

OSTA 2019 Fall Conference on Science Education

K Keynote **N** Non-Strand **T** The Confluence: Where everything comes together **H** The Gateway: A place to begin

W The Wild and Scenic: A place to explore

OCTOBER 11 • FRIDAY

7:00am – 8:00am **Breakfast** CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)
Sponsors: STEMscopes
Enjoy breakfast, coffee and snacks courtesy of STEMscopes!

7:00am – 8:00am **Check in/Registration** CML 19-200D (4000 E 30th Ave, Eugene, OR 97405)
If you have pre-registered, or need to register, meet us in CML 19-200D to check in, register if needed, and receive your badge for the day. Then, head downstairs to CML 19-100 for a continental breakfast and to meet fellow science educators. Sessions begin at 8am.

7:30am – 8:00am **Exhibits Open** CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)
Exhibitors: BIOZONE, ExploreLearning, NatureBridge, NWEA, STEMScopes, Army Educational Outreach Program (NSTA), BCCE 2020, Environmental Protection Agency, National Science Teachers Association, Oregon Science Teachers Association, California Casualty, Oregon National Primate Research Center, Oregon State University Department of Chemistry, Grand Classroom, Oregon Agriculture in the Classroom, Biodiversity Research Collective, Northwest Aquatic and Marine Educators, National Inventors Hall of Fame, National Wildlife Federation, Forests Today and Forever, OSU Marine Studies Initiative, Activate Learning, Clearing Magazine, The River Mile Network, Donate Life Northwest, Environmental Education Association of Oregon, Solve Oregon, Oregon Wing Civil Air Patrol, Oregon State University Press, Diack Ecology Education Program, OSU Extension Service - Outdoor School, Twig Science, Educational Travel Services, Carolina Biological Supply, US Geological Survey, MiniOne Systems, Vernier Software & Technology, Southern Oregon University, Wolf Ways, NSTA District XVII
Come visit our exhibitors to learn more about resources that are available to you as science educators!

8:00am – 8:50am **N Let's Use the 5-Es to Provide Equity and Access for All Students in STEM** CML 19-128 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Kenn Heydrick, Michele Cozza, David Rude
The 5-E model of lesson design can drive equal access and opportunities for all students to succeed in STEM. STEM education strives to promote equity so that bias does not occur with gender, culture, and background. Come learn how to provide more equitable opportunities for students.

8:00am – 8:50am **N Using Phenomena to Integrate ELA with NGSS** CML 19-203 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Yvette McCulley
Science phenomena is the perfect connection to the integration of ELA Standards with NGSS. Experience how anchoring phenomena and investigate phenomena are used in The Building Blocks of Science life sciences to assist students in meeting ELA Standards with the perfect match of print-digital and hands-on experiences.

8:00am – 8:50am **T AMS Pressure Blocks** CML 19-234 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Jessica Robins
Use manipulatives to help students understand air pressure and ocean currents. This workshop is from the AMS Maury Project. Accommodations for language learners will be integrated into the session.

8:00am – 8:50am **T Data Nuggets** Science 16-115 (Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Berkeley Gadbow
Come learn about a powerful free resource for educators that is designed to bring contemporary research and authentic scientific data into the classroom. We will discuss how this resource is differentiated for various levels and can be used as an assessment tool to track student growth over time. During this session we will spend time completing a data nugget together, scoring student samples, connecting it to math and reading strategies, and finding articles to use immediately in the classroom.

8:00am – 8:50am	<p>T Natural Selection and Argumentation <i>Speakers: Molly Malone</i> This workshop features one of five modules in a free NGSS-designed unit on evolution. Using a change in the lateral plate trait in a population of stickleback fish as a guiding phenomenon, the module systematically guides students in analyzing level-appropriate scientific data to determine whether or not the observed change is due to natural selection. Progress through the module is organized by a scaffold that supports students in constructing an evidence-based argument. The module employs multimedia and paper-based activities that are accessible for free on the Learn.Genetics and Teach.Genetics websites.</p>	CML 19-126 (4000 E 30th Ave, Eugene, OR 97405)
8:00am – 8:50am	<p>H Air and Water Pollution Storyline for Chemical Reactions <i>Speakers: Jomae Sica</i> This session will take participants on a journey through a storyline that uses air pollution as a global phenomena and water pollution as a local phenomena to drive the instruction of a chemical reactions unit of study. In this unit, students will learn to balance and predict the products of chemical reactions, and use stoichiometry and the engineering design process to solve real world problems addressing HS-PS1-2 & HS-PS1-7.</p>	Science 16-147 (Chem Lab) (4000 E 30th Ave, Eugene, OR 97405)
8:00am – 8:50am	<p>H WATER like Wine – reflects the region where produced <i>Speakers: Janet Migaki</i> Just as a wine steward/sommelier presents variations in wines, this session explores variations in drinking water. Attendees will take an in-depth look at drinking water and take away numerous inexpensive investigations and hands-on activities to use with students for exploring and testing their drinking water. Attendees will also be shown and given information about the real-world issues affecting drinking water (such as: bottled water misconceptions, the social injustices of water contamination, water treatment isn't the treatment you think it is). It matters to be informed and concerned about your region's water</p>	Science 16-148 (Chem Lab) (4000 E 30th Ave, Eugene, OR 97405)
8:00am – 8:50am	<p>W Go Recycle Yourself: Education on Organ, Eye, and Tissue Donation <i>Speakers: Marissa Mark</i> We will provide education on organ, eye, and tissue donation as well as the resources on this topic that Donate Life Northwest is able to provide. This topic helps frame anatomy & physiology topics as a real-world meaningful problem.</p>	Science 16-117 (Botany Lab) (4000 E 30th Ave, Eugene, OR 97405)
8:00am – 8:50am	<p>W The Wild and Scenic World of Teacher Professional Development <i>Speakers: Rachel Stagner, Bradford Hill, Alfonso Garcia, Steve Scannell</i> Looking for meaningful, exciting professional development opportunities that will change your career and reinvigorate your teaching? This panel-type discussion will feature alumni from the Albert Einstein Distinguished Educator Fellowship, The National Geographic Certified Educator Program, The Murdock Partners in Science Program, NOAA's Teacher at Sea Program, American Farm Bureau Programs, and more. Come and hear more about each program, how and when to apply, and get your questions answered about these career-changing experiences.</p>	Science 16-103 (Marine Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
9:00am – 10:30am	<p>K STEM Education for All Students, Including English Learners <i>Speakers: Okhee Lee</i> Three emerging forces promise to shape the landscape of STEM education: growing student diversity, increasing academic rigor of content standards, and advancing technological innovations. The convergence of broadening participation in STEM subjects through technological innovations represents the lives of students and teachers. As disciplinary practices in STEM subjects (e.g., develop models, argue from evidence, construct explanations) are language intensive, engagement in these practices presents both learning opportunities and demands to all students, especially English learners. Using classroom examples, this presentation will highlight the mutually supportive nature of instructional shifts in STEM subjects and second language acquisition.</p>	CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)
10:40am – 11:30am	<p>N How Do Earth's Processes Change the Landscape <i>Speakers: Mechelle La Lanne</i> What is our evidence that we live on a changing earth? What types of models can students use to enhance their conceptual understanding of forces that change the landscape? Join us to experience lessons from the new Smithsonian Science for the Classroom with engage, inspire and connect students to the real science as they investigate the effects of an earthquake, a glacier and wind.</p>	Science 16-109 (4000 E 30th Ave, Eugene, OR 97405)
10:40am – 11:30am	<p>N Let the Force Be with Your Students as They Engineer Solutions <i>Speakers: Yvette McCulley</i> Investigating forces is a fun, engaging experience for students to help them make sense of the "physics" and to be able to engineer solutions to problems. Discover how the Building Blocks of Science program provides print-digital and hands-on experiences to enable all students to be successful in engineering solutions.</p>	CML 19-203 (4000 E 30th Ave, Eugene, OR 97405)

10:40am – 11:30am	T	Diack - A Grant Program for Field-Based Student Research <i>Speakers: Michael Weddle</i>	CML 19-234 (4000 E 30th Ave, Eugene, OR 97405)
		The Diack Ecology Education Program offers grants of up to \$6000 to purchase equipment for field-based student research projects. This session will provide details on applying for the grant, give examples of projects from K-12 that have been funded and discuss strategies for developing successful field-based projects. These projects can provide and opportunity to apply the skills and knowledge learned in the classroom to engaging and meaningful real-world environmental concerns.	
10:40am – 11:30am	T	Perfect Food <i>Speakers: Daniel Jamsa</i>	CML 19-241 (4000 E 30th Ave, Eugene, OR 97405)
		The world is an exciting and complex place. Students want to make a difference yet they don't know how. It is a challenge to bundle the diverse NGSS in a student friendly way. This middle school unit - PERFECT FOOD - uses food and world food systems to instruct diverse topics such as genetics and evolution, the carbon cycle, the flow of energy and thermodynamics, interdependence, and more. Students learn how their food choices impact their bodies, their communities, and the world. The final project requires students to choose and justify their own criteria for THEIR perfect food and then research, prepare, and share their food with the public at the Perfect Food Feast. They connect with their community and educate them about the power of food choices. PERFECT FOOD offers diverse opportunities to explore local communities (i.e. local crops, farm practices, and livestock management), ask questions and define solutions (i.e. why does our store have apples from New Zealand?), practice persuasive writing (i.e. the pros and cons of GMOs), and obtaining, evaluating, and communicating information (food information researched and summarized at the feast). Connect your students to the world and provide them tools to make it a better place.	
10:40am – 11:30am	T	Providing students an opportunity to learn chemistry through guided-inquiry laboratory activities: the Science Writing Heuristic <i>Speakers: Thomas Greenbowe</i>	Science 16-117 (Botany Lab) (4000 E 30th Ave, Eugene, OR 97405)
		Most students have difficulty learning chemistry concepts and exhibit difficulty while solving chemistry problems typically encountered in a general chemistry. This presentation will describe efforts over the previous five years to implement an approach to learning chemistry that integrates guided-inquiry, the Science Writing Heuristic and Green Chemistry. Students using this approach perform better on laboratory practical tasks and on national standardized examinations from the American Chemical Society compared to students using a traditional approach to laboratory work. The Science Writing Heuristic has been implemented in all science disciplines starting and at the 6-12 and college levels. Only when instructors in different science disciplines and different age groups agree to implement similar pedagogical approaches will the innovation have a meaningful impact on students understanding of science	
10:40am – 11:30am	T	Writing to Support Three Dimensionality in the Middle School Science Classroom <i>Speakers: Melody Childers</i>	Science 16-107 (4000 E 30th Ave, Eugene, OR 97405)
		Teachers will learn strategies and receive examples of writing tasks that scaffold learners in pulling together the three dimensions of NGSS to explain phenomena.	
10:40am – 11:30am	H	NGSS At It's Best: Modeling, Discourse & CER <i>Speakers: Berkeley Gadbow</i>	Science 16-115 (Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
		Want to better understand the power of choosing strong NGSS aligned lessons and curriculum? Experience a genetics lesson from IQWST rich in data analysis and argument. This session will model instructional routines and practices that promote mathematical reasoning and language production among students. You will walk away with tools to help scaffold graph reading, student discourse, and writing a claim, evidence, and reasoning argument. We will engage in an activity together and then examine how this experience rich in mathematics can help us examine our current lessons and the skills we want students to be leaving our classroom with.	
10:40am – 11:30am	H	STEM Starts Early <i>Speakers: Leah Plack, Carolina Cavedon</i>	Science 16-105 (4000 E 30th Ave, Eugene, OR 97405)
		In this interactive session, Leah and Carolina will share their experiences in designing and facilitating workshops for the Washington County and Marion/Polk County Early Learning Hubs. They will discuss the importance of including quality science experiences into the Early Learning Curriculum, share reflections on how the shifts in pedagogy brought by the NGSS can fit into Early Learning, and highlight the importance of coherence from Pre-K to elementary and onward. The group will engage in a STEM early learning activity, collecting data with ramps and objects. Resources, such as suggested prompts for children and a data sheet, will be shared.	

10:40am – 11:30am

H **The Biology of Skin Color: An NGSS-Aligned Exploration** Science 16-111 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Cheryl Ann Hollinger

Our human ancestors in Africa likely had dark skin, which is produced by an abundance of the pigment eumelanin in skin cells. In the high ultraviolet (UV) environment of sub-Saharan (or equatorial) Africa, darker skin protects against the damaging effects of UV radiation. The variation in skin color that evolved since our human ancestors migrated out of Africa can be explained by the trade-off between protection from UV and the need for some UV absorption for the production of vitamin D. Using the case study, "Human Skin Color: Evidence for Selection," participants will use real data to propose hypotheses, make predictions, and justify claims with evidence, as an exploration of concepts presented in the short film *The Biology of Skin Color*.

10:40am – 11:30am

W **Launching Our Next Generation of Health Care Professionals: New and Better Pathways**

Speakers: Linda Beale

Science 16-103 (Marine Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)

Medical science and health care pathways are now more frequently included as standard curriculum offerings at the high school level. Indeed, health care will surely remain a promising career path for young people through the 21st century, while other careers face uncertain futures. To give our students the spark, interest and springboard to a future in health care, educators can and should employ the new and better curricula and educational strategies for these courses. Proposed changes for future medical science offerings will be discussed and explored.

10:40am – 11:30am

W **Simulating Starry Skies: Using Stellarium and Model-Based Inquiry to Teach Moon Phases**

Speakers: Randy Bell

CML 19-128 (4000 E 30th Ave, Eugene, OR 97405)

For the program:

Learn research-based methods for teaching moon phases with the excellent (and free!) planetarium program Stellarium. You'll receive resources that make implementing what you learn easy.

Additional Information:

Since its introduction in 2001, Stellarium has captured the interest of hobbyists and educators alike for its beautiful and accurate simulations of the sky. With Stellarium, students can view and manipulate the sky from anywhere on earth, the moon, or any other planet in our solar system. They can also explore what the sky was like far into the past or will be like in the distant future! These features make Stellarium an ideal platform for supporting scientific modeling and NGSS 3-D instruction.

Like other planetarium based software, Stellarium gives teachers unlimited possibilities for inquiry-based lessons. Unlike other planetarium software, Stellarium is both easy to use and free!

Research by the session authors and others has demonstrated that students of all ages have difficulty understanding and explaining the phases of the moon. In this session, participants will experience highly engaging examples of model-based lessons that help students develop deep understandings of moon phases. Independent research has demonstrated that these lessons are more effective than traditional moon-phase instruction in producing long-lasting results (Bell & Trundle, 2008). Our emphasis will be on helping students construct scientifically accurate understandings of lunar phenomena through applying modelling and other scientific practices.

10:40am – 11:30am

W **STEM Educating for Social Justice: Exploring Racism and Sexism in Science Classes**

Speakers: Rachel Stagner, Brian Pendergrass

Science 16-147 (Chem Lab) (4000 E 30th Ave, Eugene, OR 97405)

Underrepresentation on many levels is endemic in STEM fields, and STEM teachers have a unique opportunity and responsibility to address this. Analyzing the discrepancy between the demographics in science and the demographics in our classrooms--especially in schools with high minority populations--is an essential aspect of any science curriculum. Introducing and unpacking this discrepancy through data analysis, reading/literacy activities, and community-building discussions can increase the motivation of our minority students to explore careers in STEM and empower our majority students to become advocates and allies.

The Underrepresented Curriculum--which was developed from the work of teachers, for teachers--offers those teachers a flexible, easily modifiable set of lessons with guidance, rationale, and supports. Come hear about the curriculum, get guidance on how to implement it, and find out how to become involved in the ever-growing network of editors and contributors

11:30am – 12:30pm

Exhibits

CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)

Exhibitors: BIOZONE, ExploreLearning, NatureBridge, NWEA, STEMScopes, Army Educational Outreach Program (NSTA), BCCE 2020, Environmental Protection Agency, National Science Teachers Association, Oregon Science Teachers Association, California Casualty, Oregon National Primate Research Center, Oregon State University Department of Chemistry, Grand Classroom, Oregon Agriculture in the Classroom, Biodiversity Research Collective, Northwest Aquatic and Marine Educators, National Inventors Hall of Fame, National Wildlife Federation, Forests Today and Forever, OSU Marine Studies Initiative, Activate Learning, Clearing Magazine, The River Mile Network, Donate Life Northwest, Environmental Education Association of Oregon, Solve Oregon, Oregon Wing Civil Air Patrol, Oregon State University Press, Diack Ecology Education Program, OSU Extension Service - Outdoor School, Twig Science, Educational Travel Services, Carolina Biological Supply, US Geological Survey, MiniOne Systems, Vernier Software & Technology, Southern Oregon University, Wolf Ways, NSTA District XVII
Visit the Exhibits during your lunch break! Learn more about science education resources available to you.

11:30am – 12:30pm

Lunch

CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)

Join us for lunch! Vegan, vegetarian and gluten free options available.

12:45pm – 2:30pm

T Cancer Medicine Focus Enhances Biology Curriculum

Speakers: Mary Zelinski, Diana Gordon

Science 16-117 (Botany Lab) (4000 E 30th Ave, Eugene, OR 97405)

Learn a new way to enhance biology teaching and student learning using real-life biomedical technologies. This NGSS-aligned, National Institutes of Health-sponsored, free web-based approach to teaching basic biological concepts has students assume the role of oncologists who specialize in cancer treatment. Concepts are informed by a new field of medicine, Oncofertility, encompassing technologies to preserve fertility in patients before cancer treatment. Learn how to integrate cancer and therapies, cell division, anatomy, physiology, cryopreservation, fertility preservation, stem cells, ethics, and epigenetics into biology. Hands-on activities include exploring optimal cryopreservation solutions for storing tissues and a biomaterial that maintains 3-dimensional cellular structure.

12:45pm – 2:30pm

T Science and English Language Development: An Intergrated Approach

Speakers: Rebecca Levison, Kate Yocum, Jennifer Scherzinger

CML 19-203 (4000 E 30th Ave, Eugene, OR 97405)

The Next Generation Science Standards (NGSS) offer an ideal opportunity for all students to engage with each other in inquiry, knowledge construction, and discourse. Teachers in PPS have developed NGSS units at K-5 which integrate English Language Proficiency standards through language-rich tasks which are structured for interaction and scaffolds for English Language Learners. In this session, educators will share samples of developed NGSS/ELP curriculum and examples of student work. Co-teaching opportunities for ESL and classroom teachers and use of technology will also be included.

Integrating English language development and science creates a student centered environment that focuses on quality student interactions and hands on learning. Scaffolds for English language learners provides access to core content under a co-teaching model with an equity lens.

12:45pm – 2:30pm

T SPLASH!

Science 16-103 (Marine Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Jeffrey Flowers, Annie Carter

SPLASH! is an elementary and middle school curriculum developed through a partnership with the City of Eugene. The purpose of this curriculum is to engage learners through the context of the city's Storm Water system. Though it is often hidden, this system is an important factor in water quality and health and is associated with many engineering design challenges. Students will explore phenomena related to the human impact on waterways; explore the storm water system in their own school yards, share issues and concerns for non-point sources pollution, address new ways that storm water is treated through bioswales and created wetlands, and design strategies for improved water quality.

12:45pm – 2:30pm

T Students Come Alive with STEM

CML 19-234 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Donna Rainboth

Elementary teachers and their STEM Coach will share lessons and examples of how their students have been inspired and invigorated through engagement in STEM. Teachers K - 5th have been implementing STEM units and creating a culture of STEM teaching and learning in La Grande elementary schools. The STEM Coach and the teachers will share their experiences in how they worked together to create STEM units that are aligned to NGSS. Participants will engage in and receive copies of the STEM lessons.

12:45pm – 2:30pm

T The Confluence Phenomenon, Students, and Patterns Physics CML 19-241 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Bradford Hill, Matt McCollum, Steve Scannell

This session is for people new to and experienced with the Patterns Approach to Physics. A 3D, student centered classroom that meaningfully integrates across the STEM disciplines requires we provide relevant phenomena and compelling structures to facilitate students speaking, writing, reading, and listening. Participants will preview several phenomenon across multiple storylines. Participants will walk out with new student supports aimed at elevating productive student struggle for complex tasks.

12:45pm – 2:30pm

H Exploring Genetics Through Genetic Disorders Science 16-105 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Molly Malone

This workshop features a free NGSS-designed curriculum unit in which students embark on a data-driven exploration to understand the mechanisms behind a specific genetic disorder-causing allele while acquiring foundational molecular genetics concepts. By highlighting the trait-building function of protein-level interactions at the cellular, tissue and organism levels, the unit effectively explores how DNA variations lead to different phenotypes, which is often a "black box" for students. Throughout the unit students explore cause and effect, systems and system models, and construct explanations while learning core ideas in genetics and heredity. It is comprised of multi-media, interactive and paper based activities that are available for free on the Teach.Genetics and Learn.Genetics websites.

12:45pm – 2:30pm

H Let's Engage Students through Phenomena-based Science Instruction CML 19-128 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Kenn Heydrick, Michele Cozza

Science is about explaining the phenomena that occur in the world around us. In this session, participants will experience how phenomena is used during instruction and learn how to develop their own anchor and investigative phenomena to drive their lessons.

12:45pm – 2:30pm

H The Effects of El Niño and La Niña Science 16-107 (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Ellie H Prpich

Session Slides
Post Session Feedback Form

Activity based learning to investigate coastal upwelling & downwelling of the tropical Pacific Ocean and explore the effects this has on global cycles of el niño & la niña. This session will provide content background knowledge for secondary teachers along with hands on activities and materials that can be used with secondary students. Materials are provided by The Maury Project, an oceanography program funded by the American Meteorological Society and the U.S. Naval Academy.

12:45pm – 2:30pm

W Student Research: How Organisms Decay Science 16-115 (Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
Speakers: Stacey Kiser, Jeanne McLaughlin, Paul Ruscher

Lane Community College started a taphonomy facility January 2019 to engage students in the research about how organisms decay and affect the ecosystem. We will start with a brief overview of the facility and research to date and take a tour to see the site. This is a joint project with the University of Oregon.

Conversation, a Panel, and Suggestions

CML 19-126 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Dawna Bell, Cathie Alder

In this session we will explore Science education preparation programs for secondary Science teaching. After a brief global, national and regional overview of Science education trends, attendees will have the opportunity to give input into how we can better prepare future Science educators to ensure that all middle and high school students experience an excellent and comprehensive Science education. A panel discussion with representatives from regional Science MAT programs will help frame our discussion. The takeaway will be a set of ideas that will influence and strengthen the future of Science Education.

This breakout session is most appropriate for middle and high school Science teachers and for faculty in Science education preparation programs. Our goal is to look at current Science education preparation programs in Oregon and discuss how to address any gaps that we discover through an expert panel and our mutual experiences. Science educators in any phase of their career, those who have experience supervising Science-specific teacher candidates, and educators who have been tasked with inservicing fellow Science teachers are encouraged to attend. First year through the critical fifth year Science educators might find this session of particular interest to share their recent Science education training. Educators who wish to influence the direction of Science education are our specific target audience.

SCI Edu is subset of a team of middle and high school Science educators who designed a nine-course Science Masters of Arts in Teaching program. Our goal is to explore, address and improve possible gaps in current Science Masters of Arts in Teaching programs in Oregon with the experience and wisdom of Science educators at all levels of instruction.

2:00pm – 3:00pm

Exhibits

CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)

Exhibitors: BIOZONE, ExploreLearning, NatureBridge, NWEA, STEMScopes, Army Educational Outreach Program (NSTA), BCCE 2020, Environmental Protection Agency, National Science Teachers Association, Oregon Science Teachers Association, California Casualty, Oregon National Primate Research Center, Oregon State University Department of Chemistry, Grand Classroom, Oregon Agriculture in the Classroom, Biodiversity Research Collective, Northwest Aquatic and Marine Educators, National Inventors Hall of Fame, National Wildlife Federation, Forests Today and Forever, OSU Marine Studies Initiative, Activate Learning, Clearing Magazine, The River Mile Network, Donate Life Northwest, Environmental Education Association of Oregon, Solve Oregon, Oregon Wing Civil Air Patrol, Oregon State University Press, Diack Ecology Education Program, OSU Extension Service - Outdoor School, Twig Science, Carolina Biological Supply, US Geological Survey, MiniOne Systems, Vernier Software & Technology, Southern Oregon University, Wolf Ways, NSTA District XVII

Visit our Exhibitors, network with colleagues and learn more about the science education resources that are available to you!

2:30pm – 3:00pm

Afternoon Refreshments

CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)

Sponsors: Northwest Evaluation Association

Enjoy afternoon snacks and refreshments, courtesy of Northwest Evaluation Association.

3:00pm – 4:45pm

N **Discovering Yidong Xinag**

Science 16-153 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Rose High-Bear, Trish Haugen

We will introduce Wisdom's culturally-tailored multimedia environmental science curriculum which features Oregon tribes, their emerging climate issues and rich cultural arts.

3:00pm – 4:45pm

T **A New Framework for Multilingual Science Meaning Making**

CML 19-234 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Cory Buxton, Barbara Ettenauer, Karla Hale

This session will present a new framework for integrating science and language learning based on an 8-year project with science and ESOL teachers, bilingual students and their families. The session will be in a workshop format where we will share examples of classroom and community activities that bring our framework to life.

3:00pm – 4:45pm

T **Constraints and Criteria: What is the Best Roof for Heavy Precipitation?**

Science 16-109 (4000 E 30th Ave, Eugene, OR 97405)

Speakers: Mechelle La Lanne

Are your students able to use evidence to design and construct testable solutions? Experience model lessons from the new Smithsonian Science for the Classroom and see how easy it is to lead students through the engineering design process to solve a real-world problem. Leave with a better understanding of how students can use information and evidence to argue for the best materials to withstand the effects of heavy precipitation. Free sample materials.

3:00pm – 4:45pm	T Creating 3-D Performance Tasks	Science 16-188 (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Noelle Gorbett, Jennifer Mayo</i>	
	So, you want to provide science performance tasks for your students and you don't know where to begin. Come to this session to learn more about the qualities of a good performance task and how to begin finding or making them for your students. It all starts with a good phenomena.	
3:00pm – 4:45pm	T Increasing student discourse - Walk the talk	Science 16-105 (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Andrea Leech</i>	
	Demonstrate and practice methods to increase student discourse using chemistry curriculum.	
3:00pm – 4:45pm	T Learning science with stories & journals (based on “Ellie and Ricky” books)	Science 16-115 (Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Peg Herring, Judy Li</i>	
	In this presentation, we will draw on our “Ellie and Ricky” series of books to show how students can be engaged in science investigation using stories and journals as a tool for self-guided observation and interpretation.	
	“Ellie and Ricky” serve as STEAM ambassadors in four richly illustrated chapter books, exploring four different regions of Oregon (the Cascades, Central Oregon, the Coast, and Portland). Each book combines storytelling, natural history illustrations, and personal journal pages that follow the adventures of two 11-year-old budding scientists. We will discuss how the science-based narrative provides teaching opportunities to address NGSS standards, including plant and wildlife adaptation for survival, effects of changing environments, and ways for becoming citizen scientists.	
	Workshop hands-on activities will focus on journals in particular, encouraging kids to think like scientists while they record their discoveries in a variety of media—science writing, drawing, map-making, poetry, data collection, engineering, and design. Using activities with small personal journals, participants will consider how to encourage, recognize and value individual student approaches to observing natural phenomena. We will demonstrate how a student’s own journal can be a tool to record data, seek patterns, and discover connections that are personal and relevant. Journals can provide a place to record the questions and surprises that emerge when students take the time to closely observe the world around them, while providing a foundation for contributing information about the places they care about.	
3:00pm – 4:45pm	T Let’s Explore the NGSS and Literacy Using the Phenomenon of Light	CML 19-128 (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Kenn Heydrick, Michele Cozza</i>	
	Come preview our 5E-based science curriculum that is digitally delivered and written for the NGSS and the K-12 Science Framework. We will explore the phenomenon of light to show student engagement and literacy strategies. The focus on constructivist learning in STEMscopes allows students to deepen their understanding about phenomena.	
3:00pm – 4:45pm	H Empower Students to Invent Their Own Lives through Innovative Teaching Practices	Science 16-111 (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Annette Phillips</i>	
	Learn how to build a pathway for equity in your classroom through the Invention Process. The Invention Process builds a new relationship for teaching and learning and affords the learner to direct their own learning pathway. In our complex world, the foundational nature of education in our schools is to foster children’s ability to invent their own lives, explore their passions and prepare a pathway for lifelong learning. We believe the purpose of schools is to provide opportunities for learners to create their own future through early exposure and access to innovation. This workshop demonstrates how the power of the Invention Process engages learners. The fundamental concepts of the Invention Process will be covered: creativity, design thinking, disruption, confidence, collaboration, innovation, STEM, and intellectual property. Experience the Invention Process through hands-on activities, that can be replicated in your classroom.	
3:00pm – 4:45pm	H Show me the Moo-ney! Determine the Genetics of a CA\$H-Cow	Science 16-103 (Marine Bio Lab) (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Erika Fong, Cheryl Ann Hollinger</i>	
	Use genetic information to help a rancher purchase the best dairy cattle breeding pair for optimal milk protein production, benefiting his bottom line. In this workshop, you will separate samples specific for this gene using gel electrophoresis. Determine the genetic profile of individual cattle available for sale and help the rancher decide which ones will give him the best chances for breeding a Ca\$H Cow!	
3:00pm – 4:45pm	W Moving with Robotics	Science 16-117 (Botany Lab) (4000 E 30th Ave, Eugene, OR 97405)
	<i>Speakers: Cassie Whitecotton</i>	
	Get your hands on the brand new TI-Innovator Rover and get your students moving, coding, and engaging in STEM.	

3:00pm – 4:45pm

W Science and Language Assessment of All Students, Including English Learners

Speakers: Okhee Lee

CML 19-126 (4000 E 30th Ave, Eugene, OR 97405)

The Next Generation Science Standards (NGSS) three-dimensional instruction and assessment present both opportunities and challenges to teachers, especially involving student diversity and equity. This session will address how to design science instruction that incorporates formative assessment of science and language with all students, including English learners. After engaging in a science investigation, participants will assess student-developed models in terms of both science and language, and consider how to use the assessment to inform instructional next steps.

4:45pm – 5:30pm

Raffle

CML 19-103 (Conference Room) (4000 E 30th Ave, Eugene, OR 97405)

6:30pm – 8:30pm

Awards Banquet

CML 19-104 (4000 E 30th Ave, Eugene, OR 97405)

Enjoy an evening of networking with a catered meal, and celebrate Oregon's honored science educators. Recognizing the hard work and dedication of Oregon's science educators is one of the most important things we do at OSTA.

Follow this link to register for this event:

<https://oregonscience.org/event-3512952>
