

# The FieldSTEM Journal



**PEI** PACIFIC  
EDUCATION  
INSTITUTE

**Fall 2020**

**Real-World Science Outdoors**

## FieldSTEM Introduces Teachers to Outdoor, Natural Resource Jobs in Aberdeen

Although the term STEM applies to a broad range of disciplines, in many minds it's synonymous with only one: technology, specifically computer technology. Yet every day, science, engineering, math and yes, technology are being applied outdoors in natural resources industries like shellfish, farming, timber, and conservation.

Many students who grow up in regions where those industries have a strong presence are among those who don't realize what kinds of jobs are available. On February 11, a panel of natural resources professionals met with a group of 5th-grade teachers from the Aberdeen School District to change that. "We want to help students understand the other applications of STEM," says Julie Tennis, PEI's Coastal Region Coordinator. "Field-based jobs in our region are often overlooked."

Tennis convened the panel, which culminated in a discussion of ways community groups could collaborate with PEI and teachers to expose students to authentic uses of FieldSTEM and potential careers in their region. Panel members explained their roles and described the pathway they took to arrive in their career, and illustrated how they use STEM in their work.

Some of those applications are surprising. Brad Rodin has spent 24 years as an enforcement officer for Washington State Fish & Wildlife, regulating the crab and oyster industries. Theft and attempts to cheat the system by underreporting oyster yields are ongoing issues, he told the group. "We've worked cases where people are underreporting and you have to do math backward," he said. "It gets pretty complicated."

Both math and science are critical aspects of forestry, according to Bill Monahan of Rayonier, a global forest resources company that manages 2.6 million acres of timber throughout the nation, including Washington and Oregon. Two tools foresters never leave home without are Spencer's tape, which calculates trees' diameter, and a clinometer, which measures height by using trigonometry.

"We have timber crews collecting data that is used for running long-term models of how those trees are going to grow over time," said Monahan. "We either want no less growing stock than we had at the beginning or we want to increase our growing stock. So we load the data into the system, and it tells you how much stock you can take annually."



Anthony Waldrop from Grays Harbor Conservation District discusses a map with Mitch Anderson of McDermoth Elementary.



Bill Monahan, center, tells teachers about STEM in forestry.

Within the Grays Harbor Conservation District, STEM is part of the technical assistance provided to landowners to help them manage and protect resources. Service Forester Dave Houk provides forestry and agricultural support to landowners. "We do a lot of STEM," he explained. "We used fixed radius plots that can be expanded to calculate how many trees we have or determine how many snags we have in a given area. It depends on what the property owners' goals and objectives are. Geographical Information Systems (GIS) is also a very powerful mapping program we use to delineate properties to manageable standards."

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# Message from the Executive Director

I hope, as this newsletter reaches your homes and offices, that it finds each one of you, your family and community, healthy and safe. At the same time, it is unlikely that you have been unaffected by the pandemic and the social justice issues that have affected so many, especially those most vulnerable.

With school closures and teachers looking for ways to engage students in virtual settings and provide meaningful standards-based learning, PEI saw an opportunity to help. Our Regional FieldSTEM Coordinators rapidly transitioned our spring and summer workshops into opportunities to model online learning strategies while maintaining the commitment to the aspects of our work that we value: critical thinking about balanced science, elevating student voice, culturally responsive practice, and ensuring the right of *all* people to have rich connections to nature and time outdoors. We re-worked some of our most popular activities and posted them to social media, allowing parents and educators alike to provide opportunities to safely learn outdoors. Our two FieldSTEM Leadership Institutes brought together Principals, Teaching and Learning Directors and Superintendents from across the state to work on implementing FieldSTEM. Those plans now incorporate outdoor learning to engage students remotely as they return to schools this fall, and we are working on ways to support community partners to provide virtual experiences for students working from home.

As part of our 2020 strategic plan, PEI committed to strengthening our work to become an anti-racist organization. PEI supports the Black Lives Matter movement and is actively working on the imperative to dismantle systems that lead to social injustice, and to do our part to support marginalized communities. Our strategic plan also called on us to strengthen our commitment to collaboration as we partnered with the agencies, community-based organizations and businesses that are critical to local programming. PEI works with teachers to build equitable learning strategies, and on increasing effectiveness of teaching time through integration, and we rely on our partners to meet the teachers and students at the creeks, in the fields, the gardens, and the forest to bring the FieldSTEM model alive.

There is a lot of new work at PEI. Visit our website to see the 15 new Solution Oriented Learning Storylines that help teachers address climate science in a way that is relevant here in Washington. PEI was one of 16 ClimeTime projects funded through OSPI and we have a series of workshops for PreK-12 educators coming this fall. We are continuing our work with E3 on the Educating for a Green Economy project, look for publication of the Roadmap coming this fall that describes goals and recommendations for strengthening Washington's commitment to an equitable green economy.

While our partnerships and programming are rooted and growing, PEI is also in need of your support in these upcoming years as our economy recovers from COVID-19. With a portion of our funding coming from state dollars, and an expected decrease in those funds in the 21-23 biennium, it will be more important than ever for our supporters to contribute financially to this important work. Every dollar counts our ability to work depends on each of you. If you are able to make a donation, your dollars don't just support students to have one FieldSTEM opportunity, we work with educators which will then impact classrooms full of students for years to come.



Kathryn Kurtz  
Executive Director

## Voices from Our Network



### **"Can you hold my clipboard?"**

That's the most common question third graders from Shelton School District ask their friends while visiting Little Skookum Shellfish Farm. The annual trip is part of a collaboration between the Pacific Shellfish Institute, PEI and the district.

"The kids want to get their hands dirty," says Aimee Christy, a Research Biologist with PSI. "They want to count the worms and figure out what sex the crabs are, not be the one who is recording the data."

This program is a great example of how effective FieldSTEM is at getting kids engaged and excited about their learning. "I love working with PEI because there is so much detail put into it," says Christy. "There's time to meet with the teachers and make sure our programs are meeting their needs. The students seem really well prepared because everything has been building on itself from year to year."

**"I love seeing those muddy, happy faces," she continues. "FieldSTEM is a great model."**

## Ben Price and Muckleshoot Tribal School: Changing What Learning Looks Like

If anyone still needs convincing that learning can happen outside classroom walls and through connections beyond typical teacher/student interactions, a visit to the Muckleshoot Tribal School could change their minds. Ben Price has been teaching science and natural resources to middle and high school students at MTS for the past four and a half years and regularly integrates tools he's learned in PEI workshops.

"PEI has been instrumental in not only helping me to move my most important lessons onto the landscape but has also empowered me to create a grassroots movement among educators to flip our understanding of what learning looks like," says Price. In what could be a case study of PEI's FieldSTEM model, students work with community partners like Hancock Forest Management, Green River Community College, Lincoln Tree Farm, and local and National Parks to explore the ecology, biology, and history of Pacific Northwest forests. Tribal elders and educators also play a central role.

Price became familiar with the FieldSTEM model by participating in multiple PEI workshops, including the FieldSTEM Teacher Leader Institute, and SOLS writing workshops for Fire, Forest Carbon and Sea Level Rise. He has co-facilitated PEI's Forest Carbon Sequestration workshop, helped to develop the Forest Management Career and Technical Education (CTE) framework now being used at select schools throughout Washington state.



Ben demonstrating how to use  
a low cost clinometer



Ben collects tree diameter to calculate tree carbon



Ben sharing his commitment to forest education with other educators

Now he's sharing what he's learned with colleagues. "In my school we're constantly looking for ways that we can get our native students onto the landscape and out of the traditional classroom," says Price. "I'm still amazed by how much more students learn when they have the opportunity to leave the classroom. Learning becomes a first-person activity. The result is transformational."

## CONNELL DONOR FUND

This spring PEI launched a partnership with the Connell Donor Fund to increase participation in Snohomish, King and Pierce counties and to draft a sustainability course that can be used by districts across the state.





# FieldSTEM Leadership Institutes



**PEI's FieldSTEM Leadership Institutes (FLI) gather school district administrators to learn more about the FieldSTEM model and begin planning to implement FieldSTEM in their school districts for the 20-21 school year.**

Western Washington FLI, February 27 & 28, 2020,  
at the Evergreen State College, Olympia

24 School Board Members, Superintendents, Directors,  
Principals, Teacher Leaders, and Specialists from 8 school districts

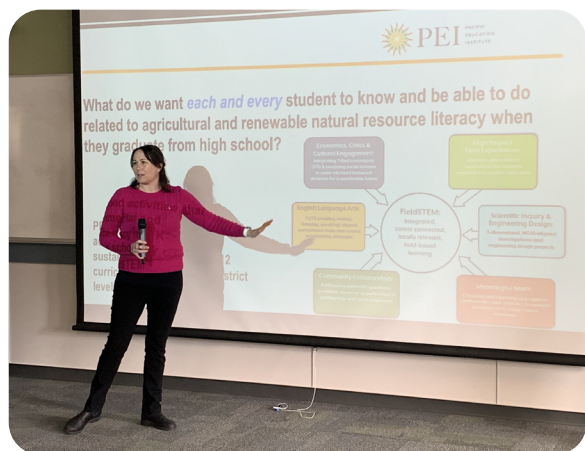
Eastern Washington FLI, May 8, 2020, Online via Zoom

25 School Board Members, Superintendents, Directors,  
Principals, Teacher Leaders, and Specialists from 7 school districts and 2 ESDs





# FieldSTEM Leadership Institutes



## GAME CHANGERS

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# PEI Takes Outdoor-Based Education Online

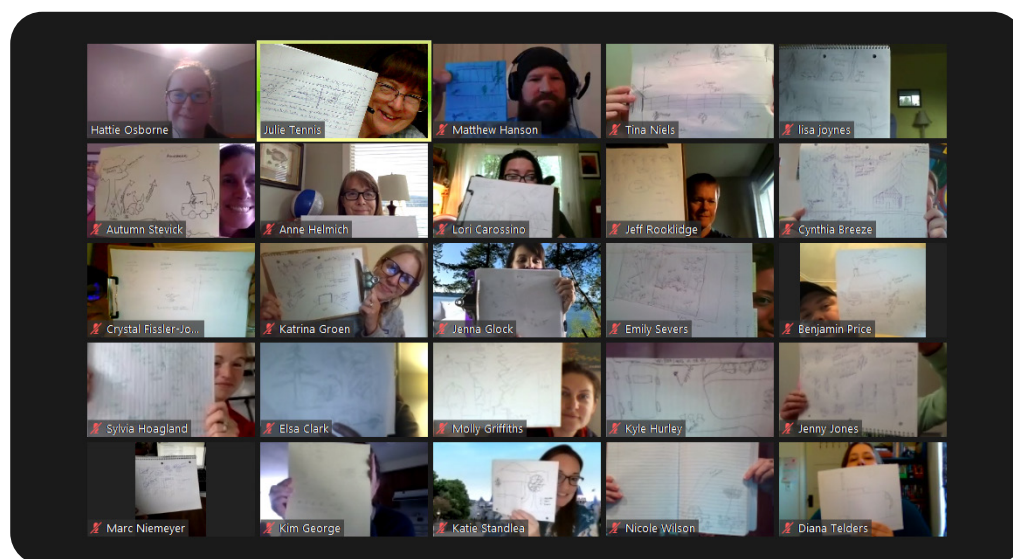
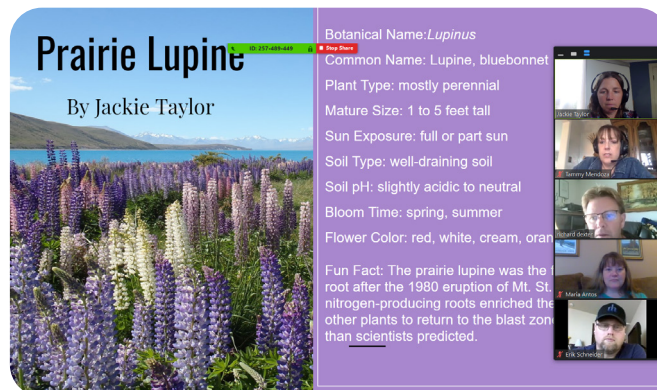
Outdoor education does not, at first glance, lend itself to online learning. But since PEI's entire educational framework is outdoor-based, when schools closed statewide in March, the priority was figuring out how to develop web-based workshops that retained the crucial aspects that make FieldSTEM so compelling.

Fortunately, the PEI team possessed the skills and knowledge to transition courses online. Since the onset of COVID-19, we have offered 36 web-based workshops. "The trick is to convert content into a modality that's simple to share with teachers online," says Regional Coordinator Megan Rivard, whose extensive background in remote teaching and learning has proved vital.

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**"The challenge is making sure that we're keeping true to our mission and vision and getting people outside."**

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Educators share observations from an outdoor observation activity during a recent workshop

Flipgrid, a free educational video app that allows users to record and share short videos, has proven to be a useful tool. "Teachers can have kids take a video of something they're working on or to explain something, and then they can share it in an online forum," Rivard explains. "We have also used a couple of little excursions where they go out and do some drawing or sketching. We've played with some different ways to get people outside."

PEI, in partnership with sponsors Sierra Pacific, Stevenson Land Company and Weyerhaeuser, offered a forest products panel at the Washington Career and Technical Education Administrators conference in Vancouver in March



**SIERRA PACIFIC  
INDUSTRIES**  
Growing Forests For Our Future



**Weyerhaeuser**



**Stevenson  
Land Company**





# PEI Takes Outdoor-Based Education Online

Actual online time consists of a one to two-hour check-in with teachers followed by an outdoor assignment and a debrief. “We still have the connections with nature happening,” says PEI Executive Director Kathryn Kurtz. “We’re building the competence of teachers to work with students in ways that they could never do before. As groups around the state are looking at new models of learning for the 2020/2021 school year, there’s a huge opportunity for PEI to be part of the solution.”



Foresters from the Washington Department of Natural Resources educate teachers on wildfire management.

## Aberdeen Outdoor Natural Resource Jobs Continued

Houk’s colleague Anthony Waldrop, a Watershed Restoration Specialist, helps landowners develop conservation plans for watersheds on their properties. Projects might include planting salmon-friendly vegetation or engineering log jam structures that provide salmon habitat and reduce erosion along the river. “We look at construction over a span of several years,” Waldrop said. “A lot of prep work goes into that, and we make sure it works from the landowners’ standpoint.”

Of all the panel members, Grays Harbor Stream Team Coordinator Alexa Jones was the one who works most directly with students on a consistent basis. “Our focus is on reaching students and bringing education about the habitat needs of salmon to classrooms,” said Jones.

The audience of Aberdeen teachers were highly receptive to both the message they heard and to exploring ways to collaborate with panel members and their organizations. “I just want my kids to know that there’s more out there that they could be interested in,” says Janice Williams, a 5th-grade teacher at Robert Gray Elementary School. “A lot of kids go fishing and hunting, but they don’t realize that they could make a career out of being outdoors. I want to open their eyes to different opportunities.”

Kevin Pilemalm knows firsthand how easily students can overlook such chances. “I’m really glad to see what you’re doing here,” the marketing director and former field engineer at Rayonier told the group. “I graduated from a Federal Way High School and I didn’t even know the forest industry existed.”

Kyle Deerkop has also noticed a lack of information and clear pathways to careers in students’ own communities. Deerkop is a manager at Pacific Seafood, which supplies two-thirds of all the oysters consumed in Washington state and one-fourth of those nationally, in addition to crabs and other marine life. “Westport is one of the top ten landing ports in the nation,” he noted. “We don’t think about students growing up to be oystermen or crab fishermen, but it is a real part of our community.”

A Q&A session followed, and the group began brainstorming for ways to work together while accommodating as many students as possible. Rotating students through stations provided by different partners was one popular suggestion. “If you come out to Westport, we could put 30 kids on a boat, Alexa could talk about water quality and Brad could talk about Fish & Wildlife,” said Deerkop. “We could link multiple stakeholders together to accommodate larger groups.”



Alexa Jones, lower left, describes her role as the Grays Harbor Stream Team Coordinator.

# Upcoming: Workshops & Events

	September 2020	
Workshop Title	Date	Location
Urban Forest Correlations Series 1	September 2 <sup>nd</sup> -4 <sup>th</sup>	Eastern Washington
Introduction to Teaching FieldSTEM Online	September 8 <sup>th</sup>	Coast (by invitation only)
Community Based Science & Data Collection for Grades 4-6	September 17 <sup>th</sup>	East Sound (by invitation only)
Schoolyard Investigations for Grades K-1	September 21 <sup>st</sup>	East Sound (by invitation only)
Schoolyard Investigations for Grades 2-3	September 28 <sup>th</sup>	East Sound (by invitation only)
Urban Forest Correlations Series 2	September 29 <sup>th</sup> - October 1 <sup>st</sup>	Eastern Washington
	October 2020	
Workshop Title	Date	Location
Investigating Invasive Species for Grades 3-8	October 3 <sup>rd</sup>	Statewide
Schoolyard Investigations for Grades K-1	October 5 <sup>th</sup>	Statewide
Schoolyard Investigations for Grades 2-3	October 7 <sup>th</sup>	Statewide
Solutions Oriented Learning Storylines: Coastal Hazards	October 12 <sup>th</sup> - 15 <sup>th</sup>	Coast
ESD 113: Climate Science Series for Grades K-3	October 14 <sup>th</sup>	South Sound
Solutions Oriented Learning Storylines: Solar	October 19 <sup>th</sup> - 22 <sup>nd</sup>	Statewide
ESD 113: Climate Science Series for Grades K-3	October 21 <sup>st</sup>	South Sound
FieldSTEM Notebooks for Secondary Educators	October 27 <sup>th</sup> - 29 <sup>th</sup>	Statewide
	November 2020	
Workshop Title	Date	Location
Solutions Oriented Learning Storylines: Coastal Hazards	November 2 <sup>nd</sup> - 5 <sup>th</sup>	South Sound, East Sound
Solutions Oriented Learning Storylines: Fire	November 2 <sup>nd</sup> - 5 <sup>th</sup>	Central WA & Eastern WA
Solutions Oriented Learning Storylines: Solar	November 5 <sup>th</sup>	Central WA (by invitation only)
	December 2020	
Workshop Title	Date	Location
FieldSTEM: Writing Performance Tasks	December 1 <sup>st</sup> - 3 <sup>rd</sup>	Statewide
Solutions Oriented Learning Storylines: Food Waste (Spanish)	December 7 <sup>th</sup> - 10 <sup>th</sup>	Statewide
Solutions Oriented Learning Storylines: Fire	December 7 <sup>th</sup> - 10 <sup>th</sup>	Central WA & Eastern WA

For more information, please visit our Training and Workshop Event Calendar at <https://pacifieducationinstitute.org>. Questions about future workshops may be directed to PEI Program Coordinator, Katie Hatam at [khatam@pacifieducationinstitute.org](mailto:khatam@pacifieducationinstitute.org).