Washington Office of Superintendent of
PUBLIC INSTRUCTION

Washington State Environmental and Sustainability Literacy Plan

2022

WASHINGTON STATE ENVIRONMENTAL AND SUSTAINABILITY LITERACY PLAN

Version 2.0

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TABLE OF CONTENTS

THE VALUE OF LEARNING CONNECTED TO THE NATURAL WORLD

The natural world provides an outstanding context for students to learn. Robust research demonstrates the benefits of using the environment as a theme for learning and/or learning in outdoor settings. These benefits include building equity in student learning and improving physical and emotional health, social skills, and academic outcomes for all students of all ages.[1,2] Providing green schoolyards and play spaces for students can enable them to access these benefits and supports a school culture shift toward a resilience mindset.[3]

> *"Environmental and Sustainability Education is an essential component of our students' K–12 educational experience. Our students are taking leadership roles now and in the future that put environmental sustainability at the center of everything we do. This is not a standalone conversation or an elective class or credit; the content and learning inherent in this work will make or break the United States and our planet!"*
>
> *–Superintendent Chris Reykdal*

This policy document is meant as a resource for educators, administrators, families, community members, community-based organizations, and businesses to:

1) integrate environmental and sustainability education (ESE) with school and community needs,
2) support environmental and sustainability career opportunities for youth,
3) provide all students with access to the outdoors as a learning laboratory,
4) connect with the environment as an integrating context for learning across subject areas in all grade levels,
5) build environmental literacy in students, educators, and families, and
6) support justice, diversity, equity, and inclusion for all learners, their families, and their communities in our educational spaces.

[1] See the Children and Nature Network Research Collection, available online at https://www.childrenandnature.org/
[2] Kuo, M., Barnes, M., Jordan, C., (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. Frontiers in Psychology, 10
[3] Bates, C., (2020). Rewilding education? Exploring an imagined and experienced outdoor learning space. Children's Geographies, 18(3)

Figure 1: US-ED Green Ribbon School Carnation Elementary (2019 student work pictured here) and schools across Washington engage in service-learning projects to educate the school community about opportunities to reduce waste.

Every student has the right to experience high-quality, content-integrated environmental and sustainability education learning in each grade level. Our students are growing up in a world that is changing rapidly all around them. Climate change and environmental degradation pose significant threats to our students' futures. Extraordinary advancements in science and technology hold the potential to address some of those threats but can also cause harm. Environmental and sustainability education provides opportunities for students to learn about the environments we live in, how human well-being and the health of the environment are linked, and how our actions can harm or help environmental health. It also reveals career opportunities and can ease the growing anxiety many learners are experiencing as their community grapples with ecological problems. Community engagement empowers students as civic leaders.

In Washington state, we have a responsibility to ensure every student and educator has access to environmental and sustainability education throughout their school experience. All students benefit from these opportunities, including—and in some cases especially—students experiencing poverty, homelessness, hunger, and students with physical, behavioral, and emotional disabilities.[4,5,6]

Everyone has the right to be part of a healthy community, and communities thrive when all members have access to positive and rewarding outdoor experiences. Community members can gain experiences by visiting a local park, community garden, natural play area on school grounds, high desert, stream, or ocean beach. Going outside connects us to ourselves, each other, the world around us and reminds us that we are part of something bigger. This prepares us for learning that incorporates our relationship with and dependence on the natural world. These connections result in an increased quality of life, improved health, and social well-being.[7]

Nature and the environment can connect the disciplines of math, language arts, social studies, and science to authentic applications in students' communities and provide students with opportunities to be civic participants. Students enjoy making a difference in their community while they master the practices associated with these disciplines and environmental and sustainability education. Environmental and sustainability education is critical to a student's ability to make healthy decisions for themselves, their community, and the world; this ability is increasingly important as they respond to impacts of a changing climate, pandemics, and other global issues.

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[4] Guardino, C., Hall, K.W., Largo-Wight, E., Hubbuch, C., (2019). Teacher and student perceptions of an outdoor classroom. Journal of Outdoor and Environmental Education, 22(2), 113-126

[5] Price, A., (2019). Using outdoor learning to augment social and emotional learning (SEL) skills in young people with social, emotional, and behavioural difficulties (SEBD). Journal of Adventure Education and Outdoor Learning, 19(4), 315-328

[6] Szczytko, R., Carrier, S.J., Stevenson, K.T., (2018). Impacts of outdoor environmental education on teacher reports of attention, behavior, and learning outcomes for students with emotional, cognitive, and behavioral disabilities. Frontiers in Psychology, 3

[7] ReThink Outside, (2020). Our Shared Narrative. Accessed online at https://rethinkoutside.org/our-shared-narrative/

The Environmental and Sustainability Literacy Plan (ESLP) provides support for the implementation of WAC 392-410-115(6): Mandatory areas of study in the common school, which states, "Pursuant to RCW 28A.230.020 instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities, and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment."[8] (See also Appendix A: Selected Relevant Laws, Statutes, Rules, and Regulations.)

Figure 2: Students in Pullman Public Schools helped plant their outdoor classroom. (Photo copyright PPS. Used with permission.)

Defining Environmental Literacy

In Washington state, environmental literacy is defined as, "The individual and collective understanding, skills, cultural awareness, motivation, and practice of environmental stewardship resulting in responsible decisions that consider relationships to our planet Earth's communities and future generations, with an emphasis on understanding impacts on historically marginalized populations and nations."[9]

HIGHLIGHT: PULLMAN PUBLIC SCHOOLS (PPS)

Located in Eastern Washington, PPS is a US Department of Education Green Ribbon School.

In partnership with Washington State University and Community Based Organizations, PPS built an outdoor learning laboratory that includes an amphitheater, school garden, "sit" spots, and other stations for students to actively engage in hands-on science, mathematics, reading, writing, art, physical education, and other integrated learning opportunities.

For example, learners engage in watershed service-learning activities. building interest and identity as scientists and engineers. Middle schoolers learned about watershed health and participated in streambank restoration projects. Students then initiated, planned, and developed a litter clean up on Earth Day to reduce waterway pollution.

[8] Accessed online on 8/31/2020 at https://apps.leg.wa.gov/wac/default.aspx?cite=392-410-115

[9] This definition was adopted after a systemic review of state environmental literacy plans and was influenced by the North American Association for Environmental Education's definition of environmental literacy, "An environmentally literate person is someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the well-being of other individuals, societies, and the global environment; and participates in civic life," found in "Developing a Framework for Assessing Environmental Literacy" (2014). North American Association for Environmental Education.

Goal 1: Environmental and Sustainability PreK-12 Learning

1.1 The Integrated Environmental and Sustainability K–12 Learning Standards are up-to-date, accessible, and aligned with all Washington State K–12 Learning Standards.
1.2 Educators are aware of and use the Integrated Environmental and Sustainability K–12 Learning Standards.
1.3 School board directors, parents, district administrators, and principals are aware of and support the integration of environmental and sustainability concepts into core content areas at all grade levels.
1.4 Educators have access to high-quality environmental and sustainability instructional materials that can be integrated into currently used science, social studies, Career and Technical Education (CTE), math, English language arts, and other content area curricula.
1.5 Districts offer in-depth courses in environmental and sustainability concepts.
1.6 Where appropriate, the Integrated Environmental and Sustainability K–12 Learning Standards provide a context for classroom-based and performance-based assessments.
1.7 Where appropriate, information about connections between state learning standards and environmental and sustainability literacy is used to inform instruction.
1.8 *Early Childhood Programs Guidelines for* Excellence are used to support indoor and outdoor preschool and transitional kindergarten instruction.

Goal 2: Environmental and Sustainability Educator Professional Learning and Certification

2.1 Preschools, school districts, and colleges incorporate environmental and sustainability concepts into the school curriculum, professional development, and campus operations
2.2 Colleges of Education have the resources and motivation to offer Environmental and Sustainability Education as part of pre-service programming.
2.3 Formal and informal educators facilitate effective delivery of environmental and sustainability education to their respective audiences. Educators have credentials and background to deliver best practices grounded in content and learning (pedagogy) research.
2.4 School districts incorporate environmental and sustainability concepts into the school curriculum, professional development, and campus operations.
2.5 Districts offer courses in environmental and sustainability concepts in all grades, including Career and Technical Education Science Equivalency Courses.

Goal 3: Environmental and Sustainability Lifelong Learning and Community Partnerships

3.1 OSPI, schools and districts partner with communities to support increased access to natural spaces, where children and adults are outside in nature more often during early learning, after-school, or adult learning programs.
3.2 OSPI, schools and districts support community and school access to resources about environmental literacy and engagement in discussing and addressing local environmental problems and issues.
3.3 Local collaborations between schools and informal education organizations support environmental and sustainability education.
3.4 Raise awareness about environmental issues and community assets to encourage holistic health.
3.5 At the school and community level, increase awareness and understanding of Justice, Equity, Diversity, and Inclusion in Environmental and Sustainability Education.
3.6 Environmental and sustainability education is embedded in lifelong learning and community partnership opportunities.

Goal 4: Environmental and Sustainability Implementation and Funding

4.1 The Literacy Plan is supported, monitored, and updated regularly.
4.2 The outcomes of the Literacy Plan are monitored, evaluated, and revised for the most significant impact.
4.3 Funding is secured for implementation of the Literacy Plan.
4.4 Funding is provided to entities to support the Literacy Plan.
4.5 A strong network of partners support the Literacy Plan.

Benefits of Environmental and Sustainability Education

Diversity, Equity, and Inclusion

To create healthy and sustainable communities, it is essential that all members of our community enjoy access to the natural world and high-quality environmental education that fosters and strengthens our understanding, interconnection, and responsibilities. Collaboratively, families, students, and educators play a vital role.

Equality in access to environmental education and outdoor learning for every student improves inclusivity at each school district. Improving access to environmental education more broadly, particularly for those traditionally underserved by science education as described by case studies in Appendix D of the Next Generation Science Standards (NGSS), improves inclusivity at each school district.[10] Every student must be included in environmental education and outdoor laboratory science, and accommodations made for students with disabilities. In addition, outdoor learning space design must consider the needs of each learner.

Environmental and sustainability education (ESE) builds opportunities for equity in the classroom by meeting the needs of learners who prefer hands-on, place-based, and/or project-based learning. It also provides schools and educators context needed for culturally inclusive, culturally resilient pedagogy that values the needs of students and families, and centers families as our students' first teachers, who educate youth before, during, and after their formal schooling begins. ESE learning provides real-world, community-situated learning that engages groups of students who may not be experiencing education in inclusive ways. Adults can honor student voices and ideas. Adults are responsible for listening to student voices and supporting students as they generate and implement sustainability solutions in their homes, schools, and communities.

HIGHLIGHT: ANDERSON ISLAND ELEMENTARY (AIE)

A US Department of Education (US-ED) Green Ribbon School Honoree, AIE administrators and educators prioritize hands-on, interdisciplinary learning, linking sustainability and environmental studies to traditional subjects.

The school has an agreement with the adjacent park to use the lands as an outdoor learning laboratory. Students walk a mile long path to reach their outdoor classroom in the forest. They raise and release salmon and conduct multiple field trips to study their local ecosystem, conducting scientific research like water quality testing. The school garden integrates life and earth science, math, and nutrition education.

Students and teachers at this PreK-3 school championed a zero-waste cafeteria, including reusable lunch trays, flatware, water bottles, condiment dispensers, and composting systems. Students used their engineering skills to design the school's recycling systems.

Social-emotional health of students and families is prioritized. Learning and practicing strategies for self-care, such as mindfulness breaks, are part of the school culture.

[10] Next Generation Science Standards: Volume 2: Appendices. (2013) The National Academies Press, Washington DC.

Offering scaffolded and bilingual instruction in outdoor settings, such as school gardens, can build inclusivity. This strategy ensures students learn content alongside educational and social vocabulary, rather than in isolation. For example, research found that "school gardens could contribute to more environmental equity in urban areas and serve as gateways to reducing the achievement gap between groups of students, especially groups defined by socioeconomic status and race."[11]

Figure 3: Students in the Lopez Island School District (US-ED Green Ribbon School) designed a process to turn discarded milk jugs into filament for 3D printers (Photo copyright LISD. Used with permission.)

Environmental and sustainability education supports building hope and resilience in students as they learn about and engage in actions to restore damaged ecosystems and support positive change in their communities and change their daily behaviors in fundamental ways. This work comes to life when students' learning and actions are directly connected to community goals. All schools and communities are responsible for teaching students about environmental sustainability, preparing them to advocate for ecological justice, and engage in civic life.

Diverse students of color are interested in environmental and STEM career fields, where there are historical and current barriers to equitable access.[12] Providing student access to outdoor classrooms, natural spaces, and place-based learning can broaden career pathways and lifeways for our youth, their families, and communities.

Inclusivity means educators can and should create a culture of respect for the diversity of cultural ways of knowing about science and the environment, such as traditional ecological knowledge. This includes creating space in classroom settings for student discourse, as well as creating space for and honoring student voices in the classroom and broader school community.

Citizens of tribal nations in Washington are disproportionately affected by the impacts of climate change, including the loss of land and homes due to sea level rise, flooding, drought, and wildfire. Climate change is also impacting treaty guaranteed fish, game, and plant resources affecting tribal members' health, well-being, and the ability to practice and pass on cultural knowledge from one generation to the next. Consulting and collaborating with tribal nations are essential steps toward fostering educational opportunities that respond to the adaptation and climate resiliency needs of tribal communities. Learning and teaching created in collaboration with tribal nations – rooted in place-based, contemporary, and real-world situations – is aligned with learning that resonates with tribal community members (see *Since Time Immemorial* curriculum resources).[13]

[11] Ray, R., Fisher, D.R., Fisher-Maltese, C., (2016). School gardens in the city. Does environmental equity help close the achievement gap? Du Bois Review: Social Science Research on Race, 13(2), 379-395.
[12] Exeilo, Angelou; Chiles, Nick, (2020). Engage, Connect, Protect: Empowering Diverse Youth as Environmental Leaders.
[13] Available on the OSPI website at https://www.k12.wa.us/student-success/resources-subject-area/time-immemorial-tribal-sovereignty-washington-state

Figure 4: US-ED Green Ribbon School District Oak Harbor Public Schools students learn science and social studies during field studies at the beach near their school. (Photo copyright OHPS. Used with permission.)

Employment is the fastest path to equity. Many sectors of the economy are changing, altering employment patterns. Employment opportunities are increasing in areas that address emerging societal goals. The transition from fossil fuels to renewable energy is one example. The Bureau of Labor Statistics forecasts a 51% increase in solar installation and a 61% increase in wind installation jobs over the next decade.[14] Providing environmental and sustainability education to all students broadens the choices students have when choosing areas of study and potential careers.

Social-Emotional and Physical Health

From a social-emotional and health viewpoint, outdoor settings (green schoolyards, parks, and/or less developed nature settings) support physical, emotional, mental, and social health. Benefits of nature contact for children include, "positive outcomes in terms of physical health, cognitive functioning and self-control, psychological well-being, affiliation, and imaginative play, and affiliation with other species and the natural world—all related to children's realization of their capabilities."[15]

[14] Bureau of Labor Management. (2019.) Occupational Outlook Handbook. Accessed online on 4/26/2021 at https://www.bls.gov/ooh/fastest-growing.htm.

[15] Chawla, L., (2015). Benefits of nature contact for children. Journal of Planning Literature, 30(4), 433-452.

Student focus, self-discipline, and impulse control levels increase, and symptoms of Attention Deficit and Hyperactivity Disorder are reduced. [16,17,18] Access to green schoolyards can decrease stress, strengthen attention, minimize behavior problems, and enhance factors associated with resilience in children of all ages.[19] Access to the outdoors can reduce nearsightedness, [20] can increase physical activity[21,22] and vitamin D levels.[23] Through edible garden-based education programs, students may experience improved nutrition through increased access to low-fat vegetables…, trying new foods, and eating healthier diets.[24,25,26]

Figure 5: Students at Wahluke School District (US-ED Green Ribbon School District) engage in school garden programs that integrate math, science, language arts, and sustainability (Photo copyright WSD. Used with permission.)

[16] Faber Taylor, A., Kuo, F. E., Sullivan, W. C., (2002). Views of nature and self-discipline: Evidence from inner city children. Journal of Environmental Psychology, 22, 49-63.
[17] Faber Taylor, A., Kuo, F. E., Sullivan, W. C., (2001). Coping with ADD: The surprising connection to green play settings. Environment and Behavior, 33(1), 54-77.
[18] Amoly, E., Dadvand, P., Forns, J., López-Vicente, M., Basagaña, X., Julvez, J., Alvarez-Pedrerol, M., Nieuwenhuijsen, M. J., Sunyer, J., (2014). Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE project. Environmental Health Perspectives, 122(12), 1-34.
[19] Chawla, L., Keena, K., Pevec, I., Stanley, E., (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. Health & Place, 28, 1-13.
[20] French, A.N., Ashby, R.S., Morgan, I.G., Rose, K.A., (2013). Time outdoors and the prevention of myopia. Experimental Eye Research, 114, 58-68.
[21] Hartig, T., Mitchell, R., de Vries, S., Frumkin, H., (2014). Nature and health. Annual Review of Public Health, 35, 207-228.
[22] Sprague, N., Berrigan, D., Ekenga, C.C., (2020). An analysis of the educational and health-related benefits of nature-based environmental education in low-income Black and Hispanic children. Health Equity, 4(1), 198-210.
[23] McCurdy et al. (2010). Using nature and outdoor activity to improve children's health. Current Problems in Pediatric and Adolescent Health Care, 40(5), 102-117.
[24] Wells, N.M., Meyers, B.M., Todd, L.E., Henderson, C.R., Barale, K., Gaolach, B., Ferenz, G., Aitken, M., Tse, C.C., Ostlie Pattison, K., Hendrix, L., Carson, J.B., Taylor, C., Franz, N.K., (2018). The carry-over effects of school gardens on fruit and vegetable availability at home: A randomized controlled trial with low-income elementary schools. Preventive Medicine
[25] Garcia, M.T., Coelho, D.E.P., Bogus, C.M., (2017). Pedagogical school gardens as a Food and Nutrition Education strategy: Perception of parents and educators of their impact on children's diets. Demetra.
[26] Sarti, A., Dijkstra, C., Nury, E., Seidell, J.C., Dedding, C., (2017). 'I eat the vegetables because I have grown them with my own hands': Children's perspectives on school gardening and vegetable consumption. Children & Society, 31(6), 429-440.

Figure 6: Seattle Public Schools (US Green Ribbon School District) uses school buildings and grounds as learning laboratories for a variety of subjects. Green play areas increase student engagement in the landscape. (Photo copyright SPS. Used with permission.)

Academic Benefits and 21st Century Learning Skills

The benefits of using the environment as context or using Nature-Based settings—even small green spaces on the school campus—for providing environmental and sustainability education include better academic performance in reading, writing, math, science, and social studies.[27] According to Kuo, et. al, "Learning outcomes include: (a) increased retention of subject matter; (b) higher standardized scores; (c) better grades; (d) better math, reading and writing skills; and (e) higher graduation rates. Personal development outcomes include: (a) better leadership skills; (b) better communication skills; (c) more resilience; (d) better critical thinking and problem solving; and (e) better spatial skills."[28] Their research states, "it is time to take nature seriously as a resource for learning—particularly for students not effectively reached by traditional instruction." Even seeing nature from within school buildings can foster academic success.[29] Lack of trees on a school campus negatively impacts academic achievement in Washington's middle school students.[30]

Environmental and sustainability education that includes an equity ethic[31,32,33] results in real-world, community-based learning and teaching, which in turn builds in opportunities for students to work together in teams, researching and engineering solutions to small-scale environmental problems that interest them. From a pedagogical standpoint, it is essential that the magnitude and scale of issues that children are introduced to are within their ability to take action to address, and within the scope and sequence of the Environmental and Sustainability Education, Next Generation Science, Common Core, and C3 Social Studies, and Career and Technical Education Standards.

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[27] Lieberman, G., and Hoody, L. (1998). Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. Results of a Nationwide Study. San Diego: State Education and Environment Roundtable.

[28] Kuo, M., Barnes, M., Jordan, C., (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. Frontiers in Psychology, 10.

[29] Li, D., Sullivan, W.C., (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. Landscape and Urban Planning, 148, 149-158.

[30] Ming Kuo, Samantha E Klein, Matthew HEM Browning, Jaime Zaplatosch. (2021). Greening for academic achievement: Prioritizing what to plant and where. Landscape and Urban Planning, Vol. 206.

[31] E. McGee and L. Bentley, (2017). "The equity ethic: Black and Latinx college students reengineering their STEM careers toward justice," American Journal of Education, vol. 124, no. 1, pp. 1-36.

[32] J. C. Garibay, "STEM Students' Social Agency and Views on Working for Social Change: Are STEM Disciplines Developing Socially and Civically Responsible Students?," Journal of Research in Science Teaching, vol. 52, no. 5, pp. 610-32, 2015.

[33] D. Morales-Doyle, "There is no equity in a vacuum: on the importance of historical, political, and moral considerations in science education," Cultural Studies of Science Education, vol. 14, pp. 485-491, 2019.

For example, while it is essential the science of weather and climate be explored in pre-kindergarten and elementary school classes, the problem of climate change does not enter the standards until middle school. Therefore, education from kindergarten to college must address climate science. The next generation must be equipped with the civic capabilities, equity mindset, and technical skills needed to respond to climatic threats our societies will face in the 21st century.[34]

Figure 7: Students at Chief Leschi engage in environmental engineering projects connecting career pathways with sustainability (Photo copyright CLS. Used with permission.)

Environmental education and science have strong connections. In the NGSS alone are 64 environmentally connected Performance Expectations. To prepare a strong STEM workforce and scientifically literate public, science content must be taught holistically, uncovering connections with the earth and societal systems so future citizens can leverage STEM to improve the world.[35] Today's students desire a more altruistic and socially-just approach to learning and broadening the definition of STEM "success" to building "collective power for peace, justice, and sustainability."[36] This approach supports the persistence of all students in STEM fields and broadens the participation of underrepresented groups.[37]

"Lake Leschi restoration project has been an amazing experience for students of Chief Leschi schools. Students have learned skills such as water quality testing and how to plant and clip trees to create better habitats for the lake's ecosystem. Students have taken stewardship of the plants and land to the point where they are desperate to visit their trees that they planted."

–Elsie Mitchell, Natural Resources Teacher, Chief Leschi Schools

[34] C. P. Harbour and B. L. Bower, "Community Colleges in the Anthropocene: A Philosophical Justification for Campus Climate Action Plans," Community College Journal of Research and Practice, vol. 44, no. 1, pp. 6-14, 2020.
[35] M. A. Fisher, "Systems thinking and educating the heads, hands, and hearts of chemistry majors," Journal of Chemistry Education, vol. 96, no. 12, pp. 2715-2719, 2019.
[36] D. Morales-Doyle, "There is no equity in a vacuum: on the importance of historical, political, and moral considerations in science education," Cultural Studies of Science Education, vol. 14, pp. 485-491, 2019.
[37] E. Seymour and N. M. Hewitt, Talking about leaving revisited: Persistence, Relocation, and Loss in Undergraduate STEM Education, Cham, Switzerland: Springer International Publishing, 2019.

Within these guidelines, we know that children thrive when given the opportunity to address local problems and be part of a needed solution—acting as environmental engineers in their communities.

Figure 8: Family and community engagement is key to building sustainable and culturally responsive environmental and sustainability education. US-ED Green Ribbon School Carl Sandburg Elementary and Discovery Community School engage family and community volunteers to maintain their herbicide free grounds. (Photo copyright CSE/DE. Used with permission.)

For example:

- Second-grade students at Evergreen Elementary, a bilingual school in the Shelton School District, devised stormwater drain filters to catch and remove trash before entering their local stream, after participating in a unit of study about water quality.
- Students at Hilltop Heritage (formerly Jason Lee) Middle School in Tacoma conducted a solar research study, developed a solar energy plan for their school, wrote grants, and worked with the school board, local utility, and other partners. Ultimately solar panels were placed on the school.
- Chief Leschi Schools, a Bureau of Indian Affairs school operated by the Puyallup Tribe of Indians, shared that students are working to restore a wetland on campus by removing invasive species and cultivating more native trees and shrubs. They are monitoring the improvement in water quality and are excited about the beaver that has since taken up residence. Responsible stewardship of the environment is a cultural priority, and the tribal community has been enthusiastic about students' efforts. The area now includes an outdoor classroom that is used by their entire school.[38]
- High school students on the Oak Harbor High School robotics team used their skills to build a solar-powered tiny house for a community member experiencing homelessness.
- At Pullman Public Schools, second-grade students presented a proposal for tree planting on their school grounds to improve shade and comfort during recess. Middle school students developed a school-wide community litter clean-up after a unit on water quality.
- In Spokane, high school students at On Track Academy studied the urban heat island effect, local tree canopy, and benefits of trees, then designed and implemented a tree-planting project in a low-income, low tree density area. They worked with residents to identify and mitigate barriers to tree survival.
- Students from Wahluke School District (and other schools and districts across Washington state) help collect compostable items from the cafeteria. Wahluke School District is also partnering with the local Wanapum Tribe to develop a native plants teaching garden.

[38] Nancy Nelson, CTE Director of Chief Leschi Schools, email correspondence, 9/30/2021

College and Career Readiness for Washington's Green Economy

Implementing integrated environmental and sustainability education in all grades helps our youth prepare for jobs we can't even imagine today, engineering a brighter future for tomorrow.

The *Education for a Green Economy (EGE)* [39] report produced by the Pacific Education Institute and E3 Washington in partnership with the Governor's Policy Office for Education and Workforce Development and the Employment Security Department found:

- green economy jobs are forecast to increase
- educators, workforce and economic development professionals, and industries can and should leverage sequentially connected PreK–12 and post-secondary education with workforce training at regional and local levels
- the demand for workers with the appropriate skillsets for green jobs exceeds the supply of potential employees

The report suggests goals and recommendations for the next steps including:

- "build and incentivize equitable PreK–12 and post-secondary pathways for green jobs"
- "provide green economy professional learning…using resources for educators available in the OSPI Open Education Resource (OER) portal"
- funding of "a green jobs grant program through OSPI's Environmental and Sustainability Program…to increase opportunities for youth ages 15–17 to participate in environmental sustainability education and stewardship projects that provide work integrated and career launch opportunities."

The full report details the critical need for students to graduate with environmental and sustainability knowledge and skills to be adequately prepared for future jobs in Washington.

For the purpose of EGE, "green" is defined in a literature review by Georgetown University's Center on Education and the Workforce, which found that there were generally three types of green definitions: 1) a social justice/worker-centered definition, which makes green contingent on its potential to address environmental inequity; 2) a renewable energy and energy efficiency definition, which defines green as activities in the clean energy sectors; and 3) a broad environmental definition, which defines green as anything relating to environmental protection and quality.[40] This means all sectors in Washington state have "green" jobs, and environmental and sustainability education plays a crucial role in preparing students for those jobs.

[39] Roadmap to a Green Economy: aligning education, workforce and economic development systems. Produced by the Pacific Education Institute and E3 Washington for the Governor's Policy Office for Education and Workforce Development. 2020. Accessed online at https://pacificeducationinstitute.org/wp-content/uploads/2020/01/EGE-Executive-Summary.pdf; full report is online at https://pacificeducationinstitute.org/wp-content/uploads/2020/11/Educating-for-a-Green-Economy-Roadmap-FullReport.pdf.

[40] Georgetown University Center on Education and the Workforce. (2010). State of Green: The Definition and Measurement of Green. https://cew.georgetown.edu/wp-content/uploads/2010/08/Literature-Review_Green.pdf

The Economic Analysis of Outdoor Recreation in Washington State estimates that Washingtonians, on average, spend 56 days a year recreating outdoors. According to the recreation surveys and public land records used in this study, outdoor recreation in Washington resulted in $26.5 billion in annual expenditures and supporting approximately 264,000 jobs in Washington, and $12 billion in wages, putting the outdoor industry on par with the aerospace industry in the state."[41] In 2018, the Workforce Training and Education Coordinating Board published the Outdoor Industry Jobs Report which also reported the value of outdoor recreation and agriculture, natural resources, and clean energy jobs to the state.[42]

The Green Economy Work Group convened by the Washington Department of Commerce[43] interim report said, "Climate change is driving ecological, economic and social disruption across the globe and in Washington state. Washington state is a leader in scaling existing and creating new solutions in response to these challenges… The green economy produces strong and innovative businesses, good jobs, health, prosperity, and resiliency for all communities throughout the state."[44] The final report identifies opportunities in Education and Workforce Development.[45]

Plan Structure

The Environmental and Sustainability Literacy Plan has four broad goals, with strategies and anticipated outcomes described in a table following the description of each goal. The goals encompass Environmental and Sustainability Education priorities in the PreK–12 learning environment, educator professional learning and certification, community partnerships, and the importance of funding and implementing the plan.

The Plan's Appendices are also valuable sources of information. They include a reference to several key environmental and sustainability education-related policies, resources, and supporting materials for individuals looking to take a deeper dive into the world of environmental and sustainability education.

[41] Mojica, J., Fletcher, A., 2020. Economic Analysis of Outdoor Recreation in Washington State, 2020 Update. Earth Economics. Tacoma, WA. (2020). Accessed online at https://rco.wa.gov/wp-content/uploads/2020/07/EconomicReportOutdoorRecreation2020.pdf?8in4b.

[42] Workforce Training and Education Coordinating Board (2018) Outdoor Industry Jobs: A ground level look at opportunities in the agriculture, natural resource, environment, and outdoor recreation sectors. https://pacificeducationinstitute.org/wp-content/uploads/2019/01/18-1119-OutdoorIndustryJobsReport.pdf

[43] Pursuant to Chapter 415 Laws of 2019 – HB 1109 Section 129(38).

[44] Accessed online 9/8/2020 at https://deptofcommerce.app.box.com/v/green-economy-interim-report.

[45] Washington State Department of Commerce. Washington's Green Economy. Accessed online at https://www.commerce.wa.gov/wp-content/uploads/2020/09/GreenEconomyFinalReport091520_BD-SA-OPT.pdf.

Selected Highlights of Environmental and Sustainable Education in Washington State	
Since Time Immemorial	• Tribal citizens' and nations' teachings and ways of life are centered within environmental sustainability
1930s	• Cleveland High School (Seattle Public Schools) begins conservation education
1940s	• Outdoor residential programs at Snohomish Camp Silverton-Waldheim and Camp Waskowitz
1960s	• Governor's Conference on Environmental Education (EE) creates EE Advisory Group
1970s	• OSPI develops Environmental Education Guidelines
1980s	• Association of Washington School Principals begins outdoor education program at Cispus Environmental Learning Center
1990s	• State Legislature creates legal authority for environmental, conservation, and natural resource education (RCW 28A.230.020) • State Board of Education creates a rule which includes environmental education as part of Basic Education, mandating its instruction in public school at all grade levels (WAC 392-410-115)
2003	• Legislature establishes Washington Natural Science, Wildlife, and Environmental Education Partnership Grant Program (House Bill 1466) • Pacific Education Institute is established to provide ESE resources in partnership with natural resource agencies and industries
2006	• Legislature directs OSPI to prepare a report on EE effectiveness for student learning (House Bill 2910) • E3 Washington initiative is funded and launched
2007	• Legislature establishes Washington State No Child Left Inside (NCLI) Grant Program (Senate Bill 1677)
2009	• OSPI adopts K–12 Integrated Environmental and Sustainability Learning Standards
2009	• Professional Educators Standards Board establishes ESE Specialty Endorsement
2010	• E3 Washington establishes statewide network and develops Comprehensive Plan
2011	• OSPI adopts Washington State Environmental and Sustainability Literacy Plan • Environmental educators support review and drafting of Next Generation Science Standards
2012	• OSPI participates in US Department of Education Green Ribbon Schools Program
2014	• Environmental and Sustainability Education Learning Standards updated
2015	• *Since Time Immemorial: Tribal Sovereignty in Washington State* required to be taught in all schools, modified from 2005 legislation • Legislature funds $1 million FieldSTEM Proviso
2018	• Legislature passes ESSSB 6362, which links learning requirements to the benefit of outdoor-based activities through RCW 28A.320.173
2021	• Environmental and Sustainability Literacy Plan revised • Legislature directs the licensing of Outdoor Early Learning (Implemented by DCYF) • OSPI funds $1 million for Environmental and Sustainability Literacy Plan Implementation • Legislature funds $10 million for Outdoor School access to address COVID-19 learning gaps; increases No Child Left Inside and FieldSTEM funding; allocates new funding for bilingual environmental education and environmental education in Whatcom County

Table 2: Highlights of Environmental and Sustainability Education in Washington

GOAL 1: ENVIRONMENTAL AND SUSTAINABILITY PREK–12 LEARNING

School districts, schools, State-Tribal Education Compact schools, tribal schools, educators, and administrators in Washington have the necessary resources and policy support they need to provide environmental and sustainability education learning opportunities so that every student experiences hands-on, interdisciplinary environmental and sustainability education in all grade levels.

Standards and Content Areas

Integrated Learning Opportunities

Environmental and sustainability education provides a meaningful and engaging context for English language arts, mathematics, science, the arts, health and fitness, educational technology, career and technical education, and world languages.

For Pre–K students, outdoor and Nature-Based learning opportunities are a developmentally appropriate experience. The integrated nature of environmental and sustainability education is well suited to the holistic nature of pre–K learning. Pre–K education is supported by the Washington State Early Learning and Development Guidelines, as well as the *North American Association for Environmental Education (NAAEE) Guidelines for Excellence*. By supporting outdoor, Nature-Based experiences for our youngest learners, we establish connections and familiarity with nature that serve as a basis for future learning.

"My students are most engaged when they are actively studying a local community problem and helping to design and implement solutions."

–Middle School teacher Deborah Ellefson

K–12 Environmental and Sustainability Education Standards

In 2009, OSPI adopted *Washington State K–12 Integrated Environmental and Sustainability Learning Standards* describing what all students should know and be able to do to be environmentally and sustainability literate. Consistent with the intent of the law governing environmental education in Washington state (WAC 392-410-115(6)), [46] these standards are intended to be integrated into core content areas and taught across all grade levels.

> *"Community science, school gardens, and teaching with the seasons are examples of environmental and sustainability education that provide a bridge between classroom and community."*
>
> *–Ellen Ebert, OSPI Director of Secondary Education Content; Science, Secondary Education and Pathway Preparation*

The *Washington State K–12 Integrated Environmental and Sustainability Learning Standards* are aligned to Washington K–12 science, English language arts, and mathematics learning standards, adopted in 2014. The Office of Native Education has aligned the Since Time Immemorial curriculum to the ESE standards. The complete *Washington State K–12 Integrated Environmental and Sustainability Learning Standards* document is posted on the OSPI website. There you will find the background and context for each standard and alignments with 2014 core content standards.

ESE Standard 1: Ecological, Social, and Economic Systems

Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment

Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility

Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

[46] WAC 392-410-115(6): Mandatory areas of study in the common school: "Pursuant to RCW 28A.230.020 instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities, and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment." Accessed online on 8/31/2020 at https://apps.leg.wa.gov/wac/default.aspx?cite=392-410-115.

Learning Resources

Courses and Instructional Materials

In the elementary grades, integration of environmental and sustainability education across content areas can more naturally occur because a single teacher typically teaches all (or most) subject areas. Using the lens of sustainability and environment, instruction of science and social studies standards can be strengthened when guided by the principles of place-based and experiential education.

Sustainability provides a context for learning around a theme such as food and gardens, ecosystems, and campus sustainability. Mathematics weave seamlessly into these learning opportunities as students measure spacing in the garden, calculate the circumference of a tree, or analyze metrics from a school waste audit. Environmentally themed literature, science notebooks, and outdoor writing experiences support literacy skill-building in this real-world approach.

The *Guidelines for Excellence in Environmental Education* series (Appendix B) provides best practices to assess programs and resources. *Early Childhood Environmental Education Programs: Guidelines for Excellence* can guide program design and support developmentally appropriate methods for the youngest learners. The *K–12 Environmental Education: Guidelines for Excellence* help define what learners should know and be able to do to be considered environmentally literate at different grade levels.

Because Washington is a "local control" state, specific courses meeting state standards are determined by districts. Examples of middle and high school courses supporting environmental and sustainability literacy include Career and Technology Education (CTE) Climate Science: Technology and Engineering and CTE Forest Management framework; Advanced Placement (AP) Environmental Science; AP Human Geography; and Integrated Science.

Exemplary models of interdisciplinary environmental and sustainability courses across all grades do exist, some of which are captured in OSPI's "Stories from the Field" document, available on the OSPI website. However, a more comprehensive database of exemplary courses would benefit districts looking to offer integrated environmental and sustainability education courses. One action item for the implementation of this plan is to generate a framework for the review of materials to be posted on the Washington Hub of the OER Commons. Another is to create a spatial database of Environmental and Sustainability Education programs and resources.

Recognition and Support Programs

The US Department of Education Green Ribbon Schools (US-ED GRS) program recognizes schools and districts that demonstrate progress in all three program pillars.

- Pillar 1: Reduced environmental impact and cost
- Pillar 2: Improved health and safety for students and staff
- Pillar 3: Integrated environmental and sustainability education

These three pillars provide a helpful structure for schools and districts interested in reducing facilities costs, improving the health and wellness of their community, and using school buildings and grounds as a resource for learning. In Washington, schools and districts apply for this award through OSPI. Schools and districts that complete the state application often find they are implementing more sustainability practices than they thought. They gather new ideas for further implementation through the application process. Local, state, and national green school programs offer support for implementation. (See Appendix C: Learning Resources for more information.)

Learning Settings – Natural and Built Environments

There are many opportunities to engage students in real-world, hands-on learning, using the local environment as a setting and context for instruction. Natural and built environments are tied to engineering. The study of the built environment, for example, a playground, provides rich context to study design problems like erosion, flooding, and weed control. Students can exercise creativity and design skills by designing creative solutions to real-world problems.

- School/home building and grounds as learning laboratory – e.g., studying weather, plants, water, waste, energy, ecosystems in the local school or schoolyard context to define problems and design/implement solutions (e.g., recycling, water conservation, school gardens, tree planting, erosion, weed control)
- Gardens
- Playgrounds
- Cafeterias
- Adjacent public land, natural areas, or parks
- Public lands, outdoor schools, nature centers, and other off-site locations

Resources to support the use of school buildings, grounds, and adjacent lands for instruction include OSPIs Healthy School, Healthy Child grant program, the Association for Learning Environments, the national Green Schoolyard program, and Washington FieldSTEM guides from the Pacific Education Institute.

Community-based organizations offer numerous resources, including lesson plans, curricula, learning sites, trained staff, and locally relevant phenomena to engage student interest (see also Goal 3). Additional resources to support PreK–12 Learning are in Appendix C.

Assessment System

Since environmental and sustainability education is intended to be integrated into core content, its assessments should also be integrated. With states moving from state summative assessments alone to common and comprehensive assessment systems, it will be necessary for the environmental and sustainability field to be informed by, and to report where appropriate, the development of these systems and assessments. However, this alone may not provide a comprehensive analysis of students' environmental and sustainability literacy. It may be advantageous to work with other states to develop common resources that can be used to determine students' environmental and sustainability literacy and inform instructional practices.

"Multiple assessments, incorporating formative and summative assessment processes, should be used to monitor and improve students' environmental and sustainability literacy."

–Korey Peterson, Science Assessment

In addition to assessment systems, environment and sustainability can be a rich context for project-based learning and argument-driven inquiry. For example, many classroom assessments for social studies can be developed in the context of environmental and sustainability issues. Additionally, classroom assessments in the arts or health and fitness can incorporate ecological and sustainability content. Essential strategies of this plan are to develop a toolkit of environmental and sustainability assessment models and methods for teachers to use to assess students' environmental and sustainability literacy and therefore inform instruction.

Strategies and Outcomes for Implementation of Goal 1

Outcomes	Strategies
1.1 The *Integrated Environmental and Sustainability K–12 Learning Standards* are up-to-date, accessible, and aligned with *all Washington State K–12 Learning Standards.*	1.1.1 Review and update the *Integrated Environmental and Sustainability K–12 Learning Standards* as necessary and in accordance with state rules. 1.1.2 Align the *Integrated Environmental and Sustainability K–12 Learning Standards* with relevant new state learning standards as they are adopted in Washington State. 1.1.3 Upload the *Integrated Environmental and Sustainability K–12 Learning Standards* to OSPI online grade-level resources, such as the Open Educational Education Resources Website.
1.2 Teachers are aware of and use the Integrated Environmental and Sustainability K–12 Learning Standards.	1.2.1 Conduct outreach to teachers through regional Educational Service Districts (ESDs), Fellows programs, OpenSciEd network, Since Time Immemorial curriculum training, and professional learning opportunities implemented by community-based organizations.
1.3 School board directors, parents, district administrators, and principals are aware of and support the integration of environmental and sustainability concepts into core content areas at all grade levels.	1.3.1 Develop outreach strategies to communicate about the Environmental and Sustainability Learning Plan (ESLP) to the Washington State Board of Education, school board directors, Parent Teacher Associations, Educational Service Districts, district and school administrators, and statewide associations such as the Association of Washington School Principals, Washington Association of School Administrators, and Washington State School Directors' Association.
1.4 Educators have access to high-quality	1.4.1 Work with ESE providers to develop and disseminate a toolkit of resources (including a school planning

Outcomes	Strategies
environmental and sustainability instructional materials that support and strengthen science, social studies, career and technical education (CTE), math, English language arts, and other content area curricula.	workbook) and professional development to embed environmental and sustainability education into core content areas and district-adopted curriculum. 1.4.2 Partner with professional learning providers to develop and disseminate embedded environmental and sustainability concepts in existing identified grade-appropriate and quality science instructional materials. 1.4.3 Work with ESE providers to provide support (e.g., instructional materials, professional development, and an online network) to CTE teachers for the Climate Science: Technology and Engineering; Forest Management; and other Environmental and Sustainability Education (ESE) related CTE frameworks. 1.4.4 Offer training in the *Guidelines for Excellence: Environmental Education Materials*. 1.4.5 Support the development of an environmental education materials review framework to support schools, districts, and environmental education programs in completing a comprehensive instructional materials review.
1.5 Districts offer in-depth courses in environmental and sustainability concepts.	1.5.1 Create and maintain a database of exemplary environmental and sustainability project-based courses and programs, with an emphasis on resources that build equitable support for students from communities historically excluded from justice.
1.6 Where appropriate, the *Integrated Environmental and Sustainability K–12 Learning Standards* provide a context for classroom-based and performance-based assessments.	1.6.1 Develop a toolkit of environmental and sustainability assessment resources, including: A. Formative assessment strategies that include a written description of each strategy, a video of the technique being used in a learning environment, and materials to support educators using and reflecting on the approach in their own teaching, B. Performance-based assessments strategies that use the *Integrated Environmental and Sustainability K–12 Learning Standards* as a context for the assessments, and C. ClimeTime Assessments and Practical Measures connect to the *Integrated Environmental and Sustainability K–12 Learning Standards*.

Outcomes	Strategies
1.7 Where appropriate, information about connections between state learning standards and environmental and sustainability literacy is used to inform instruction.	1.7.1 Map state science learning standards to the *Integrated Environmental and Sustainability K–12 Learning Standards*. 1.7.2 Track students' classroom performance on science, mathematics, and English language arts standards that are connected to the *Integrated Environmental and Sustainability K–12 Learning Standards* and use that data to inform professional development.

Table 3: Goal 1 Strategies and Outcomes

Early Learning Considerations and Strategies for Goal 1 Implementation

- Young children learn through play and by interacting with their environment, peers, and adults. Developing children's connection to nature should begin at birth, and nature-focused experiences serve as a basis for environmental and sustainability literacy, as well as a context for learning in other areas (e.g., reading, writing, math, and science).
- Early learning and childcare are provided in several settings in Washington state, such as childcare centers, family home-based early learning programs, Head Start programs, and Early Childhood Education and Assistance Program (ECEAP).
- Washington state has a strong and growing statewide system supporting early learning led by the Washington State Department of Children, Youth, and Families (DCYF), Child Care Aware of Washington, and OSPI.
- Provide training and professional development opportunities to early learning staff about nature-centered education (early childhood environmental education) and disseminate environmental curriculum resources to parents and educators.
    - North American Association for Environmental Education (EE Pro + Natural Start), Growing Up WILD, Project Learning Tree, National Wildlife Federation
- Support affordable access to age-appropriate indoor and outdoor play areas, parks, natural areas, and learning facilities such as zoos, aquariums, nature centers, and arboretums.
- Align environmental and sustainability education programs with the Washington State Early Learning Plan and provide resources to early learning educators. These actions ensure that young children have a foundation for environmental and sustainability literacy.
- Expand the outdoor preschool model (approved for implementation by the Washington Department of Children, Youth, and Families in the 2021 Legislative Session).

GOAL 2: ENVIRONMENTAL AND SUSTAINABILITY EDUCATOR PROFESSIONAL LEARNING AND CERTIFICATION

Build an organized, coherent system for professional learning and environmental education certification programs to ensure educators have the skills and knowledge needed to employ the learning and teaching strategies identified in Goal One.

To prepare students for success in 21st Century life, educators and education leaders must participate in well-designed, ongoing environmental and sustainability education professional development. In this plan, our target audience for professional development includes college and career readiness, formal (school-based), informal educators, and education leaders. Professional development ensures successful links between schools and community-based organizations, which is one of the underlying tenets of environmental and sustainability education. To effectively engage educators in continued learning, a system of institutional support, incentives, and locally relevant ESE professional development that integrates environmental and sustainability standards into the curriculum is needed.

Pre-Service Teacher Education

In 2018, the governing body for teacher education programs (the Washington Professional Educator Standards Board, or PESB) revised the requirements for teaching credentials. Model Core Teaching Standards were developed by the Council of Chief State School Officers' Interstate Teacher Assessment and Support Consortium (InTASC) in April 2011. Several required competencies support the implementation of environmental and sustainability education in the classroom via teacher preparation. These are listed in Appendix D: InTASC Competencies Related to Environmental and Sustainability Literacy. Ultimately, our aim is to help colleges and universities prepare staff for teacher credentialing programs so that the environment and environmental literacy is one of the themes through which teachers gain their teaching credentials.

Twenty-one Washington colleges and universities are approved to prepare teachers for the Residency Certification, the basic license that all new teachers must earn. The process for implementing these competencies offers an opportunity to embed environmental and sustainability education content and pedagogy into pre-service teacher education programs.

In 2008, PESB developed a "Specialty Area Endorsement" under Washington Administrative Code 181-82-200. In 2009, PESB approved the ESE Specialty Endorsement, the first of its kind in the nation because of its focus on environmental as well as sustainability and systems thinking education. This endorsement sets criteria for a formal educator to ensure the tenets of ESE are upheld in classroom practice. This endorsement was desired to ground a teacher fully in environmental and sustainability content and methods, including utilization of systems thinking, project-based learning, and outdoor field studies. At the time of this Plan's publication, six teacher education institutions had been approved to offer an endorsement. (See Appendix D for the Core Competencies of the Environmental and Sustainability Education Specialty Endorsement.)

In-Service Teacher Professional Development

Throughout Washington state, a growing number of practicing teachers receive in-service professional development in ESE knowledge, skills, and resources.

Teachers receive environmental and sustainability professional development through in-service programs provided by a variety of public and private entities, such as ClimeTime. These include ESE organizations, nature centers, zoos, museums, aquariums, arboretums, educational service districts, and local, state, tribal, and federal agencies. Offerings range from a few hours in length to programs that span across the course of two years. Washington has an opportunity to develop a fully coordinated program of teacher in-service professional development for ESE. OSPI is developing a searchable network directory and asset map, in part to inventory the programs that are offered. This inventory will help state leaders and educators assess which topics, pedagogical approaches, and resources are available, overlapping, or redundant, and find gaps in meeting teachers' professional development needs.

"A comprehensive environmental and sustainability education professional development program implemented in Washington State will provide educators the skills, knowledge, and abilities to effectively engage learners in experiences that lead to environmental and sustainability literacy."

– Goal 2 work group member

District and School Leadership Professional Development

School Board directors, principals, district superintendents, and curriculum supervisors currently receive limited or no pre-service preparation or in-service professional development in ESE. However, a growing number of schools and districts across the state have those in leadership and administrative roles who value and support ESE. State professional development associations for educational leaders, such as the Washington State School Directors' Association (WSSDA), Washington Association of School Administrators (WASA), and the Association of Washington School Principals (AWSP), provide professional development for education leaders and are vital partners in developing opportunities to include environmental and sustainability education in their offerings.

Informal/Nonformal Environmental and Sustainability Educator Professional Development

Washington's informal and nonformal ESE providers typically facilitate learning experiences for learners that are either outside of the formal education setting or that supplement/supplant the curriculum in the formal education setting. Families and school field trips often include informal education sites such as nature centers, zoos, wildlife parks, museums, parks, wastewater treatment facilities, landfills or municipal recycling facilities, public lands, land trusts, or local businesses. These sites often offer programming for educators, students, and families. Many organizations develop learning and teaching materials and provide professional development programs for the classroom or school setting. Increasingly, informal/nonformal educators offer programs during the school day. However, many of these experiences are offered as optional, and only interested teachers participate, creating an equity issue for students in other teachers' classes that do not receive the same experiences.

Currently, Washington has an opportunity to create a comprehensive program for informal/nonformal educators. While informal/nonformal educators provide important knowledge, learning experiences, and resources, they do not always receive a coherent and consistent level of professional development support for their role in education. There is a need for an organized system that allows teachers, school administrators, and parents to identify and utilize qualified, credible community-based informal/nonformal educators and organizations. All ESE programs must be high quality, credible, and effectively a) engage youth in informal, unscripted play and exploration-based learning, and/or b) foster learning that enhances engagement in and learning of the subject matter. One pertinent resource for this kind of training is the *Guidelines for Excellence: Preparation and Professional Development of Environmental Educators* (See Appendix B).

Environmental Education Certification Programs

An Environmental and Sustainability Certification Program for Informal/Nonformal Educators would establish high standards and the professional qualifications expected of environmental and sustainability educators in Washington. This would not be a licensure program.

Three states offer EE Certification programs accredited by NAAEE. Which include North Carolina, Kentucky, and Colorado. Accredited program graduates are recognized nationwide—in other words, these certifications transfer across state lines. While Kentucky and North Carolina's programs require in-person participation, Colorado's program can be completed remotely. Several options for the preparation and professional development are available through NAAEE and their eePRO website.

Washington could create or partner with a certification program for informal/nonformal community-based educators to assure quality ESE and to enhance the competencies and qualifications of those who provide environmental and sustainability education in Washington communities.

Numerous colleges and universities in Washington state offer environmental education and environmental science degrees (see Appendix E).

Strategies and Outcomes for Implementation of Goal 2

Outcomes	Strategies
2.1 Preschools, school districts, and colleges incorporate environmental and sustainability concepts into the school curriculum, professional development, and campus operations.	2.1.1 Identify the amount of funding needed to implement WAC 392-410-115 for all schools in Washington State. 2.1.2 Identify funding mechanisms. 2.1.3 Secure funding. 2.1.4 Build an interactive database and/or mapping tool that identifies preschools, school districts, and colleges that incorporate environmental and sustainability concepts into the school curriculum, professional development, and campus operations. Use this tool to highlight implementation across the state.
2.2 Preservice Education—Colleges of education have the resources and motivation to offer Environmental and Sustainability Education as part of pre-service programming, including: o Administrator preparation programs prepare superintendents and principals to lead schools and district efforts to incorporate environmental and sustainability education, o All new K–12 teachers meet Interstate Teacher Assessment and Support Consortium (InTASC) standards demonstrating competency (knowledge, skills, and dispositions) and can apply them through the lens of environmental and sustainability education concepts, and o Early Learning preparation programs prepare teachers to lead their schools' ESE efforts.	2.2.1 Collaborate with colleges of education to define needs and provide resources and support around incorporating environmental and sustainability education in superintendent and principal administrator preparation programs, including field experiences with environmental and sustainability education practitioners, to bolster system-level integration and support innovative educator practices. 2.2.2 Collaborate with colleges of education and the Professional Educator Standards Board to define needs and provide support around the implementation of InTASC standards identified in Appendix D. 2.2.3 Collaborate with the Washington Nature Preschool Association, the Department of Youth, Families, and Children, the OSPI Early Childhood Program, and Early Learning preparation programs to offer trainings to relevant personnel in the *Guidelines for Excellence: Early Childhood Environmental Education Programs*.
2.3 In-service Professional Learning: Educators—formal and informal—facilitate effective delivery of	2.3.1 Use the *Guidelines for Excellence: Professional Development of Environmental Educators* as a resource for aligning professional learning

Outcomes	Strategies
environmental and sustainability education to their respective audiences. Educators have the credentials (e.g., ESE Endorsement, EE Certification, or other supporting qualifications) and background needed to deliver best practices that are grounded in both content and learning (pedagogy) research, including: o Regular and consistent number of high-quality, credible, locally relevant ESE professional learning opportunities in every region of Washington, o Increase the number of formal and informal educators participating in *Guidelines for Excellence* trainings or other environmental and sustainability education certification programs, o Formalize and implement an individualized Environmental and Sustainability Education Professional Development Certification program. Include individual Professional Development Plan, use of existing networks, and oversight by ELP Implementation Committee to ensure consistent and embedded delivery of the *Integrated Environmental and Sustainability K–12 Learning Standards*. o Provide informal educators with support (e.g., professional development, research, and models) around best practices in environmental and sustainability education and learning sciences.	opportunities in environmental and sustainability education. 2.3.2 Maintain a Professional Learning Resource interactive website to ensure resources are in place to support Professional Learning and to identify/fill gaps that emerge. 2.3.3 Offer trainings in the *Guidelines for Excellence: Professional Development of Environmental Educators* to all environmental and sustainability education training providers. 2.3.4 Offer trainings in the complete *Guidelines for Excellence* series to ensure that ESE providers are trained in best practices for *K–12 Learners, Materials, Programs, Early Childhood, and Community Engagement*. 2.3.5 Provide formal and informal educators with support (e.g., professional development, research, and models) around best practices in environmental and sustainability education and learning sciences. 2.3.6 Start with a system of delivery—Connected to Goal 3 Implementation—offerings aligned to clock hour system and/or Environmental Educator Certification, as appropriate.
2.4 In-service Professional Learning– School districts incorporate environmental and sustainability concepts into the school curriculum,	2.4.1 School Boards and Superintendents set ESE as a priority for school districts.

Outcomes	Strategies
professional development, and campus operations, supported by: A. School Boards and Superintendents setting ESE as a priority for school districts, and B. Teaching and Learning Directors and Coordinators offering the resources and support needed to implement ESE for every student at all ages/levels of educational attainment, and C. Teachers participating in professional learning, with the resources and administrative support needed to implement ESE for every student in their classroom.	2.4.2 Principals set ESE as a priority for schools. 2.4.3 Provide opportunities (such as observing and participating in model school district and community-based programs) for educational governance and leadership associations (e.g., WSSDA, WASA, and AWSP), school board members, superintendents, and principals to gain perspectives and competencies so that they can support the integration of environmental and sustainability concepts into professional development and campus operations. 2.4.4 Create structure and incentives to engage administrators. 2.4.5 Provide curriculum leaders with a menu of a) successful models of environmental and sustainability education embedded into what teachers are already teaching in core content areas and career and technical education courses, b) professional development for their teachers, and c) evaluation tools to measure and assess environmental and sustainability education programs.
2.5 Districts offer courses in environmental and sustainability concepts in all grades, including Career and Technical Education Science Equivalency Courses.	2.5.1 Create a database of exemplary environmental and sustainability project-based courses and programs.

Table 4: Goal 2 Strategies and Outcomes

GOAL 3: ENVIRONMENTAL AND SUSTAINABILITY LIFELONG LEARNING AND COMMUNITY PARTNERSHIPS

Schools and districts actively partner with community-based organizations and tribal nations to foster environmental and sustainability education in support of community goals, in every grade level and within families. Everyone has a role to play, and community partnerships are key to successfully integrating environmental literacy into people's everyday lives.

Teaching and learning about the environment can and should happen among communities, and in partnership with schools and other organizations. Knowing and caring about the environment is an essential aspect of a healthy and sustainable society. The goal of lifelong learning and community partnerships focuses on opportunities that come from outside the formal K–12 system, such as early learning, preschool, informal and nonformal environmental education, and adult learning. This can include partnerships between schools/districts and community-based organizations or families, and integrated educational opportunities built from these partnerships. In each of these areas, it is crucial to incorporate the following:

Support Peoples' Access to Nature

The benefits of being outdoors are well known and can improve people's mental, emotional, physical, and spiritual well-being. By focusing on place-based opportunities, where people engage with nature in their urban or rural region, we can support communities' health as well as their environmental education. Being outside and building a relationship with the environment may also lead people to ask a question like *how can I help*? or *`how do my actions make a difference?* This can lead to a culture of environmental stewardship.

Support Communities' Ability to be Resilient

Many communities feel the effects of pollution, economic and climate changes, or lack equitable access to nature or healthy food. The frequency of climatic events such as wildfires, flooding, and drought, are having direct consequences on people's lives. Children and adults should be supported in developing sustainable habits, finding pathways to careers in sustainable economies, and reducing their environmental footprint. Increasing environmental literacy opportunities also promote ecological justice.

Support Existing Programs and Community Partnerships

Outstanding programs and resources to support environmental and sustainability literacy already exist in most places. There are many ways to help or become involved in some of the great work already being done and opportunities to build something new that supports community environmental literacy.

The *Guidelines for Excellence: Nonformal Environmental Education Programs* can support schools, districts, and informal/community-based organizations in ensuring their programs are built and operated using best practices. The *Guidelines for Community Engagement* offer resources that support building regional and community partnerships. Both resources are in Appendix B.

Support Diversity, Equity, and Inclusion

There are many initiatives and resources to support cultural competency (how to engage across cultures in a positive and appropriate way) and address inequalities, and these should be identified, connected to, and supported.

Want to get involved?

It is up to each person to choose to build an environmentally sustainable society. This list of ideas is a starting place to help teachers identify student interests and community relevance. Topics should be determined by students' areas of interest and could include local agriculture, forests, waste reduction, climate science, water quality, biodiversity, and more.

- Families: Take your children outside. Look, notice, and wonder about what you see. Explore your local ecosystems. Find simple ways that you can give back to your communities by reducing waste, picking up litter, conserving water, planting pollinator gardens, or supporting local agriculture, for example.
- Students: volunteer at community gardens or other community-based organizations to build your skills, teach your parents about sustainable practices, mentor younger students.
- Business owners: Use environmentally safe products, reduce waste, educate your staff about green business practices, provide apprenticeships or internships to support career pathways.

CARNATION ELEMENTARY

Carnation Elementary, a 2018 US-ED Green Ribbon School, has a strong partnership with the Snoqualmie Indian Tribe and a number of community partners.

Students are presented the opportunity to work with local scientists, educators, organic farmers, and specialists who impart on them a perspective and understanding that is personal and meaningful. The environmental studies at Carnation Elementary are tailored to help connect the students to their environment. Each year, students help raise Salmon fry as part of their studies into the Salmon lifecycle. These fry are then released into a local stream to become part of the ecosystem. Students work with King County and the Snoqualmie tribe on volunteer tree plantings and riparian zone restoration on local rivers. This work helps ensure the health of the local watershed and the success of the local animals that depend on this ecosystem.

CLIMETIME

Nine Educational Service Districts and more than a dozen community-based organizations have collaborated to support educator professional learning opportunities in the Next Generation Science Standards, with an emphasis on climate science.

Resources produced by this collaboration are published in on online free database for curricular resources, called the Washington Hub of the Open Educational Resources Commons (or OER). ClimeTime related news and resources are available on this website.

One favorite activity shared in teacher workshops engages families with young children in Wondering Walks around their neighborhoods. Together, families engage in noticing and wondering about what they see. Back in the classroom, students contribute their families experience to class level data. These kinds of experiences foster student identity and interest as scientists. They also draw families into learning in an authentic way that values and honors their unique experiences and contribution to the scientific classroom community.

- Elders: Bring your knowledge to the local school or after school community, teach a class, volunteer at an early childhood center, advocate.
- School administrators and educators: Share resources and provide environmental literacy programs with families, partner with community organizations and businesses to address shared environmental literacy goals.
- Policymakers: support policies that operationalize consistent PreK–12 access to environmental and sustainability education—and professional development for teachers, along with community-based organizations and partnerships, that support this access.

Strategies and Outcomes for Implementation of Goal 3

Outcomes	Strategies
3.1 More access to natural spaces, where children and adults outside in nature more often during early learning, after-school, or adult learning programs.	3.1.1 Through the implementation of the ESLP, increase or strengthen partnerships between land managers, schools, and environmental education programs. 3.1.2 Encourage community members to access local green space with their families or programs.
3.2 More public access to resources about environmental literacy; more public engagement in environmental action.	3.2.1 Use the ESLP to communicate with the broader community and provide a state/regional Community Resources website.
3.3 More local collaborations between schools, nonformal, and informal education organizations to support environmental and sustainability education.	3.3.1 Within the ESLP website, highlight local and regional collaborations, link to relevant websites. 3.3.2 Encourage connections between career pathways in STEM and green jobs training and opportunities. 3.3.3 Use the ESLP website or supporting resources to provide guidelines for building school/community partnerships at the district and cross-district levels. This includes suggestions for data and information sharing between community organizations, schools, and individuals, including specific examples or templates. Resources should help schools and community-based organizations explore the following: What are the pathways to partnership? What is the process for evaluating new and existing programs or organizations that want to partner with schools and districts? How can schools take a lead role in forming and formalizing these partnerships? 3.3.4 Raise awareness of supportive organizations, such as Dispute Resolution Centers, who can facilitate local collaborations between groups that have previously experienced conflict. 3.3.5 Support E3 Washington in their provision of resources and tools that incentivize collaborations among diverse stakeholders (informal educators, agencies, etc.) at the regional level and as a forum for environmental education professional development activities, knowledge, and resource sharing, creating integrated learning pathways, and responding to regional goals. 3.3.6 Support development of regional program directories based on local needs along with a regional coordinator to provide guidance to teachers and educators on program

Outcomes	Strategies
	selection and evaluation. 3.3.7 Support local, regional, or statewide Discussion Forums, such as the Environmental Issues Forums offered by the Kettering Institute. 3.3.8 Offer trainings in the Guidelines for Excellence: Environmental Education Programs for community-based/informal environmental education programs to support the implementation of best practices in partner programs.
3.4 Bring attention to environmental issues and community assets to encourage holistic health.	3.4.1 Within the ESLP and through partner organizations, encourage more gardens, local food, and local agriculture use, such as through Farm to School. Build a framework for interdisciplinary content and standards-based connections to school gardens/local foods, including Since Time Immemorial/First Foods. 3.4.2 Develop a framework for evaluating program distribution across schools and districts to identify assets, address gaps and increase equity. Share data with community partners to inform and stimulate program development. Use community asset mapping as a tool to achieve this strategy. 3.4.3 Encourage data sharing between schools and community partners to aid individual program development, curriculum alignment, coordinating learning pathways, equitable program distribution, and addressing inequities.
3.5 Increase awareness and understanding of Justice, Equity, Diversity, and Inclusion in Environmental Education.	3.5.1 Encourage partnerships with organizations that can provide guidance on reaching underserved communities. 3.5.2 Develop or disseminate family inclusion resources. 3.5.3 Encourage ESE organizations to partner with organizations already working with historically underserved populations.
3.6 Environmental and sustainability education is embedded in lifelong learning and community partnership opportunities.	3.6.1 Communicate the health and well-being benefits of ESE to partner organizations.

Table 5: Goal 3 Strategies and Outcomes

GOAL 4: ENVIRONMENTAL AND SUSTAINABILITY IMPLEMENTATION AND FUNDING

Design systems, attain funding, track progress, and adapt strategies to successfully implement the Washington State Environmental and Sustainability Literacy Plan.

The Washington State Environmental and Sustainability Literacy Plan was created in 2011 with detailed strategies for implementation of each of its intended outcomes by 2021. Without funding for the plan's implementation, many of the strategies were not fully contextualized for communities or tied to existing programs. The need for the residents of Washington to understand sustainability and our environment has grown greater with each passing year. It is imperative that we facilitate community members' development of the skills and knowledge required to solve or mitigate the problems our communities, state, tribal nations, country, and world are grappling with.

Funding is required to make all of this happen, including for a full-time Environmental and Sustainability Education Program Supervisor. This position is needed to supervise the implementation and assessment of each of the Literacy Plan's goals. Successful implementation requires cooperative engagement among the many partners involved in education, including OSPI and other state agencies, tribes, E3 Washington and other community-based organizations, Educational Service Districts, school districts, schools, colleges, universities, communities, and business partners. The position is also critical to forming and supporting an Environmental and Sustainability Literacy Plan Advisory Council.

The Environmental and Sustainability Literacy Plan Advisory Council will provide guidance and support to the Environmental and Sustainability Education Program Supervisor to ensure successful implementation of the Plan. The Advisory Council will establish and maintain systems to track each goal and develop a funding plan to implement the strategies. In addition, the Advisory Council will help ensure the strategies evolve to meet the challenges of changing conditions and propose adjustments to meet lessons learned as the plan is implemented through solid core content instruction.

The Environmental and Sustainability Literacy Plan cannot be sustained without the support of committed partners who understand its purpose and how it can make a difference in providing environmental literacy to the citizens of the state. Washington residents are more committed to a healthy and sustainable environment now than at any point in history and do not necessarily know how the Literacy Plan serves that commitment.

While the long-term goals of this Plan are shared by many organizations and governmental agencies, some may not realize how their missions align with those of the Plan. To this end, outreach efforts will need to include community partners, including tribes, legislators, school districts, educators, environmental organizations, and others who support learning in the community. The chart in Figure 1 below, provides an overview of leadership roles for funding and implementation.

To make all this happen will require funding. This includes money from the legislature, private foundations, and appropriate state and federal agencies. Funding will support efforts by OSPI and its partners to bring the goals of the plan to fruition. The funding plan will include processes to identify and apply for grants from public and private sources as well as sources of matching funds. Grants alone will not provide a sustainable approach to plan implementation.

Our state, tribes, the United States of America, and our world face fundamental challenges in the years ahead, and we need a public that can understand, solve, and adapt to those challenges. As a state, we have a responsibility to ensure our students and our citizens can thrive in a healthy environment that is resilient and adaptable. An Environmental and Sustainability Education Program Supervisor, an Advisory Committee, funding, and committed stakeholders are fundamental to implementation. However, the work requires all of us working together to make our environment, communities, and ourselves resilient in this time of change. Together, we can do this.

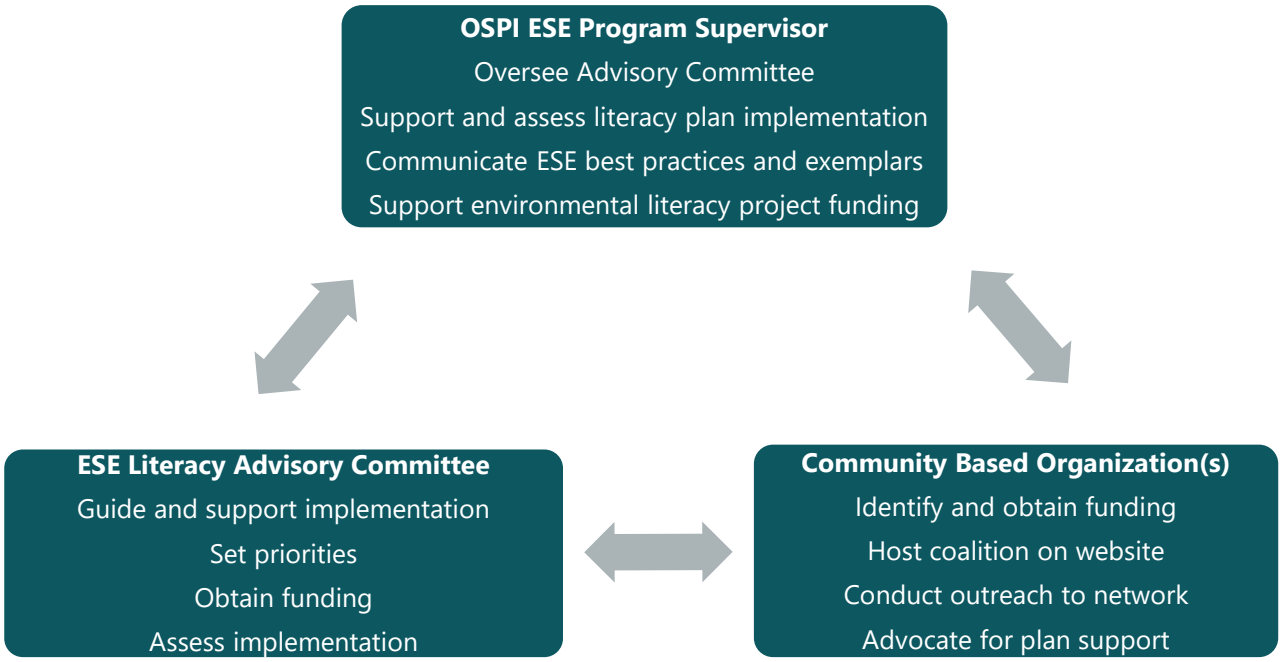

Figure 9: Leadership roles for funding and implementation.

Strategies and Outcomes for Implementation of Goal 4

Outcomes	Strategies
4.1 The Literacy Plan is supported, monitored, and updated. A. OSPI's Environmental and Sustainability Education (ESE) Program Supervisor supports and coordinates the Literacy Plan Implementation.	4.1.1 Ongoing funding for a full-time ESE Program Supervisor position at OSPI. 4.1.2 A Statewide ESE Literacy Advisory Committee is established and meets quarterly to advise on and support the implementation of the plan. Regional representation from a variety of organizations including Schools and/or Districts, Colleges of Education, Tribal Nations, Conservation Districts, State Agencies (e.g., Department of Natural Resources, Recreation and Conservation Office, Department of Fish and Wildlife, Department of Ecology, Department of Children, Youth, and Families, Department of Commerce, Department of Health, and Department of Commerce), ESE focused organizations (e.g., E3 Washington), and business/industry. 4.1.3 Systems are established and maintained to track and monitor each goal, strategy, and outcome in the literacy plan. 4.1.4 Entire plan is updated every five years.
4.2 The outcomes of the Literacy Plan are monitored, evaluated, and revised for the greatest impact.	4.2.1 Conduct and evaluate initial and recurring biennial surveys to determine a baseline and assess progress on implementation. A. Potential survey target audiences include public school teachers and administrators to determine ESE literacy awareness and implementation of ESE Standards, and obstacles to the implementation of standards; Students: ESE Literacy; and Public: ESE Literacy. 4.2.2 Reach out to other state organizations responsible for implementing their state environmental literacy plans, and use other states' literacy plans as a resource, including implementation, assessment, and outreach. 4.2.3 Based on evaluation and progress, Advisory Committee makes ongoing revisions and recommendations for further implementation.
4.3 Funding is secured for the implementation of the ESLP.	4.3.1 Develop a fiscal plan to meet the budgetary needs for each goal.

Outcomes	Strategies
	4.3.2 Secure funding for regional coordinators to support professional development and community engagement. 4.3.3 Ongoing identification of funding opportunities, including timelines for submission. 4.3.4 Consult with funders once per year to provide input to the financial plan and to help secure funds. 4.3.5 Apply for grants and other funding sources.
4.4 Funding is provided to entities to support the implementation of the ESLP.	4.4.1 Ongoing updates of funding opportunities on state and regional websites. 4.4.2 Convene local, regional, state, and tribal agency grant providers whose goals overlap with the ESE literacy plan to: Build understanding of the ESE literacy plan and consider opportunities to include it in their guidelines; identify who is and who is not being served; and coordinate equitable distribution of resources. 4.4.3 Establish and manage a grant program focused on equitable, regional fund distribution to meet unmet needs.
4.5 Broad communication strategies are developed and implemented	4.5.1 OSPI and partners develop educator, school, and district profiles to highlight the best environmental and sustainability practices.
4.6 A comprehensive and diverse array of community members, leaders, and collaborators support the implementation of the ESLP.	4.6.1 Outreach efforts to increase understanding of the ESE Literacy Plan and its importance to our state. Efforts target: Legislators, Educational Service Districts, School Boards and Principals, Educators, Environmental Organizations, Informal Education Organizations, and Students. 4.6.2 Develop a communications plan to support outreach efforts.

GLOSSARY

Adult Learning: Any learning, formal or informal, that occurs beyond high school or the age of 18.

Critical Thinking: Analysis or consideration based on careful examination of information or evidence. Critical thinking relies on thoughtful questioning and logical thinking skills such as inductive and deductive reasoning.

Early Learning: From birth through grade 3.

Educational and Racial Equity: Providing equitable access to opportunities, resources, and support for every child by intentionally recognizing and eliminating historical barriers, as well as the predictability of personal and academic success based on race, background, and/or circumstance.[47]

Environmental and Sustainability Education (ESE) Pathway: A learning pathway for students provides classroom and community-related instruction in each grade level for every student. Instruction should build on previous learning opportunities related to environmental and sustainability education and should provide career-connected learning in environmental and sustainability-related career opportunities.

Environmental Education: "A process that enables people to acquire knowledge, skills, and positive environmental experiences in order to analyze issues, assess benefits and risks, make informed decisions, and take responsible actions to achieve and sustain environmental quality."[48]

"A process that allows individuals to explore environmental issues, engage in problem-solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions… Environmental education does not advocate only one viewpoint or course of action. Rather, environmental education teaches individuals how to weigh various sides of an issue through critical thinking and it enhances their own problem-solving and decision-making skills."[49]

Environmental Issue: "Related to, but distinguished from, an environmental problem. An environmental issue reflects the presence of differing perspectives on possible solutions to an environmental problem."[50]

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[47] Seattle Public Schools. Racial Equity Analysis Tool. (ND). Accessed online on January 4, 2021 at Racial Equity Analysis Tool (seattleschools.org).

[48] North American Association of Environmental Education (2009). *Guidelines for Excellence in Environmental Education: Programs.*

[49] US Environmental Protection Agency, accessed online on September 2 at https://www.epa.gov/education/what-environmental-education.

[50] *Guidelines for Excellence: Environmental Education Programs.* 2009.

Environmental Justice: "…the pursuit of equal justice and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, and/or socioeconomic status."[51]

Environmental Literacy: The individual and collective understanding, skills, cultural awareness, motivation, and practice of environmental stewardship resulting in responsible decisions that consider relationships to our planet Earth's communities and future generations, with an emphasis on understanding impacts on historically marginalized populations and nations.

Environmental Problem: An environmental problem is a specific example of existing or potential environmental degradation, destruction, pollution, etc.

Informal Education: Informal Environmental Education refers to learning opportunities occurring outside of the classroom or standardized school curriculum, taking place in a variety of settings, such as parks, nature centers, museums, or on farms, and at any time. In contrast, Formal Education is provided by credentialed teachers during the school day. While community partners and informal educators play a broad role in providing education opportunities to learners of all ages outside of the school day, there are an increasing number of programs offered during the school day, both inside and outside of formal settings. These programs require collaboration and coordination between schools and community partners but may or may not be aligned with formal teaching standards.

Learning Sciences: To apply evidence-based research in learning to create effective instruction and educational technologies within formal and informal settings).[52]

Learning Standard: A clear and specific statement of what a learner should know or should be able to achieve.

Next Generation Science Standards (NGSS): The NGSS were authored by a consortium of 26 states and were adopted in Washington in 2013. The standards state the expectations for what students should know and be able to do as scientists and engineers.

Nonformal Environmental Education: Education about the environment that takes place at nonformal settings such as parks, zoos, nature centers, community centers, youth camps, etc., rather than in a classroom or school. Any organized educational activity about the environment that takes place outside the formal education system. (The term is frequently used interchangeably with informal environmental education.)[53]

Sustainability: Practices and principles that ensure the needs of the present are met without compromising the ability of future generations to meet their needs.[54]

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[51] University of Michigan Environmental Justice Information Page: www-personal.umich.edu/~jrajzer/nre/

[52] Accessed online from Carnegie Mellon University. (2022). https://www.hcii.cmu.edu/masters-educational-technology-and-applied-learning-science-program-overview.

[53] North American Association for Environmental Education. *Guidelines for Excellence: Environmental Education Programs*. 2009.

[54] World Commission on Environment and Development. (1986). Our Common Future. Accessed on August 17, 2021 at https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf.

US Department of Education Green Ribbon School (US-GRS): States participate in this free program that recognizes schools and districts for demonstrating progress toward the three pillars of 1) reduced environmental impact and cost, 2) improved health and wellness, and 3) integrated environmental and sustainability education.

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- Abby Ruskey, Climate Literacy and Policy Specialist
- Aide Villalobos, Evergreen Elementary/Shelton School District
- Aliza Yair, Early Childhood/Department of Children, Youth, and Families
- Benjamin Greene, Tandem Impact
- Brad Street, IslandWood
- Dana Bowers, Stevens County Conservation District
- Dawn Cope, Assessment, OSPI
- Debbie Ellefson, Richland School District
- Dennis Wallace, Career and Technical Education, OSPI
- Hattie Osborne, Pacific Education Institute
- Jacob Parikh, Assessment, OSPI
- Jennifer Coleman, Wilson Middle School, Yakima School District
- Jerry Price, Social Studies, OSPI
- Jodi Crimmins, Oak Harbor Public Schools
- Kathryn Baldwin, Eastern Washington University
- Kathryn Kurtz, Pacific Education Institute
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- Stacy Meyer, ESD 114
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2020 Feedback
Advisory Committee Members and 108 participants of the 2020 Informal Science Educator Workshops (4 meetings held virtually and co-hosted between ESDs and OSPI) across Washington.

2021 Feedback
Kimberley Astle
Jackie-Lyn Olson
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Becky Bronstein
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Rochelle Gandour-Rood
Stephanie Bishop
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Roberta McFarland
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Indigo Brown, OSPI

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Brian MacNevin, ESD 189
Jeff Ryan, ESD 114
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Kathe Taylor, former Assistant Superintendent of OSPI Learning and Teaching
OSPI Office of Native Education
OSPI Science and Science Assessment Team
OSPI Office of Career and Technical Education
E3 Washington
North American Association for Environmental Education
National Project for Excellence in Environmental Education

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Photo Attribution

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Girl in stream (pg. 37): Photo by Kelly Sikkema on Unsplash
Summit (pg. 41): Photo by Joseph Chan on Unsplash

VERSION HISTORY

Environmental and Sustainability Literacy Plan, Version One (2011), is available on the OSPI Environmental and Sustainability Literacy Plan webpage.

- The timeline is updated to include important milestones, including the contribution of Native American/Alaska Indian Tribal nations to environmental sustainability education Since Time Immemorial.
- The introduction includes a new research summary of the benefits of environmental and sustainability education.
- Version One includes relevant supplementary material, including additional background information and Theory of Change models that are still relevant to implementation.
- In Version One, there are six overarching goals. This version collapses the original six into four goals. The graduation requirement goal is removed, and K–12 learning absorbs the goal tied to assessment, as the focus of the plan shifts to emphasize formative assessment and integrated instruction.
- Many strategies from the goals were merged or marked as completed and removed from the strategies listed with this revised goal set. New strategies were added.
- A glossary is added.
- A new section, *Relevant Laws, Statutes, and Provisos* is added as an appendix.
- The *Guidelines for Excellence in Environmental Education* are added as an appendix.

LEGAL NOTICE

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