* include formation of a new position of Community Liaison, which allows for supervision of students working off-campus in internships, and close collaboration with partners both on campus and off campus. The move to diminish boundaries between community and regional leaders/partners and high school students will assist us in providing a framework for future action. To help us monitor the impact of all of the changes mentioned above, we have planned a series of pre- and post-surveys on student attitudes toward their own success and STEM careers and will collect data on graduation rates, post-secondary success vs. socioeconomic status or other factors in underserved populations.

We will collect and disseminate data on student success, revenue, partnership success to the LCSD school board and administration, as well as the community, parents, and partners. WHS has traditionally had a Community Outreach night each year that is usually not well attended. Last year we improved public relations for this night and advertised that our new vision and course changes would be unveiled, and attendance increased. Once the STEAM Project begins, we plan to further increase attendance by inviting partners, having students interview on local radio, and having students write and post public service announcements. The nature of the Community Night will change to a Showcase. Students will design and run the event, showcasing their partnerships and achievements, and engaging in fundraising. At Showcase, we will collect data on changes in skills and knowledge of parents and community members. For example, our Environmental Science class has planned an outreach activity where they teach the

community about climate change. As part of this activity, attendees will fill out a brief pre- and post-survey on opinions and knowledge to test the efficacy of the activity. Students will analyze the data themselves.

WHS and LCSD will continue to seek external funding to sustain the program. Last year we obtained several small matching grants to support student CTE/STEM Projects; for example, the Oregon Coast STEM Hub provided funding to start a middle school Remotely Operated Vehicle (ROV) project so students could participate in the MATE ROV Competition in April. Siletz Tribal Charitable Organization also has provided in-kind funds for WHS 8th and 9th graders to build and compete with ROVs at a higher level.

In addition, students will be directly engaged in creating high technology products, such as Ocean Landers, Drifters, and Tiny Homes, that will generate new revenue for the Port of Alsea, the City of Waldport (Tiny Homes) and WHS. This revenue will be reinvested in the STEAM Program. We continue to seek out grants that will help us expand the program for several years after the duration of the CTE Revitalization Grant; when complete, we believe the revenue from sale of products and revenue from our proposed surplus storage and sales (not within the scope of this biennium) will help us maintain a sustainable program.

L. Communication

Full STEAM Ahead has a multi-faceted communication plan. We will communicate to students about possible pathways open to them in several ways. Expanding M&F and ROV programs to include middle school students will ensure that students know their options by the time they get to Waldport High School. Students will present their options and projects to parents to guarantee that parents will be informed. A STEAM Newsletter will be sent to parents, with short articles written by both students, staff, and partners.

The STEAM program is widely discussed at staff meetings. The STEAM Team will collaborate with all school staff. Our ELA teachers will support students in learning the importance of clear communication skills for project presentations. The newsletter will inform staff of current and changing directions of the STEAM project.

Media releases, social media, and student/teacher attendance at local, regional, and state events will communicate our purpose to the community. At Hatfield Marine Science Center's Spring Marine Science Day, student leaders showcase their CTE projects related to the Ocean, and discuss the changing direction of our CTE Program. A WHS STEAM Facebook page, Twitter, and Instagram account will inform parents and the public of our vision and activities. Community Night will highlight the STEAM Vision to our **parents, students,** and attending **community** members. **Partners** will also attend and help present activities.

V. Bonus Narrative: A. Middle School Component

An essential component of the *Full STEAM Ahead* Project is the incorporation of middle school STEAM into our program. To increase rigor and maximize authentic learning for high school students, it is essential to start middle school students learning with PBL, developing collaboration and leadership skills. In particular, we will target perseverance, engagement, and attention to safety to build 21st century skills before students reach high school. In this way we can better sustain the *Full STEAM Ahead* program, because students will enter high school with already-established values of community service, collaboration, and responsibility.

The middle school component of *Full STEAM Ahead* includes several levels:

- The Middle School Science teacher will train in Remotely Operated Vehicles (ROVs) at the Marine Advanced Technology Education center in California.
- ROV and Robotics curriculum will be developed to build interest, collaborative skills, leadership skills, and a deeper understanding of the importance of engineering and science beyond high school.
- Improve ties between high school STEAM students and middle students by having high school students mentor their younger colleagues.
- Middle school students will have the opportunity to take a Manufacturing and Fabrication (Material Technology) class as an elective; with the *Full STEAM Ahead* Project we intend for this class to become more authentic and tied to partner needs and skills.

We expect the above components to improve student engagement at the middle school level, which will improve sustainability of the program. Some of our partners, such as the Oregon Coast STEM Hub, are already committed to collaboration with the high school teachers, middle school teachers, and middle school students to enhance STEAM education at this level.