

Every Student Succeeds Act (ESSA)
Expanded Learning Opportunities (ELO)

*Report & Recommendations for Improving
Access to Learning and Creating*

A Sustainable Pathway for All

How Science, Technology, Engineering, Math (STEM) and
Career Technical Education (CTE) in Expanded Learning
Opportunities (ELO) can help to close the skills gap

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Executive Summary

The Every Student Succeeds Act (ESSA) has provided a number of new opportunities for families, communities, industry, state and local leaders, and educators to support improvements in informal, out of school and summer education programs. These programs are designed to contribute to both academic and social development of our youth. This document is designed to provide a plan for the integration of successful programs of study for Expanded Learning Opportunities (ELOs) in Science, Technology, Engineering & Math (STEM), and Career and Technical Education (CTE).

Our goal, using research from state, local and national resources, is to enhance *Oregon Afterschool for Kids'* long-proven record of success with ELOs across Oregon. By convening a large group of interested stakeholders to define strategies for success, we have established an action plan for implementation. Included are the stakeholders' collective vision, mission and strategies to ensure every student the chance to fill the skills gap that has long been touted by business leaders in Oregon as an opportunity gap for our students.

It is clear from this research, including surveys from industry, family and community stakeholders, that this gap can be addressed by allowing learners of all ages, from all backgrounds, and with a variety of interests to participate in high quality expanded learning opportunities. These options include informal learning options, focusing on Science, Technology, Engineering, Math (STEM) and Career and Technical Education (CTE). Quality afterschool and summer learning programs have a significant and positive effect on a number of very important aspects of student learning and 21st Century Skill development.

Vision: Every Oregon learner is prepared to meet their aspirations through equal access to personally relevant, *well-rounded education opportunities* leading them to develop comprehensive skills for learning. This learning occurs across time and settings- providing a spectrum of career options.

Mission: Our coordinated network of local, regional and state-level stakeholders will work together to increase access to high-quality STEM and CTE education in Expanded Learning settings.

- » Expanded learning programs show promising evidence to help close the achievement gap.
- » High quality afterschool programs have positive long-term effects on school attendance and task persistence.
- » Expanded learning opportunities have positive cumulative effects on student grades and academic work habits (Vandell, 2011).

Greater alignment between education, workforce, industry and government partners can help to ensure all our students receive the support, opportunities and access they need to develop the technical and workplace skills necessary for success. We must dramatically broaden our young people's academic and technical skills and knowledge as well as the social and emotional capacity to use their skills and knowledge competently and compassionately.

Working in collaboration with the Oregon Department of Education (ODE), Oregon's Chief Education Office and an amazing group of stakeholders, *OregonASK* offers suggestions and solutions to help policymakers and STEM /CTE partners thoroughly understand the importance and role that Expanded Learning Opportunities for STEM & CTE play in creating equitable systems to support all Oregon's youth and provide access to a well-rounded educational opportunity.

Introduction

The Every Student Succeeds Act ([ESSA](#)), Public Law No: 114-95 provides additional flexibility to Local Educational Agencies (LEAs or school districts) in how they design their instructional supports and other student programs. The purpose of this document is to provide afterschool, informal, STEM and CTE advocates with strategies to improve the use of Expanded Learning Opportunities as a core element to improve student access. Every student is entitled to an equal educational opportunity and, most importantly, access- and ESSA provides the framework to realize this opportunity.

There is extensive research telling us about the need for additional time, training and experiences to create a career pathway to establish a qualified workforce to fill the numerous technical jobs that currently exist throughout Oregon. In fact, there is a growing body of research that shows that while socioeconomic gaps in student achievement remain relatively constant during the school year, during the summer, the gaps widen significantly (National Summer Learning Association, 2017).

Every summer, low-income youth lose two to three months in reading achievement, while their higher-income peers make slight gains. By fifth grade, the cumulative years of summer learning loss can leave low-income students almost three years behind their peers. Weeks in the fall are spent re-teaching materials; which means that investments made in the traditional school year can be wasted if we fail to make up for the gaps created during the summer (NSLA, 2016).

Equity Statement

It is the intent for the recommendations contained within this report to ensure that every student will have access to and benefit from a world-class, well-rounded and equitable education within the Expanded Learning Opportunities (ELO) venue.

Action Plan

Summarized below are Oregon's STEM Goals:

1. Inspire and empower our students to develop the knowledge, skills and mindsets necessary to thrive in a rapidly changing, technologically rich global society.
2. Ensure equitable opportunities and access for every student to become a part of an inclusive innovation economy.
3. Continuously improve the effectiveness, support, and the number of formal and informal P-20 STEM educators.
4. Create sustainable and supportive conditions to achieve STEM outcomes aligned to Oregon's economic, education and community goals.

Working in collaboration with the Oregon Department of Education, Chief Education Office and an amazing group of stakeholders, [OregonASK](#) offers the guidance to help policymakers and STEM/CTE partners thoroughly understand the importance and role that afterschool and summer STEM and CTE opportunities play for creating equitable systems to support all youth in Oregon. Further, we provide a framework

“The future of the economy is in STEM. That’s where the jobs of tomorrow will be.”

James Brown, Executive Director of the STEM Education Coalition in Washington, D.C.

for implementation, as well as suggested funding sources to provide a practical manual for increasing student outcomes to meet the rigorous state goals set forth to ensure our state and our students, teachers and communities continue to grow and thrive in the years to come.

This document describes resources, programmatic requirements and allowable uses of funds designated by ESSA. It provides a brief description about programs authorized for Expanded Learning Opportunities, lists the appropriated and authorized funding levels as set forth by Congress, and the eligible entities.

This report and accompanying toolkit are designed to provide guidance for school districts, charter schools, private schools, non-profit and industry partners and community stakeholders in the integration of STEM and CTE within the parameters of ESSA. It was developed in consultation with the Oregon Chief Education Office, the Oregon Department of Education (ODE) and stakeholders from across the state (see Appendix A), including other state agencies and representatives from industry.

Stakeholder Input

The following statements were created by Oregon stakeholders (see Appendix A for members & acknowledgments) with a strong mutual interest in moving to action while taking advantage of the new flexibility available through ESSA:

Vision

Every Oregon learner is prepared to meet their aspirations through equal access to personally relevant, well-rounded education opportunities leading them to develop comprehensive skills for learning. This learning occurs across time and settings - providing a spectrum of meaningful career options.

Mission

Our coordinated network of local, regional and state-level stakeholders will work together to increase access to high-quality

Science, Technology, Engineering & Math (STEM) & Career and Technical Education (CTE) Expanded Learning Opportunities (ELO). This will be accomplished by developing an approach to teaching and lifelong learning that emphasizes the natural interconnectedness of STEM & CTE.

The valuable connections are made explicit through collaboration between educators resulting in real and appropriate context built into instruction, skill development, curriculum and assessment from early childhood to career. The common element of problem solving is emphasized across all disciplines allowing students to discover, explore and apply critical thinking skills as they learn.

Oregon's STEM Education Plan from the state's Chief Education Office calls for three outcomes:

1. By 2018, create and populate an online repository of high-quality instructional resources and concrete examples that engage learners in rich, authentic applications of STEM concepts.
2. By 2018, establish a STEM leadership academy to work with school principals, superintendents, teacher preparation faculty and teacher leaders.
3. By 2020, provide high-quality professional development opportunities in partnership with local STEM employers to at least 50% of Oregon's K-12 STEM educators, leveraging Oregon's Regional STEM Hubs where possible.

Expanded Learning Opportunities can support the successful achievement of these goals by building professional learning communities, including student voice, to communicate these priorities broadly. We must ensure we maintain focus on these goals while measuring progress along the way.



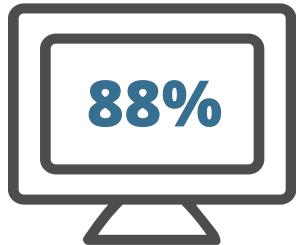
Integrating STEM & CTE within ESSA

The reauthorization of ESSA provides the flexibility necessary to emphasize the career pathways that will result in the narrowing of the skills gap that currently exists in technical fields throughout Oregon. Simply, a “skills gap” exists when there are more job openings than there are workers qualified to fill those openings.

Career Technical Education (CTE) has already been shown to increase the supply of STEM workers, which is essential to closing Oregon’s skills gap. While Oregon has many of these programs, there aren’t enough to fill the demand. Research highlighted by the business leader group ReadyNation shows during the current decade, 70 percent of job openings will call for employees who have college or postsecondary training.



of millennials believe low computer skills have not hurt their chances of getting a job, a promotion, or a raise



of those with low tech skills share that belief

That amounts to 13 million low-skilled millennials who do not recognize a major barrier to their future success

Source: Change the Equation, 2015

Only 65 percent of working-age Oregonians have this level of education. That 5 percent gap means Oregon will have about 35,000 unfilled positions. Worse still, Oregon isn’t on track to close that gap, and Oregon’s 72 percent graduation rate is fourth from the bottom among the 50 states. This ranking should be of grave concern to Oregonians (PAMPLIN MEDIA GROUP, 2017).

In order to fill the gap in skills, Oregon would need to send more students to college and postsecondary job training so that they have viable options in the modern job market. Currently, not enough young adults are graduating from high school and many are not graduating with the skills necessary for the jobs that exist. Our skills gap poses a particular threat in “STEM” fields — science, technology, engineering and mathematics, sectors that are growing the fastest. STEM jobs in Oregon are expected to grow by 19 percent between 2010 and 2020. Our workforce isn’t currently equipped to take advantage of that increased demand because 94 percent of Oregon STEM job openings will require postsecondary education.

Evidence-supported pathways that will help students access postsecondary education and careers are emphasized in ESSA through STEM and CTE. Embedded within the pathways are the skills of critical thinking, teamwork, effective communication and problem-solving that the modern workplace demands. These experiences use work-based and project-based learning to create practical connections between the classroom and careers. They even provide opportunities for students to obtain credentials that can help them land jobs.

The Oregon Legislature recently pledged funding for more CTE opportunities. These funds, along with federal emphasis and flexibility targeting STEM and CTE, will provide expanded options and a narrowing of the “skills gap” that make Oregon students more competitive, engaged and trained, and can be a key to improving graduation rates and the economy.

Digital Innovation

The need for workers with STEM skills is heightened in today's *global economy*. Technological innovation improves the competitive position of U.S. industries, drives export growth and supports high-quality jobs. Additionally, demand for STEM-capable workers has increased even in traditionally non-STEM fields due to the diffusion of technology across industries and occupations.

Technological progress can improve workers' quality of life by improving working conditions and increasing wages. However, for workers to benefit from the economic gains generated by innovation, they must have the knowledge and skills needed to work effectively in jobs requiring STEM/CTE competencies. Improving access to quality STEM/CTE education in ELO settings will strengthen the caliber of the U.S. workforce, drive economic growth and keep the U.S. competitive.

Effectively implementing digital learning and using technology in education will be successfully implemented when we work towards a vision of future possibilities where every student is a successful citizen with 21st Century skills. In order to implement that vision of learning possibilities, we must provide leadership by developing policies and practices that promote innovative uses of technology in an evolving learning environment.

Community Engagement between pre-K-12 and higher education, educators and business, public and private agencies and community-based organizations must be encouraged so that we share ideas, new technologies, strategies and resources for the benefit of all learners at all ages. By learning from each other, we can offer high quality professional development to teachers, administrators and higher education staff that will build capacity for strengthening the quality of learning opportunities. What happens in K-12 informs higher education, particularly pre-service programs that are preparing future teachers. K-12 and higher education

inform the development of products and technology innovations from business.

Effective practices in business move to the classrooms. Both education and business push for policies that open the door for future changes in how we use technology. Working together, we can build the capacity and sustainability necessary to achieve that future vision (Oregon Digital Learning / Educational Technology Plan 2017-2021).

Informal Learning: An Important Component of Expanded Learning Opportunities

The National Science Foundation defines a broad vision for informal education: "Informal learning happens throughout people's lives in a highly personalized manner based on their particular needs, interests, and past experiences." This type of multi-faceted learning is voluntary, self-directed and often mediated within a social context (Falk 2001; Dierking, Ellenbogen et al. 2004); it provides an experiential base and motivation for further activity and subsequent learning (NSF 2006). Based on a survey of Oregon parents in 2014, we know that 91,595 children in Oregon (or 16%) participation in an afterschool program, yet 221,708 (or 44%) would be enrolled if one was available to them.

Informal STEM that happens in afterschool and summer programs should be represented as an authentic partner within Oregon's implementation plan for Every Student Succeeds Act to help ensure effective collaborations for the benefit of students, families and communities.

- » ESSA provides an unprecedented opportunity to connect formal and informal education as we address student and family needs on an individual level across the state.
- » As partners in the education of youth, afterschool and summer STEM/CTE programs provide an essential

If Oregon increased the number of citizens with certificates or associate degrees by 10 percentage points, the state would have:¹⁰	
↑	\$867 higher median per capita income
↓	8,700 fewer unemployed individuals
↓	24,100 fewer individuals living in poverty

- » connection to a youth's environment, community and real-world experiences.
- » Informal learning has a key role in providing connections between school day and afterschool, particularly within STEM and CTE Programs.
- » Informal STEM learning offers the unique opportunity to integrate core-content with other essential components of a well-rounded education, while inspiring and engaging youth to be 21st century problem solvers.
- » First through twelfth grade youth spend less than 20% of their waking hours in school (Afterschool Alliance) With more than 80% of waking hours outside of school, our mindset must change about the importance of learning that happens informally, in families and in our communities.
- » As our state continues to struggle in providing adequate funding to support formal education, informal STEM may be the key to engaging more community partners in a collaborative approach to providing essential learning experiences that will promote the growth and competitiveness of Oregon's traded sector and high growth industries.
- » There must be a greater alignment with programs of study, agile training systems, industry, workforce and government partners, to create a pipeline of qualified workers to ensure future success.

Foundational Elements for Integrating Informal STEM/CTE in Oregon

Informal STEM & CTE opportunities will be based on quality program standards, intentionally providing all students and educators the tools, resources and support necessary to be successful in overcoming any possible barriers. Students and stakeholders together will build and sustain a system of equitable access and opportunity that can meet the needs of all Oregon youth.

- » Informal STEM as an integrated part of [Oregon's Ecosystem of STEM learning](#).
- » Informal STEM opportunities are crucial piece of supporting a well-rounded education.
- » Informal STEM options are key partners in supporting the success of ALL Oregon youth.
- » OregonASK's [Stem By the Numbers Infographic](#) summarizes feedback from 400 sites across Oregon.

Oregon Department of Education defines STEM as: "An approach to teaching and lifelong learning that emphasizes the natural interconnectedness of the four separate STEM disciplines. The connections are made explicit through collaboration between educators resulting in real and appropriate context built into instruction, curriculum, and assessment. The common element of problem solving is emphasized across all STEM disciplines allowing students to discover, explore, and apply critical thinking skills as they learn."

"We are not promoting the tracking of students. But instead want to create relevant pathways for each student based on their interests and needs."

Laura Roach, Oregon Department of Education, Secondary/Post Secondary Transitions, Director

The following value statements were created by a diverse team of Oregon stakeholders (see Appendix A for members & acknowledgments) with a strong mutual interest in taking advantage of the new priorities of ESSA.

Value Statement #1: Youth Empowerment

All youth deserve to be heard and understood, and contribute to their family and community. We want to empower youth to become meaningful contributors within our programs, our community and in society overall. Having youth actively making contributions creates student engagement through helping to promote ownership, commitment, action and instilling a sense of value and pride. The culture of STEM and CTE has an effect on many students' interest, self-concept, sense of connectedness and persistence in these disciplines. ELO programming goes beyond opportunity, but instead provides underrepresented youth with access to high-quality, relevant learning.

Strategies:

1. Increased collaboration between school teachers and afterschool providers can offer opportunities for students to apply their learning to solve real problems in their communities. This involves a cultural mind shift from the traditional role of educator delivered instruction ("sage on the stage") and learner-centered design (with the educator as the "guide on the side") to increase student engagement in learning. See [Oregon MESA](#) for an example of an integrated program in the Portland, OR area.
2. Personalized learning is a key strategy for increasing student engagement and providing instruction at the correct level for each student.
 - a. Tailored learning to each student's strengths, needs and interests.
 - b. Students have voice and choice in what, how, when and where they learn.
 - c. The student educator bond

is the heart of learning.

- d. Students achieve mastery of standards through flexible and meaningful pathways.
- e. Learners are active participants in setting goals, planning learning paths, tracking progress, and determining how skills and knowledge will be demonstrated and shared.
- f. All students are ready for college and career.

3. Providing connections between formal and informal learning environments through proficiency-based learning systems and data sharing agreements that allow students to track their own evidence of demonstrated learning. Bringing data from the school day allows for the opportunity for joint ownership of learning goals and coordination of learning strategies.
 - » **Shared Space:** Many ELO programs are located in schools, which can be a first step toward alignment between programs and schools. Through school-based after school programs, students and educators can build multidimensional relationships, and students can demonstrate greater involvement in extracurricular learning.
 - » **Supportive Leadership:** Supportive school leaders are considered a critical component to successful ELO-school linkages. For example, they can assist in recruitment; facilitate communication between ELO programs, schools and families; help leverage resources; offer programmatic suggestions to align ELO programming in support of in-school learning; and enable school personnel to work in ELO programs.
 - » **Shared Staff:** Overlap between school and ELO staff has the potential to strengthen in-school and out-of-school learning alike. Numerous evaluations point to the potential benefits of employing school-day teachers in OST programs.
4. Responsiveness to the changing

needs of our diverse youth population by leveraging the power of youth voice through inclusion in school and community advisory councils, planning efforts and opportunities to build skills for leadership, volunteering and civic engagement.

5. Competency Education: Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.
 - » Students advance upon mastery of defined standards;
 - » Competencies include explicit, measurable, transferable learning objectives that empower students;
 - » Assessment is meaningful, clearly understood;
 - » Accountability creates a positive learning experience for students; and
 - » Timely differentiated support is provided based on individualized needs.

Value Statement #2: Professional Development

Educators are the single greatest factor affecting student success. It is imperative that we have prepared, skilled teachers, both within and outside the school day, to ensure that each and every one of Oregon's students has the opportunity to achieve their potential. The Network for Quality Teaching and Learning was created to enhance a culture of leadership and collaborative responsibility for advancing the profession of teaching and to equip educators at the community level with the

resources and skills necessary to teach and inspire the next generation of Oregonians.

Created by the Oregon Legislature, the Network acts as a statewide umbrella of support for teachers, funding key educator development initiatives including:

- » Supporting new teachers and administrators through mentoring.
- » Providing educators with professional learning opportunities such as peer-to-peer training, mentoring and leadership groups.
- » Supporting efforts to improve recruitment, preparation, induction, career advancement opportunities and support of educators.
- » Building an educator workforce that mirrors Oregon's student demographics.
- » Forming a shared virtual space where educators can work together to access, create and pool their resources that improve practice.
- » Scaling up effective practices and removing barriers to implementation.
- » Using data to document educator working conditions to determine where resources and supports are needed to provide the most effective teaching and learning environment for students.

Strategies:

1. Provide professional development and professional learning communities in the Oregon Educator Network for early learning, school-age and post-secondary (ESEA section 2113, 2123).
 - a. Values of sense-making, reasoning,



relevance, rigor, curiosity, connection and application of concepts.

b. Connections between formal and informal learning opportunities and the benefits to student achievement, real-world relevance and future skill development.

c. Support educators to effectively teach student with disabilities and/or emerging bilinguals (ESEA section 2113; section 2123, section 3115).

2. Provide leadership pathways for STEM/CTE educators and provide differential pay for those assigned to high-need programs and measure educator effectiveness through the application of systematic observational model across the spectrum of learning which lead to increased learning opportunities, and a closing of the gap between students. Training of supervisors and peers to provide feedback, using models such as the Danielson Framework, is needed to create systems of excellence in teaching & learning (ESEA section 2113, section 2123).

3. Recruit and prepare novice educators, including those from groups historically underrepresented in STEM/CTE (Title II ESEA section 2113 and section 2123).

4. Recruit qualified individuals with STEM/CTE content knowledge from other fields to become teachers, including professionals from other occupations such as former military and recent graduates who demonstrate academic distinction (Title II ESEA section 2113 and section 2123).

5. Use funds reserved by the State for leadership activities to offer internship programs that provide relevant and valuable business experience, for educators and social support staff involved in integrated career and technical education programs (Perkins section 135).

Value Statement #3: Quality and Sustainable Opportunities

Increasing the availability of high-quality program resources and access for historically underrepresented youth will help to identify and close the opportunity gap for ELO programs in communities across Oregon. We believe that with time, research-based knowledge, personal awareness and strong support, educators can address their implicit biases and develop communication and instructional strategies that encourage every student to succeed in STEM courses, programs and careers.

- » Forming a shared virtual space where educators can work together to access, create and pool their resources that improve practice.
- » Scaling up effective practices and removing barriers to implementation.
- » Using data to document educator working conditions to determine where resources and supports are needed to provide the most effective teaching and learning environment for students.

Strategies:

1. Coordinate efforts to develop local Professional Learning Communities utilizing available resources to:
 - » Review research,
 - » Identify effective strategies,
 - » Highlight promising/exceptional opportunities that programs are providing, and
 - » Provide opportunities for replication - ELO programs that could be adapted to fit the local context.

“When designed well, a quality improvement system offers a clear framework of professional development and training aligned to each domain of its quality standards.”

Gina Warner, Executive Director National Afterschool Association



2. Maintain investments in the state longitudinal data system to identify research based strategies and effective outcomes in youth support. Data systems will evolve to include additional indicators of student needs. Interventions and opportunities should then follow the student from grade to grade, school to school or program to program.
3. Ensure that all needs assessments and planning conducted under ESSA, including under Title I and Title IV Part A include equitable student access and utilization of expanded learning opportunities.
4. Develop a system of data-sharing with all entities involved in educating our youth. Common data sources will assist in the development of systemic responses to learning, as well as allow analysis of equitable access and participation in programming opportunities.

Value Statement

#4: Partnership with Industry

We strive to accelerate learner success through developing future ready skills and meaningful career exploration in co-investment with industry. We believe that a personalized, relevant and effective education is essential to the economic,

cultural, and academic growth of expanded learning opportunities. We will continue to work with industry associations, higher education and workforce organizations to research critical industry needs, demonstrate a return on investment and bring effective programs to scale across the state.

Strategies:

1. Development of a training curriculum and system for essential skills including effective communication, project management, teamwork, leadership, strong character, time management and problem-solving capacities.
2. Focus on digital literacy skill development from elementary through high school computer science (see section on “Digital Innovation” on page 7).
3. Connect educators with industry professionals through *Oregon Connections*, a web-based tool connecting educators to industry professionals who share their skills and bring real world learning opportunities to your students. Through in-person matches and virtual real-time sessions, industry professionals connect with classrooms, both during and outside the school day to inspire and expose students to real-world opportunities. In STEM/CTE programs, students develop essential skills valued by employers such

College- and Career-Ready Standards and Pathways

To prepare students to be college and career ready, many states have identified the characteristics, skills, knowledge and dispositions that their graduates will need in order to succeed in the world. This vision provides a statewide model for aligning educational experiences from kindergarten through high school.

Oregon, New Hampshire, South Carolina and Vermont are among the states that have adopted definitions of competencies beyond academic knowledge and skills, sometimes called “habits of mind,” that include such skills as collaboration, communication and complex problem solving.

(Equity and ESSA: Leveraging Educational Opportunity Through the Every Student Succeeds Act. Channa M. Cook-Harvey, Linda Darling-Hammond, Livia Lam, Charmaine Mercer, and Martens Roc)

as communication, project management, teamwork, leadership, strong character, time management and problem-solving capacities necessary for success in the workplace. High-quality expanded learning programs provide enriching pre-employment experiences such as career exploration, job shadowing, college visits and internships with employers in fields of interest. Many students are exposed to hands-on learning that leads to development of the skills that are beneficial as all students develop their unique career pathways.

Value Statement #5: Family and Community Involvement

We believe partnerships with parents, families, communities, and other stakeholders are essential to quality public education and student success. Programs like *Educate and Engage* that include opportunities for all students, families and communities, particularly those who have been historically underserved, are a key element of this integrated plan.

Strategies:

1. A systems development approach to enhance parent engagement in STEM education.
2. Provide a systematic way to communicate available tools, materials and information to:
 - » Create a welcoming climate;
 - » Provide families information related to child development and creating supportive learning environments;
 - » Establish effective school-to-home and home-to-school communication;
 - » Strengthen families' knowledge and skills to support and extend their children's learning at home and in the community;
 - » Engage families in school planning, leadership and meaningful volunteer opportunities; and

- » Connect students and families to community resources that strengthen and support students' learning and well-being

Improving STEM/CTE Learning

Opportunity to Learn

Does the environment foster excellent teaching and student learning to support a well-rounded education?

Academic Success

Has the environment resulted in student achievement & growth?

College & Career Readiness

How well are students prepared for their next steps?

Oregon's Accountability Indicators, which apply to all learning environments, whether during or out of school, include the following:

In 2014, the National Research Council convened experts from the formal, informal and out-of-school learning community to explore how the three contexts can improve learning for all students.

1. Increase students' equitable access to STEM courses and experiences, including out-of-school programs, STEM-themed schools and career pathways;
2. Support educators' knowledge and expertise in STEM disciplines through recruitment, preparation, support and retention strategies; and
3. Increase student access to materials and equipment needed to support inquiry-based pedagogy and active learning.

Successful transitions depend on an integrated and connected learning system of opportunities for students to make education and career choices based on their interests, and that match the anticipated future job market. From early childhood to elementary, from middle school to high school and on

to community colleges, universities and the workforce, Expanded Learning Opportunities (ELO) add the necessary time and cohesion for many underrepresented students to enjoy the same level of access to 21st Century Skills as our most advantaged youth. [Click here to see what 21st Century Education looks like.](#)

Application of these indicators across the spectrum of pre-K through post secondary, in all learning environments, will lead to a cohesive, comprehensive system of education, encouraging equity of access and participation to all of Oregon's students. Providing adequate support to all educators, with STEM/CTE and informal learning opportunities integrated across the spectrum will ensure students gain the skills they need to fill the gap in talent Oregon needs to prosper.

If **people of color** were fully represented in the computer science workforce, we would have roughly **570,000** more computer scientists*



*Change the Equation analysis of Economic Modeling Specialists International, August 2015

Funding Options & Opportunities - ESSA

ESSA has numerous explicit references to summer learning and enrichment opportunities; many continuing from the prior reauthorization of the Elementary & Secondary Education Act (ESEA). Due to the variety of references to extended learning opportunities, states need to clearly interpret the flexibility available to ensure a well-rounded, equitable education is available for all students. Following are some funding sources available to states, districts and communities, including recommendations for the Oregon ESSA Framework from the Oregon ELO stakeholder group.

Title I:

Afterschool and summer programs are allowable activities for Targeted Assistance Schools (Sec 1009(b)(2)(B)) and have been identified in research as an instructional strategy to boost student achievement.

Oregon stakeholders recommend that the state interpretation include the following:

- » Use STEM strategies for targeted support, providing interconnected, well-rounded education in an alternative, safe and supportive space after school.
- » Inclusive language that explicitly defines innovative solutions to deliver cutting-edge equity strategies (addressing ethnic and special need issues) in an ever-changing learning environment.
- » Explicitly identify afterschool programming as an intervention for schools identified for additional services.
- » Update language from Extracurricular to Expanded Learning Opportunities and community opportunities to ensure a comprehensive, equitable system of support.
- » For accountability purposes: designate funding to update the statewide science assessment to match the Next Generation Science Standards (NGSS).

Summer programs are an allowable activity for the Education of Migratory Children (Sec 1301(1)).

Title II: Supporting Effective Instruction

Overall, districts should be encouraged to combine Title II with Title I funding to offer expanded learning opportunities that can pay dividends in skill growth for both educators and students.

Partnerships with private and nonprofit partners are included in Sec 2221 (Literacy Education for All, Results for the Nation (LEARN)) and funds are meant to be used to support building systems of support for excellent teaching and leading. These activities can be carried out in “other than a classroom setting.” ESSA eliminates NCLB’s definition of “core academic subjects” and allows for funds to support traditional and non-traditional pathways that may include both in-school and out-of-school educators, principals or other paraprofessionals.

Oregon ELO Stakeholders recommend:

- » Provide educators with real-world training and experience in diverse settings, including afterschool and summer program opportunities, as part of the process for earning their hours of practice and observation.
- » Require pre-service educator programs to provide all participants with training on STEM/CTE strategies & provide an informal afterschool or summer experience to practice hands-on, field-based strategies that will enhance the students’ understanding of STEM/CTE subjects.
- » Provide additional educator supports that can connect formal and informal learning:
 - ◊ Peer mentoring
 - ◊ Joint training
 - ◊ Cultural competency
 - ◊ Long term relationships between industry/educators
 - ◊ Explicit support of program administration articulated throughout
- » Administrator training and professional development relating to student career pathways:
 - ◊ Teacher paths to leadership opportunities.
 - ◊ Utilizing afterschool & summer as

opportunity to partner in providing additional supports that youth need.

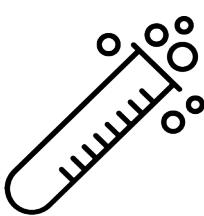
- ◊ Eliciting youth empowerment.

*Language of “integrate comprehensive literacy instruction into a well-rounded education” (Sec 2224(d)(4)) for older youth suggests potential coordination with grants under Title IV Part A, which also references a well-rounded education.

Title IV, Part A: Student Support & Academic Enrichment Grants

Every Student Succeeds Act (ESSA) includes a flexible block grant program known as Student Support and Academic Enrichment Grants (SSAEG) under Title IV Part A, which is authorized at \$1.65 billion in fiscal year 2017. Title IV, Part A authorizes activities in three broad areas:

1. Providing students with a well-rounded education including programs such as college and career counseling, STEM, arts, civics and International Baccalaureate/Advanced Placement.
2. Supporting safe and healthy students with comprehensive school mental health, drug and violence prevention, training on trauma-informed practices, and health and physical education.
3. Supporting the effective use of technology that is backed by professional development, blended learning and ed tech devices.



Just 56% of 8th grade science teachers in lower-income schools say they get “all or most” of the resources they need, compared with 67% in higher-income schools.*

*Change the Equation analysis of U.S. Department of Education, National Assessment of Educational Progress, 2015 Science Assessment

Implications for STEM afterschool

In Part A of Title IV of the bill a new \$1.65 billion formula grant program would provide funding to each state, with local school district recipients of the funding being required to spend at least 20 percent of their funding on “well-rounded” educational activities, which include a priority focus on STEM-education specific activities, specifically including afterschool STEM.

In order to receive these funds, recipients must conduct a needs assessment (see sample: *Needs Assessment*) to examine the specific areas in need of improvement in order to provide a well-rounded education to all students. The provision highlights the ability to partner with established afterschool and STEM networks to provide technical assistance to afterschool programs to improve their practice.

Oregon ELO Stakeholders recommend:

- » Promoting flexibility of funding and allowance of program delivery during the summer months; Fostering collaboration and coordination among partners, programs, and schools to ensure maximum impact of these efforts and seamless year-round integration of services; and engaging a wide range of stakeholders who support students with education services during the summer months, including schools, teachers, libraries, community-based and faith-based program providers, public housing partners and others.
- » Emphasizing that the Department of Education recognizes afterschool and summer programs as evidence-based supports that help provide a well-rounded supportive education for students--and that districts can choose afterschool and summer programs as such supports.
- » Encouraging local districts to build on STEM learning during the regular school day by using Title IV, Part A funds to provide afterschool STEM programs that offer hands on engagement and help students develop their interests, confidence and experience in career building pathways.

Title IV, Part B: 21st Century Community Learning Centers (CCLC)

The 21st CCLC language in the Every Student Succeeds Act (ESSA) is largely based on the *Afterschool for America's Children Act* amendment that was developed by Senators Boxer and Murkowski with input from the afterschool field over the past several years.

The new language:

- » Strengthens school-community partnerships to include sharing of data and resources, the ability to better leverage relationships within the community and provide an intentional alignment with the school day.
- » Encourages innovative new ways to engage students in learning that looks different from a traditional school day, with an emphasis on hands-on, experiential learning; science, technology, engineering, and math (STEM); financial literacy, workforce development; environmental literacy; and physical activity and nutrition education. Supports approaches that focus on individualized learning that provide a variety of ways for students to master core skills and knowledge.
- » Provides accountability measures that are connected to college- and career-readiness goals and shows student progress over time towards meeting indicators of student success including school attendance, grades and on-time grade level advancement.
- » Increases quality and accountability through parent engagement, better alignment with state learning objectives and coordination between federal, state and local agencies.
- » Gives additional flexibility to state education agencies to dedicate more resources to training, professional development and quality improvement for programs and program staff. Also allows states to work with external organizations to provide training and support to grantees.
- » Includes language that would allow

21st CCLC funds to be used for specific ‘afterschool-like’ activities as part of expanded learning programs in cases where at least 300 hours are added during the year; schools work with community partners; and activities do not supplant existing programs.

- » Does not prioritize any one model of expanded learning opportunities over another.
- » Maintains formula grants to states that then distribute funds to local school-community partnerships through a competitive grant process.
- » Authorizes the program at \$1 billion for FY2017, and \$1.1 billion for FY2018 through FY2020, however exact funding levels will be determined by Appropriations Committees.

Oregon ELO Stakeholders recommend:

- » Ensure that programs, parents, and students are meaningfully consulted in the development of RFPs and are included in state-level advisory groups for 21st CCLC. It will be important to involve business, education, afterschool, parents and community partners to have an integrated and leveraged approach to student preparation in and out of the school day and summer and into the workforce.
- » Additional funding for PD from a 3% to 5% set aside. This component if properly implemented could mean an increase of quality age appropriate training for afterschool educators in high quality STEM and CTE fields.
- » Acknowledge the benefits of external community based organizations which

provide coordination of services for children and youth across the k-12 continuum, these programs provide critical services, following a balanced whole child academic and enrichment expanded learning opportunities.

- » Ensure the use of “technology programs” as well as “career and technical programs, internship or apprenticeship programs, and other ties to an in-demand industry sector or occupation for high school students.”
- » Acknowledgment of the benefits that would be gained from schools (which have access to CTE and Title I money) and community partners (with 21st CCLC programs) to ensure sharing of space and equipment to help prepare students for the in-demand workforce.
- » School districts and community based organizations are encouraged to apply for 21st CCLC Grants. Eligibility criteria should consider equitable geographic access and opportunities for historically underserved youth in STEM.

Expanded Learning programs have a role to play in supporting the development of these skills for all youth. A widening skills gap is plaguing the workforce—meaning that today’s workforce is not prepared for today’s jobs—and an even more alarming problem is that youth from low-income communities do not have access to the same opportunities to build desired employability skills as their more affluent peers. Expanded Learning Opportunities can help to close necessary skill and opportunity gaps.

The [Secondary Career Pathways Funding](#) was established by the Oregon Legislature



through HB 3072. This is a first attempt at a sustained funding source for Career and Technical Education (CTE). It is intended that the funds allocated through this program will incentivize intensive CTE Programs of Study that lead to high wage and high demand occupations. Oregon has already undertaken blended funding opportunities in Expanded Learning Opportunities through Career Pathways as follows:

- » Workforce Innovation & Opportunity Act Title I (Adults and Youth)
- » Workforce Innovation & Opportunity Act Title II (Adult Education and Family Literacy Act)
- » Trade Adjustment Assistance
- » Registered Apprenticeship and Pre-Apprenticeship
- » Employment Service (Wagner-Peyser Act)
- » Pell Grants
- » Carl D. Perkins Career and Technical Education Act
- » Temporary Assistance for Needy Families (TANF)
- » Supplemental Nutrition Assistance Program Employment and Training (SNAP E&T)

The United States Department of Education (USDOE) provides examples of leveraging ESEA, IDEA and Perkins funds for STEM/CTE education in their “Dear Colleague” letter dated April 13, 2016 USDOE Dear Colleague Letter - Expanded Learning Opportunities. They encourage the pursuit of innovative strategies and active teaching methods, while working to ensure equitable educational opportunities across disciplines. They specifically identify out-of-school time, career-based experiential learning and stem-focused pathways as opportunities.

In addition to the aforementioned funding plans, the examples below highlight ways in which a grantee might be able to blend and braid funding sources to close the gap in learning for underrepresented students:

- » Eligible LEAs or consortia of LEAs could use focused activities under the Magnet School Assistance Program (ESEA section 5301 and section 5307) to

establish theme-based magnet programs that are designed for and attract students of diverse backgrounds; and

- » Public charter schools could support STEM initiatives using funds received under the Charter School Program (ESEA 5202).



Conclusions and Next Steps

The US Department of Labor has projected that by 2018 the US will have more than a million job openings in STEM fields (Lacey & Wright, 2009). To succeed in economies that are rapidly embracing STEM/CTE related careers, individuals are required to develop the skills necessary to secure meaningful employment. Of utmost priority are students and educators who have been historically underrepresented in STEM/CTE fields. As a consequence this has posed a great challenge to educators at all levels of the academy to seek ways to be responsive and accommodating in their teaching the changing needs of the workforce, students and communities (Howell, 2011).



The responsibility of the disparities among our young people and highly trained educators rests with adults, through engaging all children. We are aware that student achievement data from school districts across the country reveal similar patterns, and that complex societal and historical factors contribute to the inequities our students face. Nonetheless, rather than perpetuating disparities, we must address and overcome this inequity, providing all students and aspiring and current educators with the opportunity, access and support they need to succeed.

The combination of ever-changing knowledge, advancing technologies and fluid work environments demand more agile education and training systems. That requires greater alignment of programs among industry, education, workforce and government partners (*Oregon Talent Plan, 2015*). The Oregon Digital Learning Advisory is currently developing and defining approaches to learning, shrinking long-term equity and accessibility gaps, and adapting learning experiences to meet the needs of all learners.

STEM and CTE offer students one of the best opportunities to make sense of the world holistically, rather than in bits and pieces as they prepare for jobs in the new economy. STEM education removes the traditional barriers erected between the four disciplines by integrating them into one cohesive teaching and learning paradigm helping students make connections between school, community, work, and the global world (*Lantz, Jr., 2009*). Thus, STEM education is a priority not only because we need today's students to become tomorrow's leaders in innovation and help the US economy, but also to increase STEM interest and skill.

Career and Technical Education (CTE) curricular options play a critical role in preparing individuals for the world of work. CTE offers a holistic education that is dynamic, flexible, and responsive to the ever-changing needs and advances of technology, education, the workforce and the economy. CTE incorporates innovative methods, ideas and resources that provide students with a range of skills necessary to be considered workforce ready and secure meaningful work (*Bray, Luzzo, Green, Gore, Katt, & Harrington, 2008*).

The Educate to Innovate campaign seeks to harness public-private partnerships to improve STEM education, make STEM education more accessible, move American students up the international rankings in STEM literacy, and expand STEM career opportunities. In his State of the Union Address 2011 President Obama pledged to prepare an additional 100,000 STEM teachers by the end of the decade (*National Economic Council, Council of Economic Advisers, & Office of Science and Technology Policy, 2011*).

Expanded learning programs are more than just a safe place to spend a few hours. They are a critical supplement to school-day learning, providing additional instruction, enrichment and leadership development programs for students. Expanded learning programs are a place for students to feel safe, have fun and engage in enriching educational activities.

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Icons provided by Laura Goldben, KAPKLAM, Gan Khoon Lay, Delwar Hossain, Gregor Cresnar, Tinashe Mugayi, Mazil, Oksana Latysheva, Vectors Market, and AFY Studio from the Noun Project

Appendix A - Stakeholder Group & Acknowledgments

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Appendix B -Toolkit Resources

Contained in the following document are the descriptions of high quality expanded learning opportunities at each level from early childhood to postsecondary. Additionally, there is a sample needs assessment relating to STEM/CTE as required by ESSA available at this link: [Sample Needs Assessment](#)

STEM Ready America: Inspiring and Preparing Students for Success with Afterschool and Summer Learning, a compendium of articles from 40 leading experts featured on a new website www.stemready-america.org. The site provides success stories, research, and articles on STEM learning from policymakers, educators, and business, foundation, and youth development leaders. From Executive Editor Ron Ottinger of STEM Next, this powerful collection of articles portrays the state of the field of STEM learning ---especially in the time and space beyond school.

Providing appropriate training for educators is a key element of this work, and we provide recommendations for *Improvement Science*. Finally, we offer common vocabulary for terms relating to STEM, CTE and Expanded Learning Opportunities. Throughout the report, we offer descriptions of resources already available to educators and community partners.

Early Learning

High-quality, well-aligned standards and appropriate professional development for educators supports the development of the foundation of knowledge and the necessary growth mindset students need to become engaged in technical fields. By prioritizing STEM disciplines throughout the early childhood learning environment, the foundation for student success will be established, and interest in STEM fields as potential career choices will be fortified.

Following are the identified guidelines for exemplary early learning standards in STEM:

- a. Discipline-specific: Each discipline (science, technology, engineering and math) is addressed separately and the standards focus on the important content (“big ideas”) of each discipline.
- b. Includes STEM practices: The standards explicitly recognize important habit of mind within each discipline, as well as the common practices across STEM disciplines.
- c. Detailed: Standards are specific enough that teachers and administrators know what children should know or be able to do.
- d. Aligned: Early learning standards are clearly aligned with kindergarten standards in each discipline.

Early Childhood STEM Working Group Policy Report, 2017

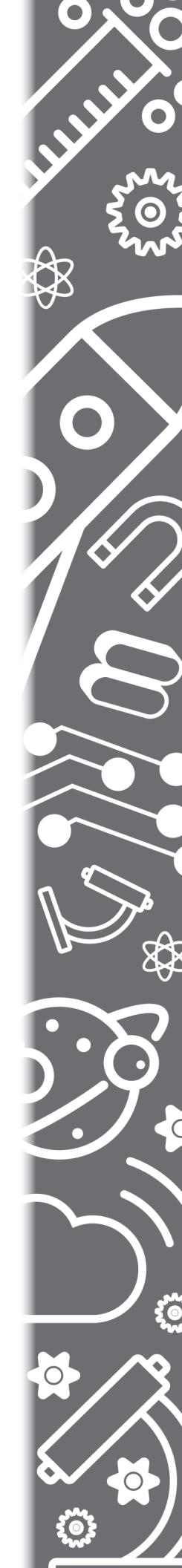
[Oregon's Early Learning Guidance document](#)

Elementary

The early years are critical for students to develop authentic interest in and experience with STEM. Through discovery, discourse, inquiry, and play, children learn to observe natural phenomena, become pattern sleuths, shape and defend an argument, and use problem-solving tactics. A recent random assignment study by the Center for Research in Educational Policy supports the claim that strong inquiry-based science experiences strengthen K-8 science outcomes, even for students who are typically underrepresented in the STEM fields.

A landmark 2007 study also showed that early math skills are one of the best predictors of later academic success in both math and language arts (Duncan, et al, 2007). Early STEM experiences are also vital because students get hooked on STEM early. Recent research suggests that students who ultimately decide to take advanced science classes and pursue postsecondary STEM fields tend to get interested in STEM and make their choices before middle school (Oregon STEM Plan, 2016).

Expanded learning opportunities (after-school, summer, and extended-day programs) offer an ideal setting to engage students in science— and more broadly, STEM (science, technology,



engineering, and math)—through hands-on, inquiry-based learning. Students are more interested in learning about science when they have a stake in it—when they have to get their sailboat to move faster, or code a website that they can show off to their friends and parents.

Expanded learning opportunities enable students to engage in exactly this kind of project-based learning. Compared to the school day, these programs' less formal environments, longer time blocks, and more personalized instruction give students the chance to visit science museums, explore local gardens, perform laboratory experiments, or otherwise spark their love of discovery. They also build students' 21st-century skills, such as problem-solving and teamwork. (Expanded Schools, 2014)

Middle School

Students who are engaged in STEM/CTE programming see the relevancy of the content and can begin to perceive themselves as active and successful learners. These less intimidating environments are accessible to all learners, including students with disabilities, ELs, or other youth who have struggled in more traditional classroom settings, to participate in STEM learning communities and graduate to more complex activities at their own pace as they gain experience (U.S. Department of Education, OET, 2016). More specifically, these types of activities help develop growth mindsets rather than fixed mindsets among children and youth. Students with growth mindsets recognize that intelligence and talents are not static but can be developed through perseverance and hard work (Boaler, 2016; Dweck, 2006). This may be especially critical to engaging and retaining historically underrepresented groups in STEM education, given persistent stereotypes and biases about who is good at and belongs in STEM. Neurological research shows that, with adolescents in particular, there exists a “special opportunity to engage them in new and creative ways of being and doing. ‘A good learning environment acknowledges that the primary mandate of young people is identify formation, and provides them with opportunities to safely envision themselves as the adults they want to become’” (The XQ Project, 2016, p. 7).

For educators and employers, understanding the knowledge, attitudes, and skills that ultimately contribute to success in school, work, and life is a priority. Throughout the past decade, expanded learning programs have helped prepare young people for the world of work in a variety of ways.

Programs serving middle and high school youth can effectively use strategies such as internships, work-study programs, job shadowing, and career development to help youth understand and begin to develop a work-oriented mind-set. Likewise, programs focus on developing work habits (e.g., punctuality) and a strong work ethic to help prepare youth for what will be expected of them when they begin working.

High School

Oregon has recently revamped its *graduation requirements* for high school students. Requirements for students graduating in 2014 and beyond include 24 total credits: 4 credits in English language arts; 3 credits in mathematics (must be algebra I and above; applied and integrated courses aligned to standards can meet credit requirements); 3 credits of science (lab experiences can take place outside of school); 3 credits of social sciences; 1 credit of physical education; 1 credit of health; 3 credits of second language, the arts or CTE; and 6 credits of electives. In addition, students have personalized learning requirements. All students have the option to earn credit by demonstrating proficiency.

Starting in 2012, Oregon students also have to demonstrate that they have mastered *Essential Skills* that are deemed critical for future success before they are awarded a diploma, including reading and comprehending a variety of text, writing clearly and accurately, and applying mathematics in a variety of settings, as well as other skills that will be phased in. According to the *Center on Education Policy*, students will have multiple options and opportunities to demonstrate their proficiency in the Essential Skills by meeting state standards through the Oregon Assessment of Knowledge and Skills, samples of student work or additional standardized assessments.



The *Oregon Skills Sets* align to academic and industry-based knowledge and skills, while *CTE Programs of Study* incorporate technical and academic knowledge and skills as well as the Oregon Diploma Essential Skills.

Oregon focuses heavily on integration and *applied academics*, which it defines as instruction that helps students understand academic content such as mathematics, language arts or science by linking that content to its application in careers.

In Oregon, this often takes one of two forms:

1. Academic Content with a Career Focus: In this approach, a teacher may teach the academic content in a course that has a specific career focus. This would include courses such as Principles of Technology, Applied Communications or Applied Mathematics developed by the Center for Occupational Research and Development (CORD).
2. Infused Academic Content: Another approach is to infuse the academic content into CTE technical courses. Examples of this infused or contextualized approach are often the result of local development involving collaboration between CTE and academic teachers. The Oregon Department of Education has sponsored professional development to support this approach.

In addition, credits in math and science can be fulfilled with applied courses and/or field-based experiences.

As noted above, professional development has focused heavily on academic-CTE integration, including the *Math-in-CTE* and Authentic Literacy professional development models. Oregon Tech, as a *Project Lead The Way* affiliate, has established a self-sustaining Summer Training Institute for teachers in Oregon.

College and career readiness

Oregon has adopted the *Common Core State Standards (CCSS)* and is a governing state of the *Smarter Balanced Assessment Consortium*. In addition, K-12 Achievement Compacts have measured college and career readiness through aggregated and disaggregated data points on graduation rate, college credit earned prior to graduation, and math and reading achievement data, according to the *2011-12 CAR narrative*.

Since May 2008, the Oregon Department of Community Colleges and Workforce Development has been issuing ACT's *National Career Readiness Certificate*, which is based on performance on WorkKeys assessments.

Career Clusters

Oregon has refined the nationally recognized Career Clusters® model into six *career learning areas* (CLAs): agriculture, food and natural resource systems; arts, information and communications; business and management; health services; human resources; and industrial and engineering systems.

CTE Delivery System and Participation

CTE in Oregon is coordinated through the Oregon Department of Education Secondary Postsecondary Transitions (SPST) team and the Community College Workforce Department (CCWD). Administered through a network of Regional CTE Coordinators, all seventeen community colleges are active through affiliation and/or articulation with 654 CTE Programs of Study.

The Oregon Department of Education (ODE) collaborates with the state agencies that have governance roles for educational programs within state correctional institutions, and collaborates with the School of the Deaf.

According to 2013-14 data from the U.S. Department of Education (the latest numbers available), the total number of CTE students in Oregon was 112,469. This includes the following:

- » Secondary: 46,642

- » Postsecondary: 65,827

More data on the state's enrollment is available [here](#).

CTE Funding

Federal: Oregon is estimated to have received \$13,541,476 from the *Perkins Basic State Grant* in FY2016 and \$13,518,483 in FY2015. More data on the state's funding allocations is available [here](#).

The Oregon Department of Education allocates Perkins funds in the state, according to the [state plan](#).

State: The *Oregon Legislature* funds the CTE Revitalization Grant to establish or expand programs of study and promote increased business engagement.

CTE Program Performance Data

CTE program performance is reported by states each year to the federal government through the Consolidated Annual Report (CAR) as required by the Carl D. Perkins Career and Technical Education Act. Learn more with the state's [core indicator reports and CAR narratives](#).

CTE State Standards

The *Oregon Skills Sets* list the things students need to know and be able to do in order to be successful in Oregon's educational and career environments. They follow Oregon's six career learning areas and align to academic and industry-based knowledge and skills. The Skills Sets also include career-related learning standards such as teamwork, personal management and problem solving. According to [a report from the National Association of State Director of Career-Technical Education Consortium](#), Oregon uses the same CTE standards across secondary and postsecondary systems.

Dual Enrollment and Articulation

The State Board of Education and the Oregon Legislature have long-standing commitments to support [articulation agreements](#) among education partners. Oregon has had multiple academic and career and technical articulation streams with associated terminologies. Accelerated College Credit Program Grants were created to enhance and expand the accelerated college credit opportunities for students within Oregon's educational system, according to the [2011-12 CAR narrative](#).

Specific programs include:

- » [Dual credit programs](#), which allow students to earn both high school and college credits for courses offered in high schools, taught by approved high school instructors. In 2009, the Joint Boards of Education approved Dual Credit Standards for Oregon programs. However, at the local level, these programs are governed by the policies of the credit-granting postsecondary institution.
- » The [Expanded Options Program](#), which creates a seamless education system for students enrolled in grades 11 and 12 to have additional options to continue or complete their education, earn concurrent high school and college credits, and gain early entry into postsecondary education.

Oregon also has a few Early College High Schools, according to the [Early College High School Initiative](#). The [Oregon Transfer Module](#) (OTM) provides a one-year curriculum for students who plan to transfer to a state of Oregon two-year or four-year college/university of higher education. The module allows students to complete one year of general education foundation coursework that will apply to transfer to an Oregon University System institution and meet the admission standards of that transfer institution. Completion of the OTM qualifies the student for sophomore standing at an Oregon University System institution.

Post Secondary

There exists a complex array of pathways that students take to STEM degrees and CTE training programs. These are not easily navigated, and students sometimes encounter barriers along



the path to earning a degree or certificate. The environments they encounter when they begin postsecondary programs may not be welcoming, and the teaching may not connect to their prior skills and knowledge. Barriers also result from departmental, institutional, and national policies. They may find themselves inadequately prepared for the rigor of college coursework or they may face stereotypes from faculty or peers. Students may encounter these barriers in classrooms and in other aspects of campus life. Partnerships to create high quality opportunities for aspiring and current educators to follow career paths to entry-level and/or leadership positions moving education forward into the 21st Century will assist in students' persistence to finish certificate and degree programs.

According to *Oregon's Chief Education Office*, research shows that hands-on, project-based learning approaches in STEM and CTE dramatically improve graduation rates. During the 2013-14 school year, 85.7 percent of Oregon students who took one or more CTE credit graduated from high school compared to 72 percent in the overall student population. Even more powerful is that the graduation rate for students from communities of color who participated in CTE programming was 20 to 30 percentage points higher than students overall. This data is important because it illustrates one pathway that is effectively closing systemic gaps in student achievement while simultaneously preparing students for their future.

In statewide efforts to better match our education system with the evolving industry and workforce needs, Governor Brown and the Oregon Legislature have made investments in STEM and CTE (HB 3072) a core priority. The 2015 session marked doubling of investments in programs (\$41 million total) that create hands on learning opportunities and put additional pathways in place to smooth the transition to the world of work.

With 15 of the top 20 of the fastest growing occupations involving STEM/CTE skills, providing students more opportunities to gain experience in these fields will have a direct impact on Oregon reaching its 40-40-20 goal and will fuel economic growth. These occupations boast high-wage jobs and create important opportunities for both individuals and communities to prosper.

In addition to community level investments in STEM/CTE made in partnership with the Oregon Department of Education, the *STEM Council* was created to guide the Chief Education Officer in the development of long-term strategies to position students for STEM/CTE careers. Cross-sector regional *STEM Hubs* were also created to generate locally driven connections between education and the workforce.

The Evidence is Clear

Students participating in afterschool programs that focus on science, technology, engineering, and math (STEM) reported increased interest in science careers and gains in important 21st century skills --- such as critical thinking and perseverance that are in high demand in today's workforce.

The key findings emerge from the Afterschool & STEM System Building Evaluation 2016, an ambitious study supported by the Charles Stewart Mott Foundation and STEM Next. The study looked at the impact of more than 160 afterschool programs, surveying nearly 1,600 youth in grades 4 through 12 across 11 states. The study is the latest in a growing body of evidence demonstrating that afterschool programs help students succeed in school, work, and life. More than 70 percent of students across all states reported positive gains in areas of science interest, science identity, science career interest and career knowledge, and 21st century skills, including perseverance and critical thinking:

Key Findings Include:

- » 80% of students reported a positive gain in their science career knowledge
- » 78% experienced a positive change in their self-reported interest in science
- » 72% reported an increase in their perseverance and critical thinking skills
- » 73% reported an increase in "STEM identity"—a personal belief that he/she can do well and succeed at science

Terms Related to Informal & Expanded Learning Opportunities

21st Century (learning) Skills: The Framework for 21st Century Learning consists of core subjects and themes that revolve around three core skills: life and career skills, learning and innovation skills, and information media and technology skills. These are the skills that students need in order to be successful in the 21st century. Principles of 21st Century skills include authentic learning, mental model building, internal motivation, multimodal learning, social learning, and international learning. 21st Century skills are also mentioned as “non-cognitive skills,” “social-emotional learning (SEL),” character development, etc.

Afterschool: Programs and activities for 5-18 year-olds that take place when they are not in school, including before/after school, evenings, weekends, summer, and holidays. Also known as Expanded Learning Opportunities (ELOs), afterschool programs may fall within any of these categories:

Childcare: When an adult cares for and supervises children 5-12 years old while they are not in school and their primary caregiver is unavailable to take care of their immediate needs. In Oregon, childcare programs are licensed through the Office of Child Care and must meet basic health and safety requirements. Childcare, as defined in federal law, serves school age children from birth up to the age of 13.

Education: Includes community education/community schools, schools or school districts offering enrichment programs, and programs that receive 21st Century Community Learning Center grant funding. The focus is often on enrichment and/or academic support, including tutoring. Education-related programs and activities can serve children and youth from kindergarten through 12th grade.

Recreation: Afterschool recreation includes programs at community centers, schools or parks, as well as classes (such as art, music, and dance) and sports teams that are offered by park and recreation district/departments, community groups, and some for-profit organizations. These activities are not academic in nature, but rather allow students time to relax or play. Sports, games, and clubs fall into this category. Occasional academic aspects of recreational activities can be pointed out, but the primary lessons learned in recreational activities are in the areas of social skills, teamwork, leadership, competition, and discipline.

Youth Development: Traditional youth development programs have included 4-H, Boys and Girls Clubs, Girl and Boy Scouts, Camp Fire, and youth leadership programs. Youth development may also include community intervention or treatment programs, as well as programs that target at-risk populations. These programs and activities usually have been designed for older children and youth, from age 10 through 21.

Alignment of school and informal: The set below represents promising mechanisms identified through a review of implementation evaluations:

Shared Space: Many ELO programs are located in schools, which can be a first step toward alignment between programs and schools. Through school-based after school programs, students and teachers can build multidimensional relationships, and students can demonstrate greater involvement in extracurricular learning.

Supportive Leadership: Supportive school leaders are considered a critical component to successful ELO-school linkages. For example, they can assist in recruitment; facilitate communication between ELO programs, schools, and families; help leverage resources; offer programmatic suggestions to align ELO programming in support of in-school



learning; and, enable school personnel to work in ELO programs.

Shared Staff: Overlap between school and ELO staff has the potential to strengthen in-school and out-of-school learning alike. Numerous evaluations point to the potential benefits of employing school-day teachers in OST programs.

At-Risk: While educators often use the term at-risk to refer to general populations or categories of students, they may also apply the term to individual students who have raised concerns—based on specific behaviors observed over time – that indicate they are likely to fail or drop out.

Blending: Funds from two or more separate funding sources are wrapped together within one full-workday, full-year program budget to pay for a unified set of program services to a group of children. In blending, costs do not have to be allocated and tracked by individual funding source.

Braiding: Funds from two or more funding sources are coordinated to support the total cost of services to individual children, but revenues are allocated and expenditures tracked by categorical funding source. In braiding, cost allocation methods are required to assure that there is no duplicate funding of service costs and that each funding source is charged its fair share of program and administrative costs.

Competency Education: Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions. Students advance upon mastery of defined standards; competencies include explicit, measurable, transferable learning objectives that empower students. Assessment is meaningful, clearly understood, a positive learning experience for students and timely differentiated support is provided based on individualized needs.

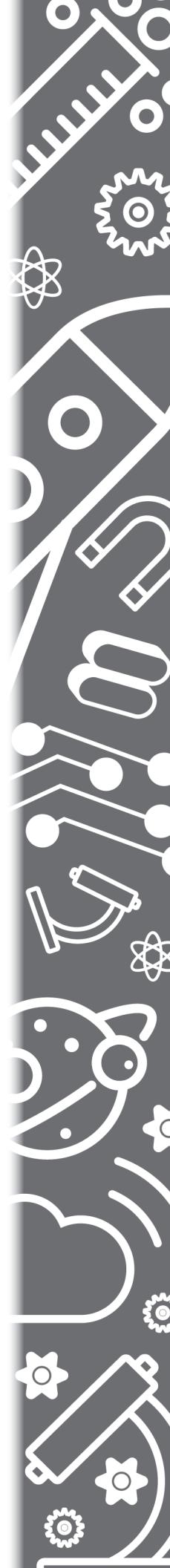
Content Specialist: A content specialist provides leadership to ELOs in curriculum, instruction, assessment, and standards; and, is knowledgeable in the content area as it relates to specific subject matter.

Creative Compensation: Where traditional strategies of compensation include money, value for many educators and other workers is also derived from: passion for the work being done, the culture being created, visions and values, and the chance to share the future built by working together. To attract the best teachers and principals to work with the students who need them most, salaries competitive with other careers might be paired with other incentives like bonuses, tuition subsidies, portable licenses, and loan forgiveness. Also, it will be important to address the physical and technical needs of the schools in poverty, providing resources to help teachers function well under more challenging conditions without spending their own money for basic supplies. (USDOE, 2016)

Cultural Responsiveness: As defined by Nieto, “Culturally responsive education recognizes, respects, and uses students’ identities and backgrounds as meaningful sources for creating optimal learning environments,” (as cited in New England Equity Assistance Center, n.d.). Being culturally responsive is more than being respectful, empathetic, or sensitive. Accompanying actions, such as having high expectations for students and ensuring that these expectations are realized, are what make a difference (Gay, 2000).

Data Collection/Data Sharing: The practice of public agencies and schools collecting and sharing specific disaggregated student information with afterschool and youth development programs in order to individualize learning strategies and focus supports to improve youth outcomes.

Digital Learning: Digital Learning is any instructional practice that



effectively uses technology to strengthen the student learning experience.

It encompasses a wide spectrum of tools and practices, including:

- » increased focus and quality of teaching resources,
- » creative use of time and space,
- » online and blended content and courses,
- » online classroom assessments,
- » applications of technology in classrooms and school buildings,
- » adaptive software for students with special needs,
- » learning platforms,
- » high-level and challenging content and instruction, as well as many other technology advancements related to teaching and learning.

Additionally, Digital Learning provides a platform for collaboration within professional communities of practice for educators and students alike.

Educator: A person who provides instruction or education, either in a formal classroom or informal setting; someone who supports the learning of others.

Equity of Access: The notion that in education, each and every learner will receive the necessary resources they need individually to thrive in Oregon's schools no matter what their national origin, race, gender, sexual orientation, differently-abled, first language, or other distinguishing characteristic.

Experiential Learning Approach: Experiential learning approach refers to learning through reflection on doing, which is often contrasted with rote or didactic learning experiences in most educational settings. Experiential learning activities are among the most powerful teaching and learning tools available, requiring self-initiative, an "intention to learn," and an "active phase of learning". They are structured, intentional, and creative learning activities that build linkages with schools to align and expand learning opportunities. They provide a range of activities in various subjects including STEM (science, technology, engineering and math), the arts (visual, drama, music, literature), service learning, civic engagement, leadership, citizenship, and 21st century skills. Many Afterschool and Youth Development (AYD) programs use the experiential learning approach as a successful way to engage participants.

Expanded Learning Opportunity (ELO): The term Expanded Learning Opportunity refers to before and after school, summer, and intersession learning programs that focus on developing the academic, social, emotional, and physical needs and interests of students through engaging, hands-on learning experiences. Expanded Learning programs should be student-centered, results-driven, include community partners, use program standards, and complement but not replicate learning activities in the regular school day/year.

Extended Day: School-based models that extend the traditional school day and calendar year in order to provide additional instructional time. Critically different from Expanded Learning Opportunities, which provide experiential learning opportunities outside of the regular school day.

Inclusion: Involvement and empowerment - where the inherent worth and dignity of all people are recognized. The term inclusion captures, in one word, an all-embracing societal ideology. Regarding diverse individuals, inclusion secures the opportunity for all to learn in formal and informal settings.

Innovative Strategies: Dugger (2010) argued that there are a number of ways that STEM can be taught. One way is to teach each of the four stem disciplines

individually. Another way is to teach each of the four STEM disciplines with more emphasis going to one or two of the four; this is what is happening in most US schools today. A third way is to integrate one of the STEM disciplines into the other three, e.g. integrating engineering aspects into science, technology and mathematics. And lastly, a more comprehensive way is to infuse all four disciplines into each other and teach them as an integrated subject matter. It is imperative that teachers become STEM literate as well as be aware of various STEM teaching models, in addition to available open source and freeware software that may supplement their teaching.

Learning Pathways to Careers: Applies to an expansion of educational options beyond what is historically been offered to students and commonly refers to educational experiences that occur outside of traditional classroom settings. Today's desired professional and technical learning is a mix of educational credentials and applied experience that combine technical knowledge with skills such as project management, teamwork, diagnostic thinking and problem-solving capabilities.

Multiple Measures: The use of multiple indicators and sources of evidence of student learning, of varying kinds, gathered at multiple points in time, within and across subject areas.

Parent Involvement/Family Engagement: Indicates a shared and continuous responsibility for student achievement and learning that occurs across multiple settings in a variety of cultural settings, where families work in partnership with educators.

Personalized Learning (Personalization): Refers to a diverse variety of educational programs, learning experiences, instructional approaches, and academic-support strategies that are intended to address the distinct learning needs, interests, aspirations, and/or cultural backgrounds of individual students. Personalized learning is intended to facilitate the success of each student by first determining the learning needs, interests, and aspirations of individual students, and then providing learning experiences that are customized for each student, creating a pathway to a successful career.

Personalized learning: an approach to education that encompasses a diverse variety of educational programs, learning experiences, instructional methods, and academic support strategies. Effective and efficient personalized learning is dependent on digital resources including access to:

- » Data and analysis tools
- » Digital content
- » Opportunities for students to use technology for learning
- » Student portfolios
- » Communication tools
- » Parent engagement facilitated by technology

Problem Solving: Refers to the ability to move through the problem-solving process to discover solutions to complex tasks. The problem-solving process includes problem identification, structuring the problem, looking for solutions, making a decision, implementation, and monitoring/seeking feedback (skillsyouneed.com)

Restorative Justice: In a school context, restorative justice is about:

- » Creating a culture of relationships and building safe school climates;
- » Developing social and emotional skills;
- » Creating time and space for people to build community and make things right;

- » Unpacking our personal backpacks so we can be inclusive teachers and focused learners.

School-Community Partnerships: Collaborations that weave together resources and strategies to enhance caring communities that support all youth and their families and enable success at school and beyond. Comprehensive partnerships represent a promising direction for generating essential interventions to address barriers to learning, enhance healthy development, and strengthen families and neighborhoods.

Soft Skills: Refers to a broad set of skills, competencies, behaviors, attitudes, and personal qualities that enable people to effectively navigate their environment, work well with others, perform well, and achieve their goals. These skills are broadly applicable and complement other skills such as technical, vocational, and academic skills.

Student-Centered: Typically refers to forms of instruction that, for example, give students opportunities to lead learning activities, participate more actively in discussions, design their own learning projects, explore topics that interest them, and generally contribute to the design of their own course of study.

Summer Learning Opportunities: High quality academic and enrichment activities that take place in the summer, and that aim to reduce learning loss over the summer months. Often targeted towards low-income students in order to reduce the academic achievement gap between high-income and low-income students.

Underrepresented Youth (Historically underrepresented or underserved) and Underserved students: Students whom systems have placed at risk because of their race, ethnicity, English language proficiency, socioeconomic status, gender, sexual orientation, differently abled, or geographic location. Many students are not served well in our education system because of the conscious and unconscious bias, stereotyping, and racism that is embedded within our current inequitable education system.

Well-Rounded Education: Includes 17 subjects covering the commonly tested subjects of English and mathematics, as well as arts, sciences, civics, economics, foreign languages, history, geography, and more. Within ESSA, it opens up a well-rounded education to include both in-school and out-of-school learning opportunities.

Whole Child Approach: Transition from narrowly defined academic achievement to one that promotes the long-term development and success of all youth.

Youth Empowerment: Youth empowerment is an attitudinal, structural, and cultural process whereby young people gain the ability, authority, and agency to make decisions and implement change in their own lives and the lives of other people, including youth and adults.

Heidi Sipe, Superintendent, Umatilla School District