

I. REQUIRED DOCUMENTATION

APPLICATION COVER PAGE

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

| |
|--|
| Project Name: Industrial Automation and Control Systems Technology Project (IACST) |
| Requested Funding: The total budget for the project is planned to be \$ 153,326.00 serving to support program development at both Pine Eagle Charter School and Eagle Cap Innovative High School in robotics and Industrial automation and Control Systems Technology with instruction connected by “Smart Classrooms”. |

| | | |
|--|---------------------------------------|------------|
| Project Director: Cammie deCastro | | |
| District, School or ESD: Pine Eagle Charter School | | |
| Address: 375 N Main | | |
| City: Halfway | State: Oregon | Zip: 97834 |
| Phone: 541-742-2811 | Email: cadecastro@pineeagle.k12.or.us | |

| | | |
|--|------------------------------------|------------|
| Grant Fiscal Agent Contact: Lisa Butler, Deputy Clerk | | |
| District, Charter School or ESD: Pine Eagle Charter School | | |
| Address: 375 N Main | | |
| City: Halfway | State: Oregon | Zip: 97834 |
| Phone: 541-742-2550 | Email: lbutler@pineeagle.k12.or.us | |

| | | |
|---|------------------------------------|------------|
| Superintendent: Mike R. Corley | | |
| District or ESD: Pine Eagle School District #61 | | |
| Address: 375 N Main | | |
| City: Halfway | State: Oregon | Zip: 97834 |
| Phone: 503-742-2550 | Email: mcorley@pineeagle.k12.or.us | |

| | Participating High School or Middle School Name | Lead Contact Name | Grade Levels | Student Enrollment |
|----|---|-------------------|--------------|--------------------|
| 1. | Pine Eagle Charter School, Pine Eagle School District #61 | Mike R. Corley | 6-12 | 182 |
| 2. | Eagle Cap Innovative High School , Baker School District 5J | Walt Wegener | 9-12 | 65 |

BUSINESS, INDUSTRY, LABOR AND POSTSECONDARY EDUCATION PARTNERS

The following individuals and/or organizations have reviewed, discussed, and agreed to their part in implementing the project proposed in this grant application:

| | Name | Title | Organization |
|----|---------------|---------------------------|-----------------------------------|
| 1. | Dale Kroger | Manager, Power Production | Idaho Power Corporation |
| 2. | Mark Butler | Technician Forman | Idaho Power Corporation |
| 3. | Bob Seal | Hydro Specialist | Idaho Power Corporation |
| 4. | Casey Rowen | Coordinator, Trainer | Idaho Power Corporation |
| 5. | Patrick Latin | Manager | Pine Telephone |
| 6. | John Minarich | Owner – Manager | Alpine Alarm |
| 7. | Roger Findley | Associate Dean | Treasure Valley Community College |
| 8. | Fred Haynes | Associate Dean | Linn Benton Community College |
| 9. | Barry Nemeč | Principal | Eagle Cap Innovative High School |

Abstract

Pine Eagle Charter School and Eagle Cap Innovative High School have a vision to graduate students that are highly qualified for employment in the fields of industrial automation and control systems. Their goal is to provide innovative CTE opportunities that incorporate classroom instruction, project-based learning and on-the-job training for careers in these fields. Funding through this grant will support a collaborative effort involving three local companies, two colleges partners, and numerous local individual partners with instructional support from one Work Force Development University

The Industrial Automation and Control Systems Technology program (IACST) program will use dual enrollment instruction, work experience and pre-apprenticeship opportunities that lead to entry-level employment or advanced training for licensing, certification, or an advanced degree. Instruction will focus on electrical engineering and electrical maintenance technician skill sets. Both schools will feature “smart classrooms” where instruction may be updated as needed and transmitted and shared with other small schools in the region.

IACST’s program of study will provide CTE in electricity, electronics and mechanization taught by certified math, science and shop teachers. Specialty instruction, project-based learning, and on the job training is led by industry professionals.

The diversity of instruction will enhance academic performance and stimulate critical thinking, complex reasoning, and reflective processing. The nature of the learning will

enhance student preparedness for high paying jobs involving industrial automation and control systems.

III. Project Description

A. Project Outcomes and Progress Markers

Industrial Automation and Control System Technology (IACST) is the CTE revitalization project for Pine Eagle Charter School (PECS) and Eagle Cap Innovative High School (ECIHS). It is a perfect fit for the industrial community of Eastern Baker County. Electrical and electronic systems engineer and maintenance technician education will provide many of our students the opportunity to be more competitive for careers in the local industries involving power generation, communication, and security alarm systems.

Improve student engagement in CTE

Outcome I, IACST program is in place: The existence of industrial education programs in Oregon's small rural public schools has all but disappeared. Many local high-paying technical positions require knowledge of math and science and skills in communication, basic electricity, electronics and mechanical systems. Some positions require licensure, certification, or a technical degree obtained through a post-secondary education. Others require pre-apprenticeship experience, secondary level literacy, math and science, and a working knowledge of mechanical systems for an entry level position. Responding to these requirements is the objective of the PECS development committee as well as the planning committee for the IACST program. This committee is comprised of professionals from the local industry partners who are in hiring positions. They identified a program that extended academic learning to include experiential

project based learning to the industrial skill set for industrial automation and control systems technology.

By the August 24, 2012, the IACST program, with curriculum, and agreements for articulation to post-secondary training or job entry will be in place. Students enrolled at Pine Eagle Charter School and Baker School District's Eagle Cap innovative High School will share instruction through distance learning from industry professionals. The program will be fully articulated with two community college programs and have agreements in place.

Outcome 2, Career awareness. The IACST program, with opportunities for participation in robotics and technology based field trips, will foster a school culture that values and motivates students desiring highly skilled and high paid career options. These experiences will increase student engagement in the CTE program for industrial automation and control. The project is also expected to increase participation in higher level academic programs of math and science. During the first year, both schools will have in place the Jr. FIRST Lego, First Lego League, and the First Technology Challenge robotics programs. Also in place will be specifically designed career awareness activities, electronic control projects using micro processing options on mechanical systems and a presence of industry partners in the school functioning as registered teachers.

Improved teacher knowledge and practice

Outcome 3, Professional Development. Few teachers of math, science and communication have experience with industry. The skill by which teachers apply math

and scientific principles and technical writing to the work of electrical and electronic engineering or engineering technician is fundamental to this project. Only with experience in the profession can complex cognitive skills be effectively integrated into student learning objectives. Rarely do academic teachers have the experiences and insights required for critical thinking or complex reasoning in the industrial setting. To increase our staff's knowledge and experience and to facilitate this level of cognitive development in students, our academic teachers will work alongside industry professionals in mentorships performing similar work that includes problem solving activities. The reverse is also true for industry professionals working as registered teachers in the classroom. Mentorships, workshops, industrial teaching methods classes as well as other activities will enhance registered teachers effectiveness in the classroom. Student performance will increase in both academic and in career programs as a result of these carefully planned professional development activities.

Outcome 4 Distance learning. Career and technical instruction is somewhat difficult or even impossible to include in all of Oregon's small rural communities. Specific instruction may exist in some locations but not in others. By collaborating with other rural districts the opportunities to obtain instruction through "Smart Classroom" technology is greatly enhanced. A partnership through Pine Telephone in Halfway will bridge the VTel or Polycom signal to IP with the capacity of two-way communication between PECS and Eagle Cap Innovative High School. The IACST program will incorporate this technology as a means of accessing skill specific instruction for the individual units of learning. "Smart Classrooms" at both Eagle Cap Innovative High School and Pine Eagle Charter School will consolidate CTE instruction from industry

professionals at either location. Electricity, electronics, computer programming, mechanical design and advisory activities for robotics are among the individual learning units that will be more readily available to students. Carefully planned instruction supplemented with combined lab activities and projects will make CTE instruction available to a greater number of student in a greater number of locations. This will be in place before the start of the 2012-13 academic year.

Improved rigor in technical and/or academic content aligned to diploma requirements and industry recognized technical standards such as the Oregon Skill Sets.

Outcome 5, Increased Academic Performance Participation in the IACST project will increase the academic performance of students in science, math and communication. Research tells us that participation alone does not necessarily improve student performance. Increasing rigor by establishing direct connections between the academics and the skill set of technical application, however, does. Those connections directly tie the academics to the Oregon skill set for CTE. They will also serve to meet Oregon's personalized learning requirements in three ways. First, by providing extended application of academic skills to job skills. Second, by providing career related learning experiences through student mentorships and pre-apprenticeships, and finally by developing skills which are tied to the Oregon skill set. In this case, the skill sets are for the electrical systems engineers and technicians.

Outcome 6, Development of Complex Cognitive Skill Development. Of particular importance to this project is the development of complex cognitive skills such as

reflective processing, critical thinking and quantitative reasoning. Recognized here is the fact that the transfer of academic knowledge and skill to mechanical or electronic application requires the use of those higher-level cognitive skills. These are the same skills that are important for design, diagnostics and repair by industry personnel ranging from maintenance technician to design and engineering. Programs that stimulate this level of cognitive development will be enhanced by problem solving activities. Students participating in the IACST program will have opportunities to demonstrate their understanding through project based problem solving activities in industrial settings. Students will apply critical thinking skills in their senior or final project that incorporates academic knowledge and skill of electrical, electronic and mechanical systems to an individual project. Cooperative learning then shifts to individual application and includes an explanation of the problem addressed by the project. The outcome or objective of the project is a discussion of the thought process and critical thinking used in the design of a solution, the identification of the control options, selection of the control option, a demonstration of the control operation, and a critique of the effectiveness in meeting the intended goal or objective. By midterm of the first year a senior project syllabus with expectations will be in place demonstrating the use of academic and CTE knowledge and skill applied to an industrial project of the student's choice.

Outcome 7 Career Planning. Many high paying, high demand jobs in Baker County and Eastern Oregon include some form of industrial automation and control. Within the boundaries of the Pine Eagle School District, industry extends from electrical generation and transmission to agriculture and food processing, communication, and the application of geographic information systems. All use elements of automation and

control. Most jobs include technical maintenance, but some also involve design, installation, and operation. While each have industry specific applications, the basic skill sets remain similar. The IACST program will be flexible enough to serve the diverse needs within the industry. Expanding the role of industry partnerships beyond the role of instruction and mentorship to include curriculum design for individual programs is a critical step of the program. The development committee has worked with PECS to establish clear pathways to employment or advanced training, which is a high priority of the program. Industry partners will serve a critical role in planning, instruction and evaluation of the program as it serves their industry. They will work to enhance career planning for students. In the first year, all students enrolled in the program will have completed a career specific amendment to their educational plan with the guidance from industry partners.

Improved partnerships with business, industry, labor, and educational providers

Outcome 8, Preparing Students for Real Jobs. This project is focused on making our students more competitive for local jobs. Currently, local industry is unable to find sufficient applicants with entry level knowledge and skill sets to meet their needs. Representatives from the major industrial employers of the area met to design and plan the program. Others from agriculture and the building trades also participated. All of these partners have eagerly agreed to stay on and act in the capacity of an advisory committee to the IACST program. They found merit in providing teacher internships, program instruction, career awareness activities, and to continually assess the effectiveness of the program. This has strengthened the relationship between the school and local industry. This committee, along with academic professionals, will

continue to serve as an advisory committee to the program meeting quarterly to observe the operations and assess the effectiveness of the program. They will recommend changes to align with the changing needs of the industry.

B. Career and Technical Education Program of Study

The Pine Eagle Charter School Industrial Automation and Control Systems Technology (IACST) curriculum is designed to serve as the beginning point on the continuum of learning that extends from industrial maintenance to control systems technician or engineering. This basic or introductory level curriculum identifies both academic learning and industrial experiences to provide knowledge and skill specifically aligned to the Oregon career learning skill sets for electrical and electronic engineering technician and industrial manufacturing. The application of industrial automation and control is the practice of applying electronic systems of instrumentation, incorporating both analog and digital logic process and initiating mechanical action to control mechanical systems for a specific outcome. It follows, therefore, that basic knowledge and skill in both electrical systems and mechanical systems would serve student interest whether in maintenance or as a licensed technician or professional engineer. Many begin a career at one level and then step on and off the learning continuum until they reach the level of their satisfaction. This high school curriculum is designed with basic level, broad based learning and experiences to prepare students for work or articulation into advanced learning.

Career awareness and recruitment will be emphasized in the elementary and middle schools. At this level, the curriculum will include FTC robotics to build knowledge, skill,

and an interest in the field of study. Emphasis will be placed on building math and science skills with activities that apply electricity and electronic principles from physical science and math in middle school science projects. Field trips and industry field studies will enhance career awareness.

In high school the curriculum will take a more specific career path. The IACST path includes career planning, academic instruction, career and technical instruction, experiential activities and projects, and extended learning off campus and outside the traditional classroom. The components of that curriculum are identified below and in Appendix A.

Student educational planning will tie the career options to specific class developed prior to entering high school and will guide student's curriculum choices as they progress through the program. The core academic program of study is dictated by the district graduation requirements. The elective choices will follow the career choice program of study that includes advanced math, science, and other academic classes.

Career and technical courses in the IACST program are designed to support the Oregon CTE career area skill sets for industrial and engineering systems. Specifically, the classroom instructional program will be aligned to selected performance indicators of both the industry recognized electrical systems and the manufacturing focus area skill sets of Oregon. They will be taught by industry specialists (registered teachers) and will integrate academic learning and industrial application. These industry professionals will serve both in classroom and in lab.

Integrated into the program for both academic and CTE instruction is the experiential and cooperative learning strategies of project based instruction. Students choosing IACST will be required to participate in a lab style project where the elements of electronic systems are applied to mechanical systems. The project identified for the first year of the program is the design, development, and installation of a temperature and moisture monitoring and control system for the PECS green house. Future projects include residential zonal control systems for heating, ventilation and air conditioning (HVAC), on part of the building trades model energy efficient home construction.

Extended learning activities of the IACST program include mentorships, job shadowing, work experience, job placement and pre-apprenticeships as identified with partner industries. The flexibility built into the program serves to fit the student's individual needs. The educational experiences and skills are designed for specific skill development for those seeking employment immediately after graduation and are more diverse for those planning extended post-secondary training or degree programs. The educational activities planned will serve both populations.

C. Innovation

Innovative elements of the Pine Eagle IACST program include: 1) the use of industrial professionals to provide instruction and practical experience as registered teachers and 2) delivering instruction to students through "smart classrooms" bridged by Internet to classrooms and/or individual computers.

Three industry partners have stressed the importance of basic skills in electricity, electronics and mechanical systems as vital skill sets for employment in their industries.

They cite the difficulty of finding potential employees with minimum skill sets as applicants for employment. When approached for help in building those crucial skill sets in our students, they responded favorably. Employees and managers of Idaho Power, Pine Telephone and Alpine Alarm all worked in an advisory capacity over the past two years in the development of this program. It is designed as one of four CTE programs of emphasis for PECS whose implementation funding was curtailed prematurely due to state budget problems.

The vision of that advisory group remains the same: to provide learning opportunities for local, high paying technical jobs using industry professionals as registered teachers of industry-recognized technical standards. It provides an excellent requisite component of the pre-apprenticeship instructional strategy and also provides the opportunity to remain up to date and current in the application and use of control systems technology.

The second innovative strategy of the program is not necessarily innovative as a venue of instruction but rather as a method of accessing multiple tracks of instruction relevant to the broad spectrum of skills essential to the program. This series of mini courses is designed to build skill sets for conceptual understanding. Using industry specialists as registered teachers from multiple locations broadcast into classrooms or individual computers provides opportunity for a limitless curriculum taught by instructors with proven experiences and relevant knowledge. The combination of virtual learning and instructors with specific talents will provide students in rural schools and isolated regions with opportunities for career and technical education that is simply unavailable today.

Both Pine Eagle Charter School and Eagle Cap Innovative High School provide “smart classroom” sites of instruction. Remote access to instruction through individual computers bridged from Polycom to IP expands the opportunity for instruction globally. Labs, robotics training and projects shared through distance learning with multiple partners extend opportunities unavailable to rural school students today.

D. Diploma Connection

“When instruction is academically rigorous, students actively explore, research, and solve complex problems to develop a deep understanding of core academic concepts” This is quoted from the Oregon Small Schools Initiative. It follows then that the practical application of academic concepts through relevant activities, projects and experiences will extend rigor and support career focused learning. The skill and knowledge sets of IACST relies almost exclusively on the math and physical science concepts applied to electricity, electronics and mechanical systems. The support for academic instruction is inherent and reflects the building and extension of conceptual understanding of relationships. Outcome 5 of this application outlines this as primary goal of this project.

Additionally, this project is designed to meet the Oregon personal learning graduation requirements for CTE. All students will develop a plan and profile their educational program of study and relevant work experiences. Armed with an understanding of the program content and requirements for all the CTE programs of the district, students will assess their personal choice and career goals, research and analyze learning requirements and develop plans to achieve their goals.

IACST students will include in their educational plan and profile, options that are provided by this project. They will include the career-related learning experiences that are relevant to their career goals and how they are supported by academic instruction, relevant career-related learning standards and opportunities for extended application that exist through mentors, work experience, and pre-apprenticeships. This will meet the State Board adopted personalized learning requirement for graduation.

E. Activities and Timelines

Two goals target improved student engagement in CTE. Goal 1, includes having an IACST program in place beginning August 24, 2012. Several activities are planned to insure completion by this date: 1) curriculum development and mapping to the Oregon math, science, and CTE electrical and mechanical systems performance standards, 2) hiring industry qualified professionals as registered teachers, 3) program development in partnership with the control systems advisory committee, academic teachers, registered teachers and administration, 4) identification of classroom and lab facilities, and ordering of materials, supplies and equipment necessary for skilled instruction and application and 5) develop summer training agreements for pre-apprenticeships.

Goal 2 is to motivate and recruit of students. Activities to reach this goal include offering First Lego League and Jr. FIRST Lego for middle school students and First Technology Challenge robotics programs for grades 8 through 12. These activities will be available in the fall 2012. Other recruitment activities will be developed during the course of the first year with industry partners whose emphasis is to tell their story and familiarize students with automation and control career options.

Goals to improve teacher knowledge and practice stems from activities which expand teacher experience and understanding. This includes activities that will be placed in service during the summer of 2012 and before the beginning of the program. Both outcome 3 and 4 either develop or seek teachers who have knowledge of the subject matter of CTE. Outcome 3 activities will build industry knowledge and competencies in academic professional staff through industry mentorships as paid internships with industry professionals. In reverse, the program will also establish paid mentorships for registered teachers with existing teaching classroom professionals during the course of the instructional program.

Outcome 4 includes distance learning options through “Smart Classroom” technology in order to access competent and quality instruction wherever it may be located. Industry specialists with specific skills may not be locally available. The use of CTE virtual instruction and “smart Classrooms” will be in place with the installation of the smart classroom and the IP bridge prior to August 24, 2012.

Activities to improve the rigor of technical and academic course content aligned to graduation and Oregon CTE skill sets establish direct connection between learning and application, stimulate higher level thinking, and establish a link between learning and career paths for students. Activities designed to meet outcome 5 also relates to professional development and curriculum design. Teachers, both academic and CTE will participate in activities designed to develop curriculum and learning goals that support the application of academic skills such as math and science to career and technical skills. Not only will staff members learn how to apply academic skills but will, through professional development options, learn to build daily lesson plans that identify

CTE application in the lesson, stated specifically the expected outcomes, and indicate how these skills are relevant to the trade. Experiences gained in activities related to outcome 3 will form the basis of lesson planning relevant, in this case, to electricity, electronics, and mechanical systems.

Tied directly to the relevancy of instruction is the development of instructional activities that support Outcome 6, the development of complex cognitive skill. Both experiential and project based learning stimulate complex cognitive skill development. Again, professional development of teaching strategies that stimulate critical thinking and complex reasoning is a learned strategy that must be incorporated into the lesson.

Outcome 7 activities support rigorous instruction by establishing a relationship between the preparation for a career and successfully competing for positions in industry. Educational planning begins in middle school. Industry based registered teachers will actively work with regular academic teachers to help students plan career goals. The educational planning with industry professionals will begin in August 2012 and will carry through the grant period. It is expected to extend past the grant and become a regular part of educational planning in the future.

Activities to support outcome 8 are designed to engage industry in learning. Industry partners involved in academic teacher development will begin in July 2012, with the delivery of instruction starting in August and as mentorships, work placement, and pre-apprenticeships beginning the second semester or January 2013.

Providing direct connections of instruction to industry trade skills whether by locating industry competent professionals or familiarizing academic staff to industry, and then

tying instruction to individual career goals is expected to increase understanding and motivate participation. The identified timeline and activities included will establish the program. The connections with the trades and the quality of instruction will motivate the continuation of the program.

F. Evaluation

Evaluation of the project outcomes will largely be done using check sheet timelines monitored continuously. The quality of all the outcomes identified above in meeting their intended goals will be ongoing with some developed to extend beyond the first year of the grant. Outcome 1, will be achieved by having the IACST program in place as a regular charter school program by August 24, 2012 with options identified for continuation of the program by June 2013.

Outcome 2 targets career and program awareness and builds interest in the IACST program. It's intended to recruit students. The use of robotics training and competition, with collaborative training between Pine Eagle Charter School and Eagle Cap Innovative High School is the means of recruitment. The number of students attracted to the program will be assessed by enrollment. A successful outcome cannot be fully assessed until the spring of 2013.

The evaluation of the remaining outcomes deals with providing quality instruction. Outcome 3 builds industry competence in academic teachers and teaching competence in industry professionals. Outcome 4 extends the opportunity for CTE instruction to be delivered through virtual smart classrooms and individual computers. Outcome 5 connects class room instruction to industry and jobs. These instructional outcomes will

be evaluated by assessing performance standards guided by the Oregon skill set. Industry partners who provide mentorship opportunities will be surveyed on the quality of student participation, and expanding knowledge and skills. The best measure is simply the percentage of students enrolled in the IACST that are hired by industry or transfer to post-secondary career related learning and are successful. All three outcomes will be evaluated based on the quality of the instruction. The measures include; are the programs in place at the conclusion of the first year and to what extent do they expand teacher knowledge and practice and support the availability of teachers with job specific skills as measured by student performance.

Outcome 7 Supports rigorous instruction and will be assessed by quality of project based learning activities that stimulate complex thinking and reasoning skills. Outcome 8 Provides direct connection to industry trade skills. Success will be assessed by the number and relevance of the activities that directly connect the instruction to the trade skills. Specific criteria to determine if instruction is meeting those relevant standards prior to the beginning of the program will be developed by teachers. Assessment of the outcome will be determined by a review of number of students meeting the Oregon skill set performance standards.

IV. Partnerships

The conceptual model of the career and technical education program that includes the IACST program was the vision of the Pine Eagle Charter Development Committee and Charter Board. Four programs were identified by the program development committees that included industry professionals and administrators. This group worked to formulate

the vision and identify the outcomes of the programs. Six industry professionals from Idaho Power, Pine Telephone, and Alpine Alarm are scheduled to begin working with academic teaching staff and school administrators to design curriculum, extended learning opportunities, and develop site-based experiential programs such as pre-apprenticeships.

Six members of the control systems development team will remain for implementation of the program and serve as the sitting advisory committee. Each member of the advisory committee is an employee or owner of a local high tech industry that provides high wage and high demand jobs. High wage jobs targeted by this program include civil, mechanical and electrical engineers and civil, mechanical, electrical and electronic engineering technicians (Oregon Classification Code 17-2151 through 17-3029). They also represent employers of high demand occupations of electrical and mechanical engineers and engineering technicians (OCC 17-205 through 17-3029). These are the positions for which this program was established.

V. Budget,

C. Sustainability

This budget will provide sufficient resources for the development of the program. Grant dollars for project coordination and instruction in this first year will be used to develop experiential projects, design and coordinate instruction, identify learning objectives to fit the Oregon skill set, and develop industry perspective evaluation procedures. Equipment, first year professional development activities and project design will be completed in the grant. Once established with a curriculum, culture, and

student performance standards, the grant phase is complete. The second or continued operational phase will be supported financially by both district and the industry partners of this project. The commitment agreements outline roles of sustainability for this project.

VI. Bonus Section

A. Communication and Replication

The nature of the project facilitates its replication or expansion. This is particularly so in rural Oregon. The advantage of the “smart Classroom” allows the transmission of instruction to and from multiple locations. Robotics, as a motivational tool, will become available in small rural schools with collaborative team building activities shared between schools through the internet. IACST, electrical systems and mechanical systems will be available to single students or small groups across the state. Other interested districts may very well identify registered teaching industry professionals from their location and share instruction with a number of other students outside their community.

The experiential component becomes difficult for some regions if the industry is not present locally. Experiences will then need to be designed to fit individual conditions and needs. They may take the form of distance supported project learning with support through the “Smart Classroom”.

Members from both Pine Eagle Charter School and Eagle Cap Innovative High School are willing to share programming, share experiences, and/or support similar projects across the state. Ultimately, schools willing to extend their curriculum to IACST as envisioned in this project, will need to inventory their community assets, build relationships with industry partners, and secure commitments for learning objectives and instruction. Pine Telephone will provide the IP bridge from their school or home to the “Smart Classroom” and both Districts will support duplication in other locations.

B. Entrepreneurship

Entrepreneurialism may take two forms in the IACST program. They include individual entrepreneurial senior projects where a student may identify a particular project related to control systems and develop that project around a business model for private enterprise. An example of this might include an automated lawn irrigation system where electronic controls over a mechanical lawn sprinkler system may be completed commercially as a senior project. The business skills, contractor licensure, math, and science along with plumbing and control systems skill sets might be included in this individual project and supported by both registered industry and academic teachers.

A second option for entrepreneurialism in the project would include class projects for private or governmental entities. This option involves the entire class working on a control system project. It would serve as an advanced project and include the development of a business model, financial records, project timelines and activities, compliance with building codes and in some cases working under a licensed contractor or licensed professional. The first such project identified here includes an irrigation system for the elementary school greenhouse and nursery program. The IACST program will also work closely with the building trades program in designing and supporting the installation of the HVAC system for their model energy efficient home construction project.

Both options have merit. The selection of either would largely depend upon a student's educational goals as outlined in their educational plan.

C. Student Diversity

The IACST program is open to all students. During the past year as we introduced FIRST robotics into our school, our initial team was made up of all female students competing for the first time at Tigard High School. This was intended to be more diverse with at least one male student, but the girls competed and represented the charter school well in their nontraditional role. Females are truly underrepresented as employees of industry with technical positions in our region. We have actively recruited both male and female students into the Building trades and robotics program. The IACST project has been in the initial phases of development for two years. Over that period of time industry professionals from Idaho Power and Pine Telephone emphasized career opportunities for both male and female as technicians. This was done in the charter school career fairs held in the spring. Both female and male students are encouraged through scheduling and career planning to consider IACST in their educational plan and profile.