

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

Project Name: <b>Students @ Work: Building Capacity, Building Connections</b>
Amount Requested: \$452,410.00

Project Director: Carol Egan		
District, School or ESD: <b>Center for Advanced Learning (CAL)</b>		
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District or ESD: Gresham-Barlow School District		
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	Participating High School or Middle School Name <small>(add additional rows as needed)</small>	Lead Contact Name	Grade Levels	Student Enrollment
1.	Center for Advanced Learning (CAL)	Carol Egan, Director	11-12	400
2.	Clear Creek Middle School	David Atherton, Principal	6-8	680
3.				
4.				
5.				

Please check all that apply:

This project directly involves Career and Technical Student Organizations  
Please note page of proposal that describes this relationship. Page: 1 Bonus

This project has a clear connection to STEM  
Please note page of proposal that describes this relationship. Page: 3 Bonus

## **PROJECT OVERVIEW**

### **PURPOSE AND SCOPE OF PROJECT**

The “Students @ Work: Building Capacity, Building Connections” Project will expand and strengthen the innovative career and technical education (CTE) programs of study offered by the Center for Advanced Learning (CAL), a public charter high school established in 2003 in east Multnomah County, on its own campus in Gresham. CAL offers high school juniors and seniors the opportunity to earn fully transferable college credits and participate in real-world experiential learning through one of three rigorous and standards-based CTE programs: Mechanical Engineering and Manufacturing, Health Sciences, and Technology.

CTE Revitalization grant support will be used to scale up sustainable partnerships built around real work problems, mentorships, and projects in all three programs; align CAL’s applied and project-based curriculum with the CTE Core Standards being refined by the Mt. Hood Community College (MHCC) CTE Consortium and ODE; and improve the pathway from grades 6-10 to CAL for female, economically disadvantaged, culturally diverse, and other underserved student groups. Equipment upgrades and collaborative professional development opportunities will align with cutting-edge advances and standards in the industry.

The expanded partnerships supported by this project involve the MHCC CTE Consortium, Boeing Company, KCR Manufacturing, Lewis Creative (a graphic design and marketing firm), and the Troutdale Historical Society.

## **SUPPORTING THE OVERALL REVITALIZATION EFFORT**

### **INNOVATION IN THE DELIVERY OF CAREER & TECHNICAL EDUCATION (CTE)**

Established in 2003 in east Multnomah County, the Center for Advanced Learning (CAL) is a public charter school that offers high school juniors and seniors the opportunity to participate in one of three CTE programs of study: Mechanical Engineering and Manufacturing, Health Sciences, and Technology. Over the past ten years, 4,000 students have benefitted from CAL's unique two-year program, which is provided in partnership with five local high schools in three districts (Gresham-Barlow, Reynolds, and Centennial), nearby Mt. Hood Community College, and regional business/industry experts. Students spend half the day at their regular high school and half the day at CAL, with two specific purposes in mind: to obtain real-time college credits and to experience the world of work as defined by their chosen program area, while completing Oregon diploma requirements. Consistent with CAL's mission of preparing students to achieve their greatest academic and professional potential, inquiry-based curriculum and partnership-driven experiential learning teach juniors and seniors how to succeed in challenging coursework, ask critical questions, explore innovative answers, investigate their professional interests, and contribute to and collaborate with their community. In 2012-13 over 81% of CAL students earned fully transferable college credits that together totaled 3,237 credits. For two consecutive years, CAL has ranked #1 among east Multnomah County's 13 regional high schools in the number of individual students earning more than 20 credits in one school year. This project will scale up innovative partnerships built around real work problems, rigorous mentorships, CTE standards/skills, and improved grades 6-12 articulation.

## **INTEGRATION OF SEPARATE COMPONENTS INTO A COHERENT WHOLE**

As its name suggests, the “Students @ Work: Building Capacity, Building Connections” Project will accelerate CAL’s progress in strengthening the work experience pathways integrated into its three programs of study. Each of the three programs includes college-level coursework, project-based learning around real-world problems in the field, and collaboration with business/industry and community organizations to provide expert mentoring in the classroom, community, and workplace. Health Sciences—which is farther along in providing high-quality work experiences and mentoring aligned with Oregon’s diploma requirements, academic/CTE standards, and industry employability skills—will serve as a model for improving mentorships in Mechanical Engineering and Manufacturing, Digital Media and Design Technology, and Computer Information Systems Technology. A multi-tiered system and framework will be established to expand, maintain, and sustain partnerships with business/industry, labor, educational providers, and community organizations. This tiered partnership system will help ensure greater coherence within and across the three programs of study, in helping to develop rigorous and standards-based curriculum and proficiency assessments, classroom and worksite mentoring/coaching, student internships, and “capstone” portfolios. Alignment across grade levels will also be enhanced through the pilot project involving Clear Creek Middle School, which feeds to one of CAL’s partner high schools. Other outcomes will include development and implementation of project-based curriculum units, lesson plans, and assessments for ME/E and Technology that align with Oregon standards, skill sets, and employability skills; and expanded certification opportunities for students.

## **EXPANSION AND GROWTH OF CTE**

“Students @ Work: Building Capacity, Building Connections” will track the number and types of expanded partnerships resulting from CAL’s improved, three-tiered partnership framework, as well as progress in ensuring that nearly all CAL students in ME/E and Technology as well as Health Sciences participate in on-site industry experiences, completing 24 hours over a four-week experience, at least twice during the academic school year. Teachers will participate in curriculum and assessment development, alongside industry and academic partners, to establish relevant and current content and to identify standards using standards accepted by our region’s CTE consortium through Mt. Hood Community College. Students will meet these standards through proficiency-based projects and assessments aligned with these standards. Meeting these standards and completing specific assessments, students can obtain certification that will increase their opportunities for employment. The improved partnership structure will help sustain high-quality CTE programming and recruitment efforts as part of long-term strategic planning. Improved communications with families, partners, students, and other stakeholders will also support CAL’s continued growth and potential expansion, consistent with ongoing evaluations of student and other program data.

## **PROVIDING STUDENTS WITH EXPERIENTIAL LEARNING EXPERIENCES**

The proposed project’s partnership activities are designed to increase student access in each of the three CAL program of studies to research-based classroom, community, and workplace learning experiences that are built around meaningful questions, authentic problems facing particular industries, and hands-on projects that require students to apply their knowledge and skills to address a complex topic or issue. The

project will greatly expand access in each of the program areas to a continuum of high-quality classroom and workplace experiences, including projects, job shadows, tours, and in-depth internships. A set of curriculum units, lessons, and assessments will be created to support and sustain these experiences, consistent with diploma requirements, dual credit and postsecondary opportunities, and industry employment skills. CAL programming will also be articulated with the pilot middle school grades.

# GRANT NARRATIVE

## PROJECT DESCRIPTION

### **A. Project Outcomes and Progress Markers**

With grant support from the Oregon Department of Education (ODE), the proposed “Students @ Work: Building Capacity, Building Connections” Project will expand and strengthen the innovative career and technical education (CTE) programs of study offered by the Center for Advanced Learning (CAL), a public charter high school located in Gresham, Oregon. CAL’s two-year program enrolls approximately 400 juniors and seniors who spend half of their day at their regular high school and half at CAL, where they can earn college credit and participate in real-world experiential learning in three areas: Mechanical Engineering and Manufacturing (ME/M), Health Sciences (Dental and Medical), and Computer Systems and Digital Design Technologies.

CAL programs are designed to help students become professional, ethically driven collaborators and problem solvers in the 21<sup>st</sup> century workforce. Each student’s education is enriched by college-level coursework, hands-on learning, application of their knowledge and skills in projects addressing real-world questions/issues, diverse program offerings, and internships arranged through a broad range of collaborative partnerships with local and regional businesses and organizations. Challenge, creativity, innovation, and relevance are the core values guiding CAL curriculum and instruction, which is designed to prepare each student for his or her next steps after high school graduation: to

postsecondary studies, employment in high-demand careers, informed citizenship, and life-long learning.

CAL students have the opportunity to earn fully transferable college credits through Mt. Hood Community College (MHCC). While students in each program of study have access to worksite experiences and expert professional mentors who come to the school campus, since its inception the health sciences program has led the way in providing high-quality work experiences that develop the practical knowledge and evidence of skills required to progress into a certified nursing assistance program, a nursing program, or a health sciences degree program after high school.

This CTE Revitalization grant will accelerate CAL's progress in establishing similar work experience pathways in each program, and address the challenge of how to expand and sustain partnerships year-to-year, providing a consistent flow of expert classroom mentors, worksite experiences, and collaborations with industry partners in both the nonprofit and for-profit sectors to study and solve real work problems through projects and other applied and experiential learning opportunities. Other key project outcomes will target the need to increase the number of traditionally underrepresented populations in these CTE pathways, specifically female, economically disadvantaged, and culturally diverse students. CAL attracts students who are deeply motivated to accelerate their learning, their resume, and their access to college. CAL and its partners will seek to improve grades 6-12 articulation and extend learning experiences for students after school and during the summer.

**1. Improved and sustainable partnerships with business, industry, labor, and educational providers.**

Outcome: Implementation of a multi-tiered system and framework for expanding, maintaining, and sustaining long-term partnerships that support each of CAL's three CTE programs of study through evidence-based curriculum/assessments development, classroom and worksite mentoring, student internships and culminating "capstone" demonstrations and portfolios.

Progress Markers: 1.1 Draft is completed by January 2014 of a three-tiered framework describing how industry experts and community organizations can partner with CAL along a continuum of increasingly in-depth experiential learning experiences in the classroom and workplace that are aligned with Oregon standards, skill sets, and best practices in CTE. For example, Tier One partners host tours of plants and worksites, invite students to attend company presentations/events, and/or arrange presentations at the school. Tier Two partners serve as classroom expert mentors by leading mini-lessons on specific industry procedures or standards; provide coaching/mentoring during a longer classroom unit; and/or work with students in small groups or one-to-one to provide feedback and assistance (e.g., regarding a particular project, production process, piece of equipment, topic, or question). Partners at the Tier Three level serve as mentors/coaches for students at the company or organization's workplace, consistent with relevant regulations in the field and each specific CAL program area. Worksite experiences will include job shadows offered for a specific length of time (e.g., 90 minutes, three times, for one week during the

regular school day), and internships (e.g., 90 minutes, two or three times a week over four weeks or more). Similar to CAL's current health science clinical model, students' schedules will allow specific classroom time to be supplanted by an internship experience. As part of Tier Three partnerships, students will also compile a capstone (culminating) portfolio of the reflections, products, and demonstrated skills resulting from their worksite experiences.

1.2 Annual increases in the number and types of partners and expert mentors collaborating with each CAL program, on campus, at the worksite, and in the community.

## **2. Improved student access to CTE programs of study.**

Outcome: At least 90% of CAL students in Mechanical Engineering and Manufacturing, in Digital Media and Design Technology, and in Computer Information Systems Technology (CIS) will participate in and successfully complete in-depth on-site industry experiences.

### Progress Markers:

2.1 Annual increase in the number of hours CAL students participate in on-site work experiences, as measured by targets established with industry/community partners in winter 2014.

2.2 Annual increases in the number and types of partners participating with CAL students in on-site work-related mentorships.

## **3. Increased rigor in technical and academic content aligned to diploma requirements, industry-recognized technical standards such as the Oregon Skill Sets, and employability skills.**

Outcome: Development and implementation of a set of project-based curriculum units, lesson plans, and proficiency assessments in ME/E and Technology that align with Oregon's academic and CTE standards, skills sets, and employability skills. Revision and redevelopment of project-based curriculum units, lesson plans, and proficiency assessments in Health Sciences that align with Oregon's academic and CTE standards, skills sets, and employability skills.

Progress Markers:

3.1 Two-year M/ME curricular framework and set of project-based curriculum units, lessons, and assessments are completed by the end of summer 2014.

3.2 Pilot project-based curriculum for CAL Digital Media and Design Technology is implemented in winter/spring 2014 in collaboration with Lewis Creative and the Troutdale Historical Society.

3.3 Articulated curriculum, credit options, student competition opportunities, and internships between CAL's Computer Information Systems program and the Mt. Hood Community College Cybersecurity Department is developed for implementation in spring/fall 2014.

3.4 Review and revision of health sciences curriculum with renewed alignment to Mt. Hood Community College Biology Department to be developed for implementation in fall 2015.

**4. Increased career opportunities for students, which may include access to career and technical student organizations.**

Outcome: Expansion of access at CAL to certification/employment opportunities and to career and technical student organizations (CTSOs).

Progress Markers:

4.1 Annual increases in the number of students obtaining certification in all three CAL program areas (e.g., through National Career Readiness Certificate, Certified Nursing Assistant, Certified Production Technician).

4.2 Complete HOSA-Future Health Professionals membership process and recruitment of an initial cadre of CAL students in winter 2014.

**5. Improved ability to meet workforce needs in the region.**

Outcome: CAL partnerships and three CTE programs of study are aligned with current and future workforce needs in the Portland metro area.

Progress Markers:

5.1 By the end of the grant period CAL will have established the coherent and flexible system of partnerships, standards-based curriculum and assessments, and experiential learning experiences in the workplace and community needed to respond to current and future workforce needs and trends in the region.

**B. Career and Technical Education Program of Study Design**

CAL offers a two-year program of study for grades 11-12 in the following three areas: Mechanical Engineering and Manufacturing, Health Sciences, and Technology. CAL challenges students with demanding college-level coursework, internships to apply their coursework knowledge to the workplace, and opportunities to obtain transferable college credits at MHCC (for a nominal, one-time fee) while completing their high school diploma. At every stage of their development, CAL's academic and technical curriculum, instructional practices, and proficiency assessments are being aligned with the state's adopted

graduation standards, “40-40-20” goal for college/career readiness, the Oregon Skill Sets, and employability skills. CAL will continue to partner with the MHCC Core Standards in CTE Consortium and its support for ODE’s current work to expand and improve CTE standards, access for students and systems, and skills (both specific and soft). CAL teachers embed concepts and examples of professionalism, ethics, and responsibility in their instruction throughout the curriculum. These “soft” skills, coupled with the ability to collaborate and to communicate clearly and in a variety of ways, are described in the CTE Consortium’s recent standards document, and are vital to CAL students’ success in learning to think independently and critically, and to be responsible for their choices. CAL students are expected to reach their full potential, and most do. Within each of the three programs, students have access to industry professionals at the worksite or expert mentors who come to the school campus. The health sciences program has been particularly successful each year in offering students a valuable perspective into the industry through high-quality worksite experiences. Each health science senior participates in the school’s *Clinical Rotation* sessions, with the junior year providing a rigorous foundation through training in First Aid, Cardiopulmonary Resuscitation (CPR), and Bloodborne Pathogens (all providing student certification), plus classes on medical terminology, lower-division transfer college writing, health care applications and practices, and advanced biology—all of which advance student understanding of the health care provider’s responsibilities, ethics, and needed skills. Seniors are connected with a health care provider to complete 24 hours of

worksite experience, offered four times throughout the school year. Students are required to demonstrate their professionalism, skills in patient care and charting, and other characteristics of a quality employee. CAL's health science students gain valuable work experience tailored to their interests, are better prepared for the college experience, and gain a clearer vision of what they are seeking in a career. Each year, CAL health science students complete their program with high marks from the partners who work alongside them. Many students progress into a certified nursing assistant program, into a nursing program, or into a degree program in health sciences. The Health Science program requires constant review of changing practices and innovative advancements. This program stands at the threshold of the need for change and upgrades to equipment and curriculum, such as radiology and biomedical engineering. By reviewing and revising instructional resources, students will achieve more in these technologically advancing health care environments such as Legacy.

This level of practical knowledge and evidence of skills is not available in CAL's ME/M or Technology programs, although since the start of this school year both programs have started to establish work experience pathways similar to those in health sciences, through partnerships with nonprofit and for-profit organizations and companies providing expert classroom mentors, work experience at the industry site, and collaborative projects built around real work problems facing the participating industry partners. By establishing a collaborative of industry partners and teachers in the development of curriculum

and assessments and creating a sustainable system of internships, students will be better prepared to intern in a work environment.

Because of regulations and safety requirements, the ME/M and Technology programs require a differentiated approach to internships than the Health Science program. With the support of the human resource departments existing within our partners' companies, sustainable systems will be built for CAL internships for our expanded programs. This network of manufacturing representatives, the Troutdale Historical Society, and Lewis Creative (a local graphic design and marketing firm) are teaming with CAL students to solve real work problems and to develop sustainable partnerships.

The "Students @ Work: Building Capacity, Building Connections" Project will help CAL develop a sustainable structure and model for providing long-term business-community mentorships and experiential learning experiences as an integral part of each program's curriculum rather than as scattershot or one-time events. CAL's project partners will: (1) Participate in curriculum development and assessments with the CAL instructor; (2) Mentor students in the classroom (through demonstrations and assessments of student progress, by teaching mini-lessons, and by asking students essential questions about the project or problem being studied); and (3) Develop pathways for students to participate in on-site internships with mentor support. For the second year of the project, students will be assessed for readiness to work on-site. Students in all program areas will participate in a work experience rotation, completing 24 hours over a four-week experience, at least two times during the school year. Strengthening CAL's

partnerships and curriculum in this area is congruent with research showing that experiential learning programs, including student internships, have a positive impact on high school students' intellectual and social-emotional development, and that there is a direct correlation between participation in high-quality, challenging internship experiences and students' future career paths (Merritt, 2008).

CTE Revitalization support will be tailored to address specific needs, strengths, and approaches in the following CAL programs of study:

***Mechanical Engineering and Manufacturing*** requires a very high level of safety awareness, knowledge, and experience, and CAL's program involves a wide variety of skills sets and equipment (e.g., welding, foundry, machining, hand tools, plasma and laser cutters, hand and automatic drill presses, large and small CNC, physics, manufacturing processes, and CAD, including SolidWorks to MasterCam to AutoDesk software use). A collaborative curriculum development advisory committee has already been established, comprising the ME/M teacher, partners, and advisors from the field to implement a valuable and safe curriculum that includes mentors in the classroom for frequent feedback and critiques for design concepts to production development. This advisory committee is working to craft a replicable and sustainable model for implementing on-site experiences for ME/M students alongside industry experts.

***Digital Media and Design Technology*** (DMD) demands real-world timelines that are realistic while requiring a relationship between the student (as the "creative" side) and the environment within which a creative plan will be

implemented (i.e., the client or customer). DMD is currently developing a two-year plan for its students, starting with foundational “digital storytelling” for juniors that progresses through storyline, moving image and equipment skills, and awareness and intention of how to guide an audience through the story in both short and long moving image formats. This will prepare seniors for a “campaign year”—a long-term project involving all facets of media (interactive, moving, still imagery, storytelling, marketing, targeting audiences, etc.).

**Health Sciences** is a complex, changing field that is currently demanding practitioners to access, understand, maintain, and consistently engage in how best to manage health and prevent illness. According to the Health Care 2013 Innovation Summit held at Stanford, it is imperative that healthcare systems analyze the possibilities to transform healthcare information technology to be cost-effective, manageable, and user friendly. The infusion of robotics and mobile technologies into the field of health care will increase CAL health science students access to that require more complex skills than simply take blood pressure. CAL students are expected to seamlessly progress to community college or to the health care profession. Much of the CAL equipment is no longer an industry standard, thereby narrowing the scope of authentic internships within the partnership base. By refreshing the technology in CAL’s Health Science program, CAL students’ knowledge and skills will meet the current demands placed upon health care professionals and increase internships.

**Computer Information Systems Technology (CIS)** is a field requiring the commitment to take something apart in order to learn how it works. The field is

also detail-oriented, complex, and involves serious global ethical issues (e.g., “hacking”). Over the past two years, CIS has transitioned away from certification in CISCO systems to a more robust (and attractive to high school students) articulation partnership with the new MHCC Cybersecurity Department. In October 2012, former CIA Director Leon Panetta cited the potential for a ‘cyber Pearl Harbor’ if the U.S. fails to strengthen digital security addressing hackers and other “cyber warriors.” CAL and MHCC’s Cybersecurity partnership is working together to establish competitive hacking teams to offer students a safe, secure environment in which to demonstrate their problem-solving skills in ways that safeguard ethics, intellectual properties, and systems. Student internships will enhance motivation and world of work connections. However, as described in a recent U.S. Office of Personnel Management (OPM) fact sheet, there are specific challenges in securing partners in the information technology field who have the capacity to provide an on-site internship program. This project will allow CAL and its partners to address these and other design challenges. (Also see Activities, page 16.)

### **C. Underserved Students**

Numerous reports cite the continued underrepresentation of females, ethnic/cultural minorities, and economically disadvantaged students in CTE programs, in advanced science, technology, engineering, and mathematics (STEM) courses, and in related high-demand technical fields (e.g., Symonds et al., 2011; National Research Council, 2009; Oregon Employment Department, 2009). As mentioned, CAL tends to attract highly motivated juniors and seniors

interested in a rigorous CTE program offering college credit and preparation for postsecondary studies and careers. However, CAL's 2012-13 mid-year survey found that 39% of 120 responding students' parents have had no college experience. In addition to this significant population of aspiring first-generation college students, CAL also reflects the socioeconomic demographics of its partner high schools, including a significant number of students from low-income families, English language learners, students receiving special education services, and students enrolled in college-readiness support programs including AVID (Advancement Via Individual Determination). CAL and its district and industry partners have a shared commitment to equity and excellence in CTE programs for all students, and recognize the need to expand options for students from diverse backgrounds at earlier grades and better prepare them to pursue and succeed in challenging CTE and STEM courses, programs, and pathways. Expanding student interest, preparation, and options requires not only deep connections to CAL's partner high schools, but also to feeder middle schools. The CTE Revitalization project will develop and pilot a new partnership with a local middle school that will provide articulated CAL curriculum and mentors, and target opportunities to underserved student populations. It is expected that the lessons learned from the model piloted with Clear Creek Middle School (CCMS) will have the potential for future replication and scale-up locally and regionally. As outlined in the attached letter from Clear Creek's principal, the school serves a diverse enrollment (e.g., 77% free/reduced lunch, 35% Hispanic, 20% receiving Active/Monitored English Language Development services), and offers a variety

of achievement supports in core subject areas. The administration has been developing a more cohesive and engaging in-school CTE program, and is one of Multnomah County's Schools Uniting Neighborhoods (SUN) Community School sites, providing after-school activities such as Chess Club.

CAL has an established *FIRST* Robotics team and will partner with CCMS to establish a stronger and well-articulated CTE program that will produce after-school Robotics projects, as well as a one- to two-week summer camp held at CAL and involving mentor experts and CAL students in Mechanical Engineering and Manufacturing and in Technology. Through visitations to CAL by CCMS students and for CAL students to visit CCMS students on their campus, to reach out to CCMS families through brochures, newsletters, and a Family Night, CAL will introduce student projects, share opportunities, and forge a new partnership with CCMS for Fall Curriculum Night. Recruitment of girls and other underrepresented groups will be a priority. The goal of this partnership is to increase middle school students' awareness of career and college opportunities, and their engagement in activities and projects that will help them meet Oregon graduation requirements successfully during their high school years. The Gresham-Barlow School District will allow CCMS students to earn high school credit for successful completion of the CAL summer program, providing an important motive for participation which is expected to enhance recruitment efforts among students and parents as well as ignite greater awareness of and interest in CTE pathways generally and CAL specifically.

#### **D. Diploma Connections**

Among CAL's innovations is the opportunity for students to earn dual credit through MHCC in core academic subjects within their CTE programs of study (e.g., in English, in ME/M physics, in health sciences anatomy and physiology courses). CAL also provides elective courses aligned with Oregon's diploma requirements, and, as mentioned, all of the three programs' career-related learning experiences are aligned with standards and Essential Skills. In the area of personalization of the student experience (i.e., support of the student plan and profile or extended application), this project will provide opportunities for administrators from the five partner high schools to work with CAL to address the requirements more effectively; for example, CAL could be responsible for addressing a common element such as college/careers.

#### **E. Sustainability and Communication**

The Center for Advanced Learning and its district and community partners are committed to sustaining the curricular improvements and expanded learning opportunities resulting from the proposed "Students @ Work: Building Capacity, Building Connections" CTE Revitalization project. As a charter school serving students and families from three different metro-area school districts, CAL has recognized that an effective, coherent, and multi-faceted communication network is essential to create and sustain a culture of data-driven continuous improvement that involves all of the relevant stakeholder groups (e.g., students, parents, educators, employers, policymakers, other community members).

The CTE Revitalization project will build on existing CAL strategies that are congruent with the six *Key Components of Systems Change* (Kendrick et al., 2006) cited by ODE, and with the “collective impact” approach (Kania and Kramer, 2011; Hanleybrown, Kania, and Kramer, 2012) that is guiding Multnomah County’s multi-sector PK-20 “cradle-to-career” initiative, involving all six of the area’s public school districts (including CAL’s three partner districts). Achieving meaningful and sustainable collective impact on an identified problem/goal involves five key elements: (1) a common agenda and shared vision for change among the partners; (2) shared measurement (collecting data and measuring results consistently); (3) mutually reinforcing activities; (4) continuous communication to build trust, assure mutual objectives, and recognize/appreciate common motivation; and (5) a backbone organization with the capacity to drive and coordinate the joint systemic change initiative. CAL has the leadership capacity, communication networks, and demonstrated success in fostering school-community partnerships needed to serve as this project’s backbone organization.

Information on this CTE Revitalization project’s objectives, key activities, progress, and results will be communicated through the following established channels:

- Quarterly meetings with five partner high school administrators;
- Monthly meetings with five partner high school counselors;

- Monthly meetings of the CAL governing board, which includes the MHCC president, three school district superintendents, and industry representatives (e.g., see attached letter from the Boeing Company);
- Ongoing meetings with the Mechanical Engineering/Manufacturing advisory group (KCR Manufacturing, Boeing, Connor Manufacturing, Marco Polo Design);
- Ongoing meetings with the DMD project committee (Troutdale Historical Society and Lewis Creative);
- Recruitment activities at the five partner high schools, from December through April, involving the CAL director, expert mentors, and CAL students.

These regular meetings and other communication avenues will be expanded to include Clear Creek Middle School, as part of a proposed pilot partnership designed to strengthen the pathway into CTE and CAL, especially for girls and other traditionally underrepresented populations in high-demand, high-wage fields (see attached letter from the Clear Creek Middle School principal).

Existing electronic communication pathways include CAL's website, which is being redesigned this winter

(<http://www.thecenterforadvancedlearning.org>), a Facebook page, YouTube video, and monthly "eBlasts" sent to families. CAL is also the only school using the KGW broadcast company's Gresham home page as part of information and recruitment efforts. Lewis Creative, a local design agency and partner (see attached letter), is presently helping CAL develop a strategic marketing plan.

Regular data collection, including annual surveys, will continue to inform CAL's plans for ongoing evaluation, communication, and long-term sustainability of curriculum and programs that meet Oregon's diploma requirements and workforce needs. 2012-13 satisfaction survey data from juniors, seniors, staff, and families were gathered and shared with the CAL governing board; CAL will continue to collect, analyze, and report such data, facilitated by online tools such as Survey Monkey; CAL will also seek to maintain communications with, and collect data from, students over time, to help gauge the program's impact and build a strong network among alumni. For example, current seniors will be asked to reflect on how their assumptions about the world of work and what it takes to succeed academically and in future careers have changed through the course of their CAL studies.

This project will build on and expand partnerships such as the one established with the MHCC Cybersecurity Department (described in greater detail above), thus bolstering the rigor, relevance, and long-term sustainability of CAL's program. As outlined in the Activities/Timeline and Partnerships section, CAL teachers and administrators will work with representatives from business/industry and postsecondary institutions to develop a more coherent and "tiered" partnership system that better aligns CAL curriculum and the resources/expertise of existing and new business and organizational partners with the knowledge and experiences that students need for academic and career success. This improved system will provide greater coherence in working with various partners to select and rotate in and out of the appropriate tiers—ranging

from worksite tours and classroom presentations to mentorships, internships, and senior “capstone” worksite demonstrations.

CAL’s plan to develop a *Planned Giving* system will expand its financial base and future sustainability beyond State School Funding (SSF). These efforts will include:

- An annual event to recognize the innovative achievements of CAL students with industry partners and families;
- Opportunities for ongoing giving through the CAL website;
- Grants submitted to local, state, and federal agencies and foundations;
- A CAL Partnership Advisory Committee charged with guiding fundraising and long-term strategic planning around sustainability.

**F. Activities and Timeline** (January 2014 – June 30, 2015)

The table below outlines the major project activities required to achieve the outcomes and progress markers described in Section A.

Table 1: Major CTE Revitalization Activities	Dates
Develop three-tiered system for how experts from business/industry, labor, education, and other community organizations partner with CAL. Align existing and new partnerships with system. Rationale: Industry and community partners have specific needs, regulatory or other challenges, channels, and reasons for connecting with schools. A flexible, collective impact approach is likely to be more effective in aligning partnerships, standards, and experiential learning opportunities in classrooms, the community, and worksites.	Jan. 2014 draft; then ongoing
Develop project-based curriculum, lessons, assessments for ME/M, to include Tiers 1-2 partnership framework for expert mentors and a calendar and instructions to guide classroom and worksite activities; advisory group meetings at least every two weeks; development of proficiency assessments for dual credit courses; summer curriculum development workshop with partners.	Develop Jan-August 2014 Implement 2014-15
Establish HOSA-Future Health Professionals CTSO at CAL.	Jan 2014
Develop pilot cadre of CAL students to participate in NCRC assessments (January-June 2014); implement fall 2014. Review and	Jan 2014-June 2015

implement other certification/employment opportunities.	
Develop CAL DMD program partnership involving Lewis Creative, Troutdale Historical Society. Develop calendar of lessons and expert mentors for Tiers 1-2 experiences.	Winter/spring 2014
Establish Tiers 1-3 partnership articulation between CAL CIS and MHCC Cybersecurity department, to include curriculum and syllabus alignment, dual credit and assessments, opportunities for regional and national competition participation, internship rotations to be implemented in fall 2014.	Winter 2014-ongoing
Develop articulation partnership with Clear Creek Middle School, including meeting schedule, school and industry partner tours (Tier 1), alignment of curriculum, standards, assessments, projects, after-school Robotics Team (spring 2014) and two-week summer camp at CAL (2014), collect pre/post data from students on experiences (Tier 1-2).	Jan 2014-ongoing
Develop outreach and communications plan to expand/enhance partnerships for student internships, expert mentors, a planned giving fundraising committee, and other activities designed to sustain successful CAL components.	Jan 2014-ongoing
Conduct quarterly and annual reviews of each project component; complete required reports for funders, governing board, other appropriate audiences.	Ongoing

## G. Evaluation

A robust evaluation plan will determine whether and to what extent the “Students @ Work: Building Capacity, Building Connections” Project is successful in meeting the anticipated outcomes and progress markers outlined in Section A. Both quantitative and qualitative data will be collected and analyzed on a quarterly or annual basis (as appropriate), as part of formative evaluation to guide continuous improvement of the CAL project model, and as part of summative evaluation to inform strategic planning for future expansion, scale-up, and long-term sustainability of components found to be effective. Sources of data will include pre/post surveys (e.g., of CAL and CCMS students, teachers, parents, and business-community partners); interviews/observations (e.g., of student worksite experiences); video and printed documentation (e.g., of project-

based curriculum units developed and implemented); “hits” on CAL website and Facebook page; numbers and types of partnerships, as they align with three-tiered partnership framework; student enrollment and achievement data (including capstone portfolios resulting from worksite experiences), disaggregated by gender, ethnic/cultural background, disability, and ELL, special education, and free/reduced meal status; attendance logs for meetings, workshops, and other events; and sample materials and other project artifacts (e.g., student and staff presentations, promotional articles and press releases). CAL students will develop a computer application to facilitate online collection, review, and reporting of project-related evaluation data. The evaluation plan will be overseen by CAL’s director, supported by a program assistant, and implemented by a team representing the participating districts and business-community partners. Interim and final reports describing the project’s results and making recommendations for expanding, replicating, and sustaining CAL programs will be shared with the funder, CAL governing board, and other appropriate audiences. Data collected will be analyzed in quarterly meetings with all industry and academic partners and will be shared with the CAL Governing Board, families, and partner districts and their high schools.

### **PARTNERSHIPS**

Partnerships are a major focus of this proposed CTE Revitalization project, and one of CAL’s strengths. Partners involved in supporting CAL’s curriculum and experiential learning experiences in high-demand and high-wage employment areas include Legacy Mt. Hood Medical Center, Oregon Health & Science

University (OHSU), Portland Adventist Medical Center, Legacy Emmanuel, Kaiser Sunnyside, EPIC Imaging, Adventist Imaging, Rockwood Chiropractic, Portland Knee Clinic, Dove Lewis (veterinary services), the Oregon Department of Veteran Affairs, and the Gresham Fire Department. As this list suggests, CAL's has a strong longstanding partnership pool in the health sciences.

However, each year CAL is stretched to ensure that every student participates in four clinical health sciences rotations, as partners cannot always maintain the same level of involvement. As another example, CAL also has willing partners in Mechanical Engineering and Manufacturing and in Technology, but these industries have often lacked the capacity to open their doors to high school students, or sufficient expert mentors able to spend time in the classroom, or the foresight to plan for impending labor and skill shortages due to retirements or other economic trends. According to the Sloan Center's June 2010 report, top skills are in short supply in technical computer (22%) and operation skills (24%).

Community and business members connect to schools for a variety of reasons and in a variety of ways. Typically, business members may be available to present at a Career Day or speak to a class about a topic that is specific to the curriculum and yet aligned to their industry. These interactions are often one-time events. Other community connections may include after-school support, such as working with a nonprofit organization or a Robotics club. These interactions are more valuable because there are more consistent opportunities to build positive and supportive relationships. The most challenging partnership is one in which

the relationship with the expert is consistent, ongoing, and yet specifically integrated into the school day and curriculum.

As previously described, CAL recognizes the vital importance of a partnership structure that meets the needs of all the participants, that is flexible and data-driven, and that supports classroom projects and mentorship by industry/community experts along a continuum of high-quality, standards-based, and increasingly in-depth experiential learning experiences at workplaces and in the community. The CTE Revitalization grant will allow CAL to develop, pilot, and evaluate a sustainable and multi-tiered partnership framework that will strengthen all three of its CTE programs of study, with particular attention to ME/M, Digital Media and Design Technology, and Computer Information Systems. CAL has planned this project in close collaboration with the partners listed below (and whose letters of commitment are attached), and its ongoing coordination with the MHCC CTE Consortium helps ensure that partners will continue to be recruited to expand student opportunities in high-wage, high-demand fields in the region, state, and nation. CAL is also working with additional partners; for example, with OHSU to expand access to scientific research and biomedical engineering; with Rolls Royce in the United Kingdom and local and national aeronautical and manufacturing engineering industry experts, to connect with regional employers and fields that may be of high interest to diverse student populations; with MHCC Workforce Development and other local workforce development organizations, to establish National Career Readiness Certification for CAL students; with

Autodesk and Benchmade, which will support student Robotics team activities; and with others.

Letters of commitment for this project's expanded partnership are attached for: Mt. Hood Community College and its CTE Consortium, which will support curriculum development, postsecondary alignment, and access to regional professional development opportunities; KCR Manufacturing, Boeing Company, Connor Manufacturing, Lewis Creative, and Troutdale Historical Society, which will provide direct classroom support and help develop and align curriculum and assessments.

## **BONUS SECTIONS (OPTIONAL)**

**A. Career and Technical Student Organizations (CTSOs):** The Center for Advanced Learning recognizes that CTSOs such as HOSA-Future Health Professionals, Technology Student Organization (TSA), SkillsUSA, Future Business Leaders of America, and DECA-Emerging Leaders and Entrepreneurs play an important role in motivating students, preparing them for post-high school success, supporting business/community connections, enriching learning, providing leadership opportunities, teaching core employability skills, and other important outcomes. CAL plans to have HOSA-Future Health Professions established on campus by the start of the proposed grant, and will recruit an initial cadre of students from the Health Sciences program in December 2013 and January 2014. CAL faculty, administrators, students, and partners will also review other CTSOs to determine whether they are a good “fit” with the ME/M and Technology CTE programs.

**B. Middle School Component:** CTE Revitalization funds will allow CAL to initiate a pilot program articulation project with Clear Creek Middle School, which feeds to Gresham High School (one of CAL’s five partner high schools in east Multnomah County). Meeting the region’s current and future workforce needs requires greater attention to the area’s growing population of groups that have traditionally been underrepresented in high-wage, high-demand fields of ME/M, Health Sciences, and Technology. These include females, ethnic/cultural minorities such as Hispanic and African-American students, students from low-income families and first-generation college-goers, and students in special education or English language development programs. It also requires well-articulated programs that prepare students in earlier

grades to pursue and persist in challenging academic and technical courses, and to prepare for opportunities such as CAL as they transition across grades and schools. As described in the attached letter, Clear Creek Middle School is ideally positioned to partner with CAL (and business-community stakeholders) to align programs and pilot high-interest and challenging after-school and summer opportunities for students. CAL's proposed middle school component is also described on pages 10-12 of the preceding narrative, in Section C, Underserved Students. One of the innovative hallmarks of the middle school component is the opportunity for participating students to earn high school credit for successful completion of a one- to two-week Summer Camp held at the CAL campus and involving CAL students and industry partners. The project will also seek to recruit girls and other underrepresented groups to participate on Robotics teams, which are organized around a hands-on, project-based learning focus.

**C. Out-of-School Time Programming:** The middle school articulation pilot will capitalize on the out-of-school hours to strengthen articulation with CAL. Activities will include both an after-school Robotics team and a summer camp. The pilot building is Clear Creek Middle School (enrolling approximately 680 students from diverse backgrounds) in the Gresham-Barlow School District. Clear Creek is part of Multnomah County's nationally recognized SUN Community Schools initiative, and is thus experienced in recruiting students to attend extended-learning opportunities that support the regular-day curriculum, and familiar with the research literature on best practices in out-of-school time programming.

**D. Focus on Regional, Statewide, or System Changes:** CAL partners with five high schools in three different metro-area public school districts, and works with business,

education, and other community partners across the region. Several CAL students are also from other districts, and CAL regularly hosts tours for interested district (and other) representatives from the metro region. All of the participating districts are also part of the county-wide Strive/Cradle-to-Career initiative managed by All Hands Raised (a local schools foundation) toward the goal of creating a more seamless, efficient, and effective system of education targeted to high school graduation and completion of college and career training. CAL's proposed project will be organized as a collective impact partnership, built around a shared vision and sense of responsibility among participating stakeholders, common goals and measures, coordinated efforts, continuous communication, and backbone organizational capacity. CAL is also working closely with the Mt. Hood CTE Consortium, whose work on CTE standards will help guide statewide changes. As a public charter school, CAL is also well-positioned to develop, implement, evaluate, and demonstrate innovations in CTE teaching and learning at the local level that have the potential to inform both discrete efforts and systemic approaches at multiple scales: regionally, statewide, and nationally.

**E. Science, Technology, Engineering, and Mathematics (STEM):** STEM content and skills are integrated into CAL's three programs of study in Mechanical Engineering and Manufacturing, Health Sciences, and Technology, and these connections to the world of work will be strengthened through the proposed CTE Revitalization grant, which will expand opportunities at the middle school level as well as at CAL for students to explore and acquire new knowledge and skills in STEM and CTE. CAL students already have the opportunity to earn dual credit at MHCC for STEM content (e.g., advanced biology); CAL teachers and partners will collaborate in developing and implementing curriculum

focused on authentic, real-world problems and the project-based experiential learning that fosters critical thinking, teamwork, communication, and other skills that are essential to succeed in technical fields and STEM-related careers, and to make informed decisions as citizens. CAL's plans for updating its equipment and software are congruent with trends in industry and education (e.g., the increased use of 3-D printers as design and learning tools) and with recent national reports on effective STEM education (NRC, 2012, 2011). CAL is also part of a STEM committee established in east Multnomah County through the commissioner's office, involving local and regional community members who work directly in STEM and/or have resources needed to support an increase in high-quality STEM curriculum and STEM partnership development.