



Oregon Environmental Literacy Plan: Toward a Sustainable Future

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Prepared by the Oregon Environmental Literacy Task Force created through the No Oregon Child Left Inside Act (HB 2544)

Layout and Design by Erin Putnam, The Freshwater Trust



Overview

"[T]he 'No Oregon Child Left Inside Act' will provide our youth with classroom instruction about our vital natural resources and an opportunity to conduct field investigations in an outdoor learning setting. This experience is fundamental to our children and will help them develop a sense of stewardship towards Oregon's environment and help them make informed decisions about our natural resources in the future . . ."

— Governor Ted Kulongoski, on signing HB 2544 into law (July 22, 2009)

INTRODUCTION

The earliest known evidence of people living in Oregon shows that a strong relationship with natural resources has always defined the Oregon way of life. From Douglas fir trees to Chinook salmon, our landscapes, wildlife, coast and waterways have inspired our stories, our livelihood and our legacy. Oregon's natural resources are the foundation of our state's economy, and they have created a dynamic heritage that we must protect and sustain for coming generations.

Oregon is a world leader in cutting-edge environmental practices. States and countries across the globe look to Oregon for leadership and expertise in developing green and sustainable communities. As we strive to further understand the interrelationship between our environment, society and economy, it is imperative that we consider the role of the next generation.

As a measure of commitment to protecting our heritage for years to come, the State of Oregon passed legislation creating an environmental literacy plan (HB 2544) to ensure that Oregon students become lifelong stewards of their environment and community; are willing and able to exercise the rights and responsibilities of environmental citizenship; choose to interact frequently with the outdoor environment; have multifaceted knowledge of our relationship to the environment and its resources; and are prepared to address challenges and make sound decisions for our future.

The Legislative Charge

As required by HB 2544 (see Appendix E for the complete bill), the goals of the Oregon Environmental Literacy Plan (the Plan) are to:

- a. Prepare students to understand and to address the major environmental challenges facing this state and country, including the relationship of the environment to national security, energy sources, climate change, health risks and natural disasters.

- b. Contribute to students establishing a healthy lifestyle by making outdoor experiences part of the regular school curriculum and by creating programs that promote healthy lifestyles through outdoor recreation and sound nutrition.
- c. Give teachers opportunities for enhanced professional development by improving their knowledge of environmental issues and their skill in teaching environmental issues inside and outside the classroom.

The Legislature also directed the Plan to identify:

- a. Relevant academic content standards, content areas, and courses or subjects
- b. The Plan's relationship to Oregon graduation requirements
- c. How the Department of Education will measure students' environmental literacy
- d. Professional development programs that will improve teachers' knowledge of environmental issues and their skill in teaching environmental issues inside and outside the classroom
- e. How the Plan will be implemented, funded and supported
- f. How to encourage educational agencies and public schools to participate in environmental education programs

Last, the Legislature directed the Plan to define the following terms (see Appendix B for definitions):

- Environmental Literacy
- Climate Change
- Healthy Lifestyles





The Plan is specifically directed to state leaders as a roadmap for action that supports statewide efforts toward the development and implementation of environmental literacy programs. It is intended for use by schools and districts, because action at these basic levels of the educational system is essential for the Plan's success. The Plan is also intended to support teachers, nonformal educators, community partners and other interested

parties in developing and implementing locally relevant environmental literacy programs and activities.

The Need for Environmental Literacy

Our population continues to grow, increasing the demand for limited resources. Today, as we strive to understand the interrelationships between our environment, society and economy, we face major sustainability challenges that students must be prepared to understand and address.

Unfortunately, preparing Oregon's children to protect this valuable legacy, and to understand their relationship to it, is complicated by the fact that so many of them are utterly disconnected from the natural environment. Our education system often fails to provide them with the knowledge, skills, perspectives and values needed to consider whole systems, develop a sense of place, and fulfill their responsibility to our shared resources (the commons) and to each other.

Benefits of an Oregon Environmental Literacy Plan (adapted from NAAEE, 2008)

In addition to providing the knowledge and skills necessary for addressing complex environmental issues, education for environmental literacy also improves students' academic achievement.

Quantitative and qualitative studies highlight the immense benefits of an integrative environmental education framework. In one study, 92 percent of comparisons showed that students taught within an environmental framework "academically outperform their peers in traditional programs."

Additional evidence from the same study of 40 schools indicated that students taught within an environment-based context learn more effectively than those taught within a traditional educational framework.



Observed benefits include:

- Better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies
- Fewer discipline and classroom management problems
- Increased engagement in and enthusiasm for learning
- Greater pride in and ownership of accomplishments

Education for environmental literacy is essential for enhancing student learning and for developing students' problem-solving skills. It also cultivates responsible and engaged citizenship by preparing students to address the challenges and opportunities they will face throughout their lives.

Additionally, studies show that outdoor learning during the school day is critical to the intellectual, emotional, and physical health of students, and that providing students with quality opportunities to directly experience the natural world can improve their academic performance, self-esteem, health, personal responsibility, community involvement, and understanding of nature.

Development of the Oregon Environmental Literacy Plan

Development of this Plan was a comprehensive process that involved many diverse stakeholders and interests. As required by the legislation, the Governor appointed an 11-member Oregon Environmental Literacy Plan Task Force, which included members of the Oregon Department of Education; Oregon University System; Oregon Departments of Environmental Quality, Fish and Wildlife, State Lands, State Marine Board, Parks and Recreation, Forestry, and Agriculture; The Freshwater Trust; The Environmental Education Association of Oregon; and Metro Regional Government.

The task force met regularly from January to September 2010. At various times throughout this process, small working groups formed to accomplish specific tasks related to the development of the Plan (see Appendix A for a complete list of participants).

The task force created the following definition for environmental literacy:

"An individual's understanding, skills and motivation to make responsible decisions that consider his or her relationships to natural systems, communities and future generations."

Here is our vision of Oregon in the year 2030, after the Plan has been supported and implemented for 20 years:

Oregonians lead healthy lifestyles, enjoying frequent interaction with the outdoor environment. Oregon's vibrant and comprehensive education system leads us to develop a sense of wonder and curiosity about our natural world. We understand the interconnections between community, economy and environment; we can examine issues from multiple perspectives; and we are willing and able to exercise the rights and responsibilities of an environmentally literate citizenry.

The vision statement and definition guided the development of the following Plan components.

ENVIRONMENTAL LITERACY STRANDS AND GRADUATION REQUIREMENTS

To be effective, education for environmental literacy must be integrated throughout the curriculum of every Oregon classroom, providing connected and sustained opportunities for all students to participate in outdoor learning experiences. To facilitate this process, the following Environmental Literacy Strands articulate a comprehensive framework for learning content and skills. Upon graduation from 12th grade, environmentally literate students will demonstrate proficiency in each of these five areas, along with evidence that they acquired these proficiencies outdoors.

Aligning these strands with Oregon Academic Standards is a recommended next step. Once the strands and standards are aligned, it will be possible to identify areas where the learning content for cultivating environmentally literate citizens is supported. With this goal in mind, we have used language in the Environmental Literacy Strands that appears in both state and national standards. We recommend incorporating these strands across all curricular areas and grades in support of Oregon Academic Standards.

The following learning strands are designed to support the cultivation of environmentally literate students by integrating learning experiences inside and outside the classroom.

Summary of Environmental Literacy Strands

1) Systems thinking

Students study systems and issues holistically, striving to understand the relationships and interactions between each system's parts. They use the knowledge gained to assess the effects of human choices on economic, ecological and

social systems, and to optimize outcomes for all three systems.

2) Physical, living and human systems

Students understand the characteristics of Earth's physical, living and human systems.

3) Interconnectedness of people and the environment

Students understand the interdependence of humans and the environment, and appreciate the interconnectedness of environmental quality and human well-being.

4) Personal and civic responsibility

Students understand the rights, roles, responsibilities and actions associated with leading or participating in the creation of healthy environments and sustainable communities.

5) Investigate, plan and create a sustainable future

Students apply civic action skills that are essential to healthy, sustainable environments and communities.

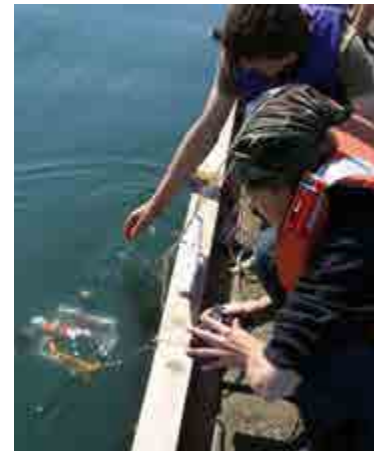
Graduation Requirements (adapted from Oregon Department of Education)

In January 2007, the Oregon State Board of Education voted to adopt new high school graduation requirements that will better prepare each student for success in college, work and citizenship. To earn a diploma, students must complete the credit requirements, show proficiency in essential skills, and meet personalized learning requirements. Students will also have the option of earning credit for proficiency. The phase-in schedule (2007 to 2014) allows students, families, schools and teachers to prepare for these new requirements.

Essential skills are "process skills" that cross academic disciplines and are embedded in the content standards. They are not content-specific and can be applied in a variety of courses, subjects and settings. Proficiency in essential skills could be demonstrated through environmental literacy.

Students are also responsible for Personal Learning. An environmental literacy context should support students in satisfying their personalized learning diploma requirement, in learning beyond the classroom, and in connecting with the adult world.

In adopting the new diploma requirements, the Oregon State Board of Education noted, "A key feature of the future diploma will be wider use of proficiency, ensuring that all students will have the opportunity to choose to earn credit by demonstrating proficiency."



Students may demonstrate proficiency inside the classroom; outside the classroom (where hours of instruction may vary); by documenting prior learning; by appropriate examination; or through any combination of the above. Thus, Credit for Proficiency is well suited to support education for environmental literacy as a vehicle for student pursuit of the Oregon diploma.

Essential skills, Personal Learning, and Credit for Proficiency are flexible options for aligning existing graduation requirements with the Plan. Examples of requirements that can be met and assessed through environmental literacy activities should be further developed and disseminated. In developing examples, priority for skills and activities should be given to Environmental Literacy Strand components that are not satisfied by current Oregon Academic Standards. Also, a new graduation requirement for environmental literacy should be considered, following the example of Maryland's proposed plan (Robelen, 2010). Last, we recommend that graduation requirements include outdoor experiences.



PROFESSIONAL DEVELOPMENT

Schools play a critical role in the preparation of environmentally literate students. Teachers, in particular, have a responsibility to guide learning experiences that lead to good environmental citizenship. Although many individual teachers, as well as entire schools and districts, have integrated environmental literacy into their curricula, more needs to be done if we are to achieve our ultimate goal of an environmentally literate citizenry.

Designing and implementing an effective environmental literacy program requires a unique set of understandings and skills, as well as adequate support services. To be successful, teachers need access to professional development opportunities that facilitate the development and delivery of comprehensive and cohesive environmental literacy experiences, both in and outside the classroom. Teachers must be skilled and supportive in satisfying educational requirements by taking students outside to participate in applied learning. Thus, professional development opportunities should improve teachers' content knowledge in environmental science and related subjects; their skill in teaching about environmental issues; and their field-based pedagogical skills.

Although environmental literacy lessons should ideally be held outside, they can feasibly occur wherever a classroom has appropriate access, including within the confines of the school (e.g., conducting energy, waste management, water and food audits); in the local community



(e.g., beach, state park or forest, farm, city hall, wastewater treatment plant, recycling center); around the state (exploring neighboring biomes); and beyond Oregon. Environmental literacy content should be integrated into core subject instruction to provide students with applied learning opportunities.

The creation of an effective professional development plan for environmental literacy is predicated on a series of interrelated considerations (summarized below; details appear in Chapter 4). With each of the following points in mind, a comprehensive environmental literacy professional development program can be designed and implemented.

Guiding Principles of Environmental Literacy Professional Development

Professional development for environmental literacy is built on a core of guiding principles that inform its approach to education. To support a systematic approach to environmental literacy, professional development should be designed to meet the needs of all administrators, teachers and support personnel.

Support Systems for Environmental Literacy Programming

We recommend various support systems to facilitate teachers' professional development in environmental literacy, including policy; school-community partnerships; communities of practice; curricular and material support systems; involvement of school facilities and operations; training of all administrators and school/district staff; and funding.

Best Practices for Environmental Literacy Instruction

Best practices for teaching environmental literacy—with an emphasis on going beyond the classroom walls—overlap with best practices for many other curricular areas. The primary difference is their focus on the environment and sustainability.

Educator Competencies for Environmental Literacy

Educators must be able to plan and implement high-quality, developmentally appropriate programs that foster environmental literacy learning for all students. Effective educators have the understanding and skills associated with environmental literacy and instruction. They are willing and able to implement research-based environmental literacy programs that improve the learning of all students. Environmental literacy educators must possess competencies in Environmental Literacy; Planning and

Implementing Instruction for Environmental Literacy; Fostering Learning; Assessment; and Professional Responsibilities.

Key Characteristics of Professional Development

Providers of professional development programs support teachers by providing the following in their trainings:

- Content information and process skills
- Developmentally appropriate lessons
- Engaging hands-on activities
- Tools and techniques to engage students in outdoor learning
- Inquiry-based learning
- State standards, essential skills and diploma requirements
- Encouraging the discovery of “sense of self,” and teaching about connecting with the individual
- Community partnerships

ASSESSMENT OF ENVIRONMENTAL LITERACY

The ultimate goal of the Plan is to improve the environmental literacy of all Oregon students. To determine whether this is happening, we need to assess changes in student environmental literacy over time, while striving toward continual improvement. Assessments should be based on the definition of environmental literacy in this Plan, student mastery of the five Environmental Literacy Strands, and the relative impact of outdoor experiences on these outcomes (see Chapter 5 for details). To maximize the efficiency and sustainability of our efforts, assessments should also align with existing assessment tools, structures, systems and survey instruments wherever possible. The assessment process should be collaborative, transparent, and clearly communicated to all stakeholders.

Environmental literacy assessment should:

- Measure the knowledge, skills and motivation of students to make responsible decisions by considering their relationships to natural systems, communities and future generations.
- Integrate environmental literacy assessment with existing tools and systems to ensure the efficiency and sustainability of measurement while enhancing existing structures.
- Determine the impact of outdoor experiences on student learning.



ENVIRONMENTAL LITERACY PLAN IMPLEMENTATION

Although some aspects of this Plan are already being implemented throughout our state, the following steps will ensure a more strategic and unified approach to integrating the Plan into Oregon schools.

Stakeholder Engagement

Implementing this Plan will involve all aspects of the K-12 system. A wide variety of stakeholders should be engaged with each aspect of Plan implementation. If support and integration are missing at any level, the effort will not reach its potential and will most likely be short-lived. (See Chapter 6 for a detailed listing and recommended timeline of implementation components.)

Statewide Infrastructure to Educate for Environmental Literacy in Oregon

Creating a sound infrastructure will support the implementation of the Plan across Oregon. The following activities are recommended to ensure sound, sustainable Plan implementation:

Oregon Environmental Literacy Council

Establish an Oregon Environmental Literacy Council that will further refine this plan and coordinate its implementation. The Council will be responsible for encouraging educational agencies and public schools to participate in environmental education programs. Council activities will also include establishing a statewide Plan Coordinator; creating Regional Coordinator positions; identifying and defining roles for each level of the school system; providing outreach to all school-system levels; and conducting an inventory of current efforts.

Professional development

Explore and refine activities related to environmental literacy professional development, including conducting an inventory of current



professional development efforts that provide outdoor learning opportunities inside and outside school settings; establishing competencies, characteristics and best practices for quality professional development; creating and implementing strategies to fill statewide professional development gaps; exploring ways to assess the effectiveness of professional development; and considering the creation of endorsements or certification programs.

Resources

Identify, develop or refine digital libraries and portals to host environmental literacy resources—including outdoor learning sites—so that they are easily accessible statewide.

Regional hubs

Support the development of regional hubs that facilitate local integration of the Plan. Create a template for regional hub development, and support regional coordinators in establishing hubs and conducting needs assessments.

Coordination with state initiatives

Coordinate Plan implementation with the Oregon Green Jobs Growth Plan and other state initiatives.

Environmental Literacy Strands

Align the Environmental Literacy Strands with Oregon Academic Standards and diploma requirements. Identify opportunities and create a plan to fill gaps.

Pre-service teacher preparation

Evaluate environmental literacy content in state teacher-preparation programs. Develop and implement a strategy to prepare pre-service teachers.

Assessment

Explore existing assessments and scoring guides to determine whether environmental literacy can be measured within the existing assessments. Develop examples of how graduation requirements might be satisfied through an environmental literacy activity. Create new assessments as needed. Develop and implement a detailed prescription for assessing the environmental literacy of Oregon students.



Schools and School District-Based Activities

Planning for implementation at both the school and district level will ensure long-term sustainability of Plan components.

The following activities at the school and district level are recommended.

Professional development

Conduct school/district needs assessments to identify education for Environmental Literacy Strands and delivery practices that are not currently supported by professional development. Develop and implement a plan to fill the gaps.

Support services

Provide planning support and release/substitute time for teachers; create an implementation strategy that prioritizes building a community of practice in state schools and districts; and support teacher-to-teacher mentoring opportunities.

School facilities

Take steps to make facilities sustainable and to support education for environmental literacy.

Assessment

Develop strategies for promoting staff expertise in measuring environmental literacy.

Funding to Implement the Oregon Environmental Literacy Plan

Funding is essential to successful integration of the Plan. We recommend the following actions:

Funding development

Secure funding to support a statewide coordinator and regional coordinator positions. Identify local, state and national funding sources for Plan implementation.

Funds management

Create a fund management/advisory team. Create regional budgets based on needs assessments for implementing the Plan. Identify an entity to hold funds and manage grant administration.

Grants

Establish a grant program focused on equitable regional distribution of funds. Grant administration should focus on accountability, fiscal responsibility, and reporting.

Chapter 1: Introduction

The earliest known evidence of people living in Oregon shows that a strong relationship with natural resources has always defined the Oregon way of life. From Douglas fir trees to Chinook salmon, our landscapes, wildlife, coast and waterways have inspired our stories, our livelihood and our legacy. Oregon's natural resources are the foundation of our state's economy, and they have created a dynamic heritage that we must protect and sustain for coming generations.

Oregon is a world leader in cutting-edge environmental practices. States and countries across the globe look to Oregon for leadership and expertise in developing green and sustainable communities. As we strive to further understand the interrelationship between our environment, society and economy, it is imperative that we consider the role of the next generation.

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The Legislature also directed the Plan to identify:

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- How the Plan will be implemented, funded and supported.
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Last, the Legislature directed the Plan to define the following terms (see Appendix B for definitions):

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- Climate Change
- Healthy Lifestyles

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The Need for Environmental Literacy

Oregon's natural resources and related industries support 37 percent* of our economy. Approximately 550,000 Oregonians work in natural resource-related fields or in jobs supported by those industries, which comprise one-third of the state's employment.

** Combined analysis performed by the Oregon Department of Agriculture.*



From the beach bill to statewide land use planning to the Oregon Plan for Salmon and Watersheds, Oregon has taken critical steps to protect our vibrant heritage. Recreation and tourism provide employment to thousands of state residents and have allowed millions to enjoy Oregon's natural beauty, thereby supporting their mental and physical well-being. Sustaining ecosystem health is necessary to maintain fresh water and air, and to support our agricultural, forests, and fisheries sectors.

Our population continues to grow, increasing the demand for limited resources. Today, as we strive to understand the interrelationships between our environment, society and economy, we face major sustainability challenges that students must be prepared to understand and to address.

All Oregonians need to be equipped to:

- Ensure that the air remains safe and clean to breathe.
- Ensure that our water is abundant, clean and safe for drinking; growing and processing food; and recreation.
- Meet energy needs and explore the use of renewable and sustainable methods.
- Protect working farms and forests.
- Restore and protect the health of watersheds and oceans, and provide high-quality habitat for fish and wildlife.
- Identify and plan for natural hazards.
- Offer diverse recreational opportunities for all Oregonians and visitors to our beautiful state.

Unfortunately, preparing Oregon's children to protect this valuable legacy, and to understand their relationship to it, is complicated by the fact that so many of them are utterly disconnected from the natural environment. Our education system often fails to provide them with the knowledge, skills, perspectives and values needed to consider whole systems, develop a sense of place, and fulfill their responsibility to our shared resources (the commons) and to each other.

A recent Kaiser Family Foundation study reports that on a typical day, 8- to 18-year-olds in the United States spend nearly eight hours consuming electronic media (Kaiser Family Foundation, 2010). An earlier report found that the number of children ages 9 to 12 engaging in outdoor activities such as hiking, walking, fishing, beach play, and gardening had declined by 50 percent (Hofferth, 2008). Further, children in the United States are spending less time playing outside than at any previous time in our nation's history (Clemens, 2004). As a result, they are



losing a direct relationship to the natural world and its resources.

Benefits of a State Environmental Literacy Plan (adapted from NAAEE, 2008)

In addition to providing the knowledge and skills necessary for addressing complex environmental issues, education for environmental literacy also improves students' academic achievement. An education that promotes environmental literacy, and involves students in important current issues, tends to engage students more deeply, leading to improved academic performance.

Quantitative and qualitative studies highlight the immense benefits of an integrative environmental education framework. In one study, 92 percent of comparisons showed that students taught within an environmental framework "academically outperform their peers in traditional programs."

Additional evidence from the same study of 40 schools indicated that students taught within an environment-based context learn more effectively than those taught within a traditional educational framework. Observed benefits include:

- Better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies
- Fewer discipline and classroom management problems
- Increased engagement in and enthusiasm for learning
- Greater pride in and ownership of accomplishments

Education for environmental literacy is essential for enhancing student learning and for developing students' problem-solving skills. It also cultivates responsible and engaged citizenship by preparing students to address the challenges and opportunities they will face throughout their lives.

Additionally, studies show that outdoor learning during the school day is critical to the intellectual, emotional, and physical health of students, and that providing students with quality opportunities to directly experience the natural world can improve their academic performance, self-esteem, health, personal responsibility, community involvement, and understanding of nature.

As a leader in the green economy, Oregon is currently developing the Oregon Green Jobs Growth Plan, which explores the role of our K-12 system in growing this vital sector.

Much of the knowledge and skills necessary for green jobs can and should be developed through education for environmental literacy activities.

A state environmental literacy plan will:

- Provide a framework for school systems to expand and improve their environmental education programs.
- Align education for environmental literacy activities with student graduation requirements and state education goals.
- Ensure that education for environmental literacy is fully, efficiently and appropriately integrated into formal education systems.
- Align professional development opportunities for environmental literacy teachers with student achievement goals in environmental literacy.
- Ensure that all Oregon children have meaningful opportunities to learn in the outdoors as part of the regular school curriculum.
- Maintain consistency, accuracy and excellence in environmental content knowledge.
- Engage underserved communities through an inclusive process, so that all stakeholders benefit from education for environmental literacy in schools.
- Involve nonformal environmental education providers, state natural resource agencies, community organizations, and other partners appropriately and effectively in education for environmental literacy activities.
- Serve as a necessary component of a comprehensive state education for environmental literacy program.
- Honor Oregon's network of schools, organizations and agencies that provide environmental, sustainability and field-based education. All of these educational approaches seek to achieve a greater balance within and between human and nonhuman systems and a sustainable society.

No Oregon Child Left Inside Act

The No Oregon Child Left Inside (NOCLI) legislation began with a broad group of stakeholders. The NOCLI Coalition enjoys support from more than 80 statewide partners representing over 90,000 Oregonians from a broad spectrum of Oregon's natural resource, environmental, and education agencies and organizations.

In June 2009, the Oregon Legislature passed the NOCLI Act (HB 2544 – see Appendix E). This state policy calls for a collaborative process to create the Plan, which addresses the educational, environmental, and natural resource concerns of a broad spectrum of community stakeholders. Oregon is the first state to pass legislation directly related to the development of an environmental literacy plan.

NOCLI has support from the Oregon Department of Education as well as state policy makers. Shortly before NOCLI passed, Susan Castillo, State Superintendent of Public Instruction, said:

"I am very proud of the work our schools do in connecting our students to the world outside their doors through field trips, school gardens, science experiments, and nature walks. Students are learning where their food comes from, seeing science first hand, receiving valuable exercise and gaining the tools to help meet the environmental challenges of the future."

"However, in Oregon, and nationwide, too few of our children have the opportunity to connect their learning to the natural world and their local surroundings. This year, the legislature has the opportunity to help our state reaffirm the education system's commitment to our environment. The No Oregon Child Left Inside legislation (HB 2544) establishes a Task Force to develop an Oregon Environmental Literacy Plan that will ensure that every student will graduate as an environmentally literate citizen. This will also position Oregon to receive pending grant monies under Title II and Title V through federal No Child Left Inside legislation. Oregon students will receive all of these benefits without creating new educational mandates or taking existing funding away from current educational programs and efforts."

On July 22, 2009, Oregon Governor Ted Kulongoski signed the NOCLI Bill into law, saying:

"[T]he 'No Oregon Child Left Inside Act' will provide our youth with classroom instruction about our vital natural resources and an opportunity to conduct field investigations in an outdoor learning setting. This experience is fundamental to our children and will help them develop a sense of stewardship towards Oregon's environment and help them make informed decisions about our natural resources in the future"

The NOCLI Act calls for a Plan that provides for a K-12 continuum of quality educational opportunities that address environmental challenges; enable students to establish healthy lifestyles; and better prepare teachers to deliver this education inside and outside the classroom. The Plan ensures that Oregon students will graduate as critical thinkers, ecological problem solvers and engaged citizens. It will also ensure that every student connects with nature and understands the impact of human behavior on ecological systems. As future decision makers, they will be better equipped to find innovative and equitable ways to meet the immediate needs of humans while sustaining and protecting essential resources for the future.



Having an environmental literacy plan in place will also position Oregon to be eligible for pending federal funds through No Child Left Inside (NCLI) legislation. The North American Association for Environmental Education (NAAEE) has been a prominent advocate for NCLI. The national NCLI Coalition comprises nearly 1,500 business, health, youth, faith, recreational, environmental, and educational groups that collectively represent more than 47.5 million Americans. The Coalition was formed to alert Congress and the public to the need for our schools to devote more resources and attention to environmental education.

The Coalition is working to support legislation sponsored by Representative John Sarbanes of Maryland and Senator Jack Reed of Rhode Island, which would ensure that every student achieves basic environmental literacy. The NCLI Act would amend the Elementary and Secondary Education Act (No Child Left Behind) to include environmental education for the first time.

This legislation would provide new funding for environmental education, especially to train teachers and to develop rigorous standards and state environmental literacy plans. It also proposes giving states that develop such plans access to additional funds. Due to this federal initiative, Oregon has the potential to earn \$1 million to \$2 million in new funding to support implementation of the Plan.



Development of Oregon's Environmental Literacy Plan

Development of this Plan was a comprehensive process that involved many diverse stakeholders and interests. As required by the legislation, the Governor appointed an 11-member Oregon Environmental Literacy Plan Task Force, which included members of the Oregon Department of Education; Oregon University System; Oregon Departments of Environmental Quality, Fish and Wildlife, State Lands, State Marine Board, Parks and Recreation, Forestry, and Agriculture; The Freshwater Trust; The Environmental Education Association of Oregon; and Metro Regional Government.

The task force met regularly from January to September 2010. At various times throughout this process, small working groups formed to accomplish specific tasks related to the development of the Plan (see Appendix A for a complete list of participants).

A concern for diverse interests, regional inclusiveness, objective instruction, and fairness in implementation guided the development of



the Plan. The task force used a wide variety of resources in preparing this Plan. In particular, *Developing a State Environmental Literacy Plan* (NAAEE, 2008) guided the Plan's basic structure. In addition to Oregon Academic Standards, the following documents were consulted in the development of the Environmental Literacy Strands: *Excellence in Environmental Education Guidelines for Learning* (NAAEE, 2010); *The National Education for Sustainability K-12 Student Learning Standards* (U.S. Partnership for Education for Sustainable Development, 2008); *Agriculture in the Classroom* (United States Department of Agriculture); *Climate Literacy: The Essential Principles of Climate Science* (US Global Change Research Program, 2009); *Ocean Literacy: The Essential Principles of Ocean Science* (National Geographic Society, 2006); and *Education for Sustainability Standards* (The Cloud Institute, 2010).

These resources set a standard for high-quality education for environmental literacy in schools across the country, based on what an environmentally literate person should know and be able to do.

The task force, along with teams of specialists and community members, contributed many hours of their time to fulfill the requirements of HB 2544. The Oregon Community Foundation was generous in their financial support and strategic advice. The Oregon Department of Education provided staffing and meeting space. Work groups comprising educational and environmental specialists and the general public convened to provide feedback that was essential to the success of this report. Time constraints were, however, a factor in developing the Plan. Selection of task force members was not completed until December 2009, significantly limiting the timeline for development.

Recommendations regarding next steps for the task force and the Plan are outlined in following sections of this report (see Chapter 6).

Chapter 2: Environmental Literacy – Vision and Essential Underpinnings

Vision Statement

The task force created a set of vision statements to guide development of the Plan. Here is our vision of Oregon in the year 2030, after the Plan has been supported and implemented for 20 years:

Oregonians lead healthy lifestyles, enjoying frequent interaction with the outdoor environment. Oregon's vibrant and comprehensive education system leads us to develop a sense of wonder and curiosity about our natural world. We understand the interconnections between community, economy and environment; we can examine issues from multiple perspectives; and we are willing and able to exercise the rights and responsibilities of an environmentally literate citizenry.

Our Vision for Students

Students become lifelong stewards of their environment and community. They are willing and able to exercise the rights and responsibilities of environmentally literate citizenship, and choose to interact frequently with the outdoor environment.

Environmentally literate students:

- Treasure outdoor experiences.
- Demonstrate love and respect for nature.
- Participate as active, informed members of their local and global communities.
- Strive to envision the features of a sustainable future.
- Understand the dynamics of systems and change.
- Recognize the need for diversity in all systems.
- Become lifelong applied learners.
- Provide a workforce ready to create a successful and sustainable future.

Our Vision for Schools and Districts

Schools and school districts are a dynamic, responsive and positive learning environment in which all students thrive. They provide students with meaningful opportunities to learn outside the classroom, and they also foster mutually beneficial relationships between the school, the district, the community, students, families, nonformal educators and the environment.

Schools and districts that foster environmentally literate students:

- Regularly use the facility, outdoors, community, and other settings to support learning and encourage active participation.
- Support teachers, administrators and other educators who effectively use creative approaches to teach environmental literacy.

- Provide access to quality curriculum materials, and assist educators in the development of locally relevant materials.
- Integrate lessons between subject areas and from one grade to the next.
- Regularly assess students' environmental literacy.
- Support healthy options for children before, during and after the school day, including nutritious food choices, nonstructured play areas and times, and walking or biking to school.

Our Vision for Communities

Communities collaborate with schools, students and other community members in activities that build, restore and improve the natural and built world around them.

Communities that cultivate environmentally literate students:

- Provide opportunities and settings for children to play and learn outside.
- Understand and promote economically, socially and environmentally sustainable practices.
- Engage educators, volunteers and community partners in education for environmental literacy.
- Provide opportunities and settings for students to use the community as a learning laboratory.
- Maintain an environment that supports sustainable businesses and a qualified, productive and balanced workforce.
- Provide a livable community by promoting civic engagement and a sense of place through safe, sustainable choices for housing, transportation, education and recreation.



Building on these vision statements, the task force defined environmental literacy as:

An individual's understanding, skills and motivation to make responsible decisions that consider his or her relationships to natural systems, communities, and future generations.

Essential Underpinnings of Environmental Literacy

Environmental literacy builds on a foundation of key principles that inform its approach to education (NAAEE, 2010). These important underpinnings include:

Active participation and personal commitment

The learner is an active participant. If learning is to become a natural, valued part of life beyond school, instruction should be guided by the learner's interests and treated as part of a lifelong process of building knowledge and skills. Environmental literacy depends on a personal commitment to applying skills and knowledge in support of environmental health and quality of life. This personal commitment begins with awareness of the world immediately surrounding the learner. Thus, instructors must foster learners' innate curiosity and enthusiasm by consistently providing them with opportunities to explore their environment. Outdoor and community-based teaching strategies are used to engage students in direct discovery of the world around them.

A balanced approach

Because environmental topics can prompt deep feelings and strong opinions, educators must take a balanced approach to instruction. Educators should incorporate differing perspectives and points of view evenhandedly and respectfully, and present information fairly and accurately.



The importance of where you live

Beginning close to home, learners explore, forge connections with, and understand their immediate surroundings. The sensitivity, knowledge and skills needed for this local connection provide a base for moving out into larger systems, investigating broader issues, and expanding understanding of causes, connections and consequences.

Integration and infusion

Disciplines from the natural sciences to the social sciences to the humanities are connected through the medium of the environment and environmental issues. Teaching for environmental literacy offers many opportunities for integration; it works best when infused across the curriculum, instead of being treated as a separate discipline.

Interdependence

Human well-being is inextricably bound with environmental quality. Humans are a part of the natural order. We and the systems we create—our societies, political systems, economies, religions, cultures and technologies—affect the total environment. Because we are within nature, rather than outside it, we have an obligation to recognize the ramifications of our interdependence.

Lifelong learning

Environmental literacy emphasizes critical and creative thinking, decision making and communication, as well as collaborative learning. These skills are essential for active and meaningful learning, both in school and over a lifetime.

Roots in the real world

Learners develop knowledge and skills through direct experience with the environment, environmental issues and society. Investigation, analysis and problem-solving are essential



activities that are most effective when relevant to the real world.

Systems

Systems help us make sense of a large and complex world. A system consists of parts, each of which can be understood separately. The whole, however, is comprehended only by grasping the relationships and interactions of each of these parts. The human body can be understood as a system, and so can individual cells, families, organizations, communities, and galaxies. Further, systems can be nested within other systems.

21st-century skills

Instruction provides opportunities for learners to enhance their capacity for critical thinking; creative thinking; collaboration; communication skills; and effective, responsible action. Engaging in individual and group work helps learners develop these capacities independently and in collaborative situations that anticipate problem-solving processes in the community, on the job, and in the family. A strong emphasis on developing communication skills means that learners will be able both to demonstrate and to apply their knowledge.

In addition, this document is grounded in these principles:

- Education is essential to the development of sustainable communities within a healthy environment that will provide for future generations.
- A healthy environment supports the development of economically viable, sustainable and vibrant communities.
- Oregon youth who are connected to the natural world and to their communities will be our future leaders, and will be capable of protecting our health and livelihood for generations.
- Access to nature promotes social and emotional well-being and cognitive development.

Partnerships

The vast networks of community partnerships that are responsible for enhancing the collective academic experience of our youth are central both to environmental literacy and to successful integration of the Plan in Oregon.

Although the goal of developing a Plan is to ensure the environmental literacy of Oregon graduates, we realize that this end is truly a product of its means. Fostering lifelong environmental literacy among all Oregon graduates requires the participation of a broad network of stakeholders, including students, parents, teachers, school and district



administrators, local agencies, nonprofits, businesses, and the community at large.

School missions across the state identify “citizenship” as a quality to be fostered in all students’ learning experience. Locally based programs, activities and projects offer ideal ways for students and teachers to satisfy educational goals, while also helping local stakeholders to meet ecological and community objectives.

The Plan recognizes and builds on successful programs that not only educate students, but also equip them to address community issues in informed, thoughtful and innovative ways. This ultimately contributes to the community’s long-term health and vitality.

Through the Plan, we seek to create a framework that provides students with opportunities for meaningful experiential learning and academic achievement; offers teachers programs and partners that support state-mandated educational goals; and gives local agencies and groups the opportunity to engage youth in real issues.

Chapter 3: Educational Standards and Graduation Requirements

Learning outdoors and in the community is central to the Oregon Environmental Literacy Plan. To be effective, education for environmental literacy must be integrated throughout the curriculum of every Oregon classroom, providing connected and sustained opportunities for all students to participate in



outdoor learning experiences. To facilitate this process, the following Environmental Literacy Strands articulate a comprehensive framework for learning content and skills. Upon graduation from 12th grade, environmentally literate students will demonstrate proficiency in each of these five areas, along with evidence that they acquired these proficiencies outdoors.

In a companion document, these Environmental Literacy Strands have been aligned with the Oregon Academic Standards, making it possible to identify where the learning content for cultivating environmentally literate citizens is supported.

With this goal in mind, we have used language in the Environmental Literacy Strands that appears in state and national standards. We recommend

incorporating these strands across all curricular areas and grades in support of Oregon Academic Standards.

These strands were developed with input from the task force and working groups. Much of this material was adapted from *Oregon Academic Standards; Excellence in Environmental Education Guidelines for Learning (K-12)* (NAAEE, 2010); and *Education for Sustainability Standards* (Cloud Institute, 2010).

Specific instructional strategies for implementing education for environmental literacy are addressed in Chapter 4: Professional Development.

Summary of Environmental Literacy Strands

The Environmental Literacy Strands are organized into five broad areas:

- 1) Systems thinking
- 2) Physical, living and human systems
- 3) Interconnectedness of people and the environment
- 4) Personal and civic responsibility
- 5) Investigate, plan and create a sustainable future

Note: Systems thinking is purposefully placed as the first strand. With its associated set of habits, concepts, tools and skills, systems thinking is applied throughout environmental literacy

education because it provides a foundation for understanding the whole of a system as well as the interrelationships among parts.

Systems thinking is not limited to any one subject and can be practiced through all curricular areas.

The Partnership for 21st Century Skills calls systems thinking—which it defines as the ability to “analyze how parts of a whole interact with each other to produce overall outcomes in complex systems”—a critical skill for all students.

To learn more, visit http://p21.org/documents/P21_Framework_Definitions.pdf.

The Five Environmental Literacy Strands and their Elements^{8, 19, 20}

1) Systems thinking

Students study systems and issues holistically, striving to understand the relationships and interactions between each system's parts. They use the knowledge gained to assess the effects of human choices on economic, ecological and social systems, and to optimize outcomes for all three systems.

a. System structure. Understand how the complex structure of a system determines its outcome. Describe a system's structure, and model changes to that structure.

- Dynamic systems consist of interdependent parts that change over time and produce outcomes.
- Complex systems are made up of smaller subsystems.
- The relationship between the parts of a system (its structure) determines its outcomes and behaviors.
- Changing the outcomes of a system requires changing its structure.
- Dynamic systems have circular feedback loops (e.g., A affects B; B affects C; and C affects A, beginning the cycle again).

b. Habits of systems thinking. Understand the habits of systems thinking, and identify opportunities to apply them.

- Question and test assumptions.
- Use understanding of system structure to identify possible leverage actions.
- Recognize the impact of time delays on cause-and-effect relationships.
- Recognize the circular nature of complex cause-and-effect relationships.
- Understand that a system's structure generates its behavior.
- Consider how mental models affect current and future reality.
- Consider short- and long-term consequences of actions.
- Consider issues fully, resisting the urge to come to a hasty conclusion.
- Seek new perspectives to increase understanding.
- Check results and change actions as needed (successive approximation).
- Notice how system elements change over time, generating patterns and trends.
- Identify where unintended consequences emerge.
- Seek to understand the big picture.

c. Strategic responsibilities of systems thinking. Apply the habits and techniques of systems thinking to decision-making.

- Envision, design, plan, act, and assess outcomes with the whole system in mind.
- Explain how human action or inaction affects the systems in which we live.
- Recognize that mental models develop gradually from our experiences and surroundings and can therefore limit our perspective.
- Draw on an understanding of mental models when developing action plans.
- Explore system structures to deepen understanding and to plan actions that achieve positive systemic impacts.
- Consider the intentional and unintentional short- and long-term consequences of actions in order to determine whether the rewards are worth the risks, and develop a plan to mitigate risk as much as possible.
- Consider the effects of human choices on economic, ecological and social systems.
- Monitor system outcomes, and make adjustments where necessary to maintain or improve desirable outcomes.
- Ask probing questions when things don't work as planned; reexamine the system's structure and propose changes.

2) Physical, living and human systems

Students understand the characteristics of Earth's physical, living and human systems.

a. Structure, function, interaction and change in physical systems. Explain the dynamic and interconnected nature of Earth's physical systems, including:

- The structure and composition of the atmosphere, geosphere and hydrosphere
- Changes in matter (physical and chemical properties of elements and compounds; the global carbon cycle)
- The properties of energy (e.g., transfer of energy; energy transformation and conservation; the laws of thermodynamics)
- The cycling of matter and energy between system components
- Evidence for geologic, climatic and environmental changes over time
- Climate (Sun-Earth relationships; processes that drive and regulate climate variability; interrelationships of climate and Earth's other physical and living systems)



- The influence of oceans on weather and climate; interrelationships of oceans and Earth's other physical and living systems
- Earth systems' indicators of sustainability

b. Structure, function, interaction and change in living systems. Explain the dynamic and interconnected nature of Earth's living systems, including:

- The structure and function of organisms, populations, communities, ecosystems and biomes
- The principles of ecology, including biodiversity; carrying capacity; habitat sources and sinks; population dynamics; and ecosystem change
- Heredity, evolution, species change, and the process of natural selection



- Matter and energy flow in organisms (i.e., processes by which plants and animals obtain energy and materials for growth and metabolism; biogeochemical cycling)
- The interdependence of plants, animals and the environment, and how adaptation influences survival
- Ecological indicators of sustainability

c. Structure, function and interconnectedness of human systems. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.

- Compare and contrast the structure and function of political systems, including:
 - The organization, responsibilities and interactions of governments at local, state, tribal, national and global levels
 - The roles and activities of political parties, interest groups, and mass media, and their effect on the beliefs

and behaviors of local, state and national constituencies

- Concepts of political power, authority, conflict and conflict management
 - Relationships between government and citizens, including forms of civic participation in local, state, tribal, national and global communities
 - The impact of government functions and processes on societies and citizens, including how different levels of government provide services and protect citizens
 - Concepts of public, private and common good, and how governments define, support and limit each
 - Instances of common interests among nations and global collaboration
- Compare and contrast the structure and function of economic systems, including:
- Allocation of scarce resources through individual choice, market interaction, and public policy; and the cost and benefits of these decisions to individuals and societies
 - Definition of economic terms (e.g., elasticity, substitution, externalities, regulation, legislation) and examples of these terms as they relate to the current economy, with particular attention to the use of natural resources
 - The history, philosophy and patterns of various economic systems and activities, and their effects on equity, prosperity, cultural diversity, and the environment
 - Economic input-output analysis and life cycle analysis of resource use, manufacturing, and end-of-life options for products (i.e., recycling, disposal, remanufacturing)
 - The production, distribution, consumption and disposal of goods, and the effect of these human choices on the sustainability of Earth's natural, economic and social systems
 - The relationship between public and private ownership and the commons, including characteristics of the commons and property
 - Relationships between property ownership, entrepreneurship and economic growth, and how these can be balanced with the common good

- Consumption and consumer choice (e.g., how consumption choices affect the health of places and people, and how the media shape consumption patterns)
 - Economic indicators of sustainability
- Compare and contrast the structure and function of social and cultural systems, including:
- The characteristics of diverse cultures, and how they change over time
 - How experiences and places are interpreted by people with different cultural backgrounds; at different times; or with other frames of reference
 - How different people understand the commons and the types of measures needed to maintain its health
 - How individuals relate to others, including relationships between individual identity, family, society and culture
 - Concepts of responsibility, fairness and equity, especially as they relate to intergenerational relationships, environmental conditions, consumer choice, resource use, and sustainability
 - How individual and societal actions value or devalue the worth and potential of other human beings
 - The influence of individual traits and group affiliations on perception of the environment
 - The effect of individual and group actions on the environment, and how groups can work to promote and balance their interests
 - Shared and conflicting societal values and principles
 - Social indicators of sustainability
- Analyze the social, cultural and economic indicators of sustainability.

3) Interconnectedness of people and the environment

Students understand the interdependence of humans and the environment, and appreciate the interconnectedness of environmental quality and human well-being.

- a. Sense of place, region, nation and global community. Explain “sense of place” as the connection between people and a place, encompassing the interrelationships

between patterns of human settlement; social and cultural relationships; communities and regions; and the natural world.

- Analyze the characteristics of their community and region, including:
- Spatial concepts (location, distance, direction, scale and movement)
 - Natural features, including flora, fauna, climate, and geologic features such as soils and watersheds
 - Distribution and settlement patterns
 - The cultural and economic heritage, and current character, of the community and region, including local food and transportation systems and livelihoods associated with the regional economy
 - Continuity and changes in places over time
 - Physical and human characteristics of places and regions, and their connections and interdependence
 - Why places and regions are important to human identity
- Analyze the interconnectedness of physical and human regional systems and the global community, including:
- Relationships between Earth’s major physical and human features
 - How the human and physical aspects of places and regions relate to development and human identity, and serve as symbols that unify or fragment society
 - How knowledge of one region can be applied to the study of others
 - The interdependence of renewable and nonrenewable resource use at the local, regional, national and global scale
 - The causes of human migration, and its impact on physical and living systems
 - Economic, cultural and environmental factors that influence population changes (including food production capacity, medical advances, and disease control), and the consequences of these changes
 - The roles that self-interest, differing points of view, and the global distribution of natural resources play in territorial conflicts





- Conflicts involving land use, economics, resource competition, political views, boundary disputes, and cultural differences within and between geographic areas

- b. Interrelationships between the environment and human activities. Analyze how environmental changes affect human systems; how human activities and systems change the environment; and the connection between environmental quality and human well-being.
 - Analyze how environmental changes affect political, social, cultural, economic and health systems.
 - Analyze how human activities and systems change Earth's physical systems (e.g., atmosphere, ocean, climate, soil, landforms) and living systems (e.g., ecosystems, biodiversity, carrying capacity).
 - Explain the interrelationships between environmental quality—including air quality; water quality and quantity; biodiversity; climate change; disease vectors; and natural disasters—and human health and well-being, including the ability to produce and access nutritious food, to access shelter, and to achieve and maintain mental and physical health.
 - Describe the human ability to shape and control the environment by developing new knowledge and technologies, including agricultural and food systems; transportation systems; waste management systems; communication systems; energy systems; and habitation systems.
- c. Resource distribution and use. Analyze how resource distribution and use shape our political, economic, physical and social

environments, and how they influence cooperation, competition, territorial conflict, and national security.

- Explore the relationship of the environment to national security, including energy security, food security, and climate change.
- Describe how human cooperation and competition for resources shape our political, economic, physical and social environment.
- Explain human dependence on renewable and nonrenewable natural resources for life, adequate sustenance and quality of life.
- Describe the roles that differing points of view; self-interest; political and economic systems; and global distribution of natural resources play in conflicts over territory.
- Explain how resource competition leads to conflicts between and within geographic areas (e.g., land use, food, water, energy sources, boundary disputes, and human migration).

4) Personal and civic responsibility

Students understand the rights, roles, responsibilities and actions associated with leading or participating in the creation of healthy environments and sustainable communities.

- a. Rights and responsibilities of citizens. Analyze citizens' rights and responsibilities and their importance in making choices locally and globally.
 - Explain the personal, political and economic rights of U.S. citizens.
 - Describe the personal responsibilities of citizens in a community, state and nation.
 - Analyze civic ideals (e.g., freedom, rule of law, equality, responsibility, civic participation, equity, respectful deliberation).
 - Compare and contrast views on individual responsibility to the commons.
 - Explain the importance of civic dispositions, including trust, honesty, patience, self-discipline, respect and open-mindedness.
 - Consider whether civic obligations require individuals to subordinate their interests or desires to the public good.
 - Evaluate how conflicts arise between individual rights and societal interests,

such as a healthy environment and a sustainable community.

b. Sense of personal responsibility.

Identify and describe personal and group responsibility; the effect of human actions on the future; and the importance of fulfilling personal responsibilities by participating thoughtfully and effectively in decision-making.

- Explain the notion of responsibility; identify basic personal responsibilities; and compare their view of their own responsibilities with commonly accepted societal views.
- Evaluate responsibilities in terms of their short- and long-term effects.
- Analyze the effects that they and the groups they belong to (e.g., family or classroom) have on environmental and community sustainability.
- Evaluate the importance of fulfilling personal responsibilities for themselves, as well as for society, the commons, people in other places, and other living beings.
- Develop self-confidence in their effectiveness as citizens (self-efficacy) by understanding:
 - How individual and group action can create beneficial change, meet individual needs, and promote the common good
 - How citizen action and public opinion can influence environmental policy
 - How citizen action has affected environmental quality and sustainability
 - How students of their own age have affected environmental quality and sustainability
 - Ways in which their own actions have made a difference
- Show a willingness to work individually and collectively to resolve issues and to participate thoughtfully and respectfully in decision-making.
- Explain how the decisions of one generation create opportunities for, and impose constraints on, future generations.
- Apply the strategic responsibilities of systems thinking to real-world decision-making (see Strand 1c).



5) Investigate, plan and create a sustainable future

Students apply civic action skills that are essential to healthy, sustainable environments and communities.

- a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views; engage in informed deliberation; and use creativity to make previously unrecognized connections.
 - Form and evaluate personal views:
 - Identify personal mental models about the world, and recognize them as guiding constructs that change in response to new knowledge and applied insight.
 - Articulate multiple sides of an issue, and propose defensible conclusions that address diverse perspectives.
 - Evaluate, communicate and justify personal views.
 - Evaluate personal beliefs and values, using such criteria as personal well-being; equity; social and environmental welfare; economic vitality; and concern for living beings.
 - Consider differing viewpoints, and assess credible information that challenges their positions.
 - Evaluate whether and how differing views should affect their own views.
 - Apply a global perspective to contemporary and historical issues.
 - Evaluate the strength of conclusions by differentiating evidence-based reasoning from reasoning based on incomplete information, opinions, fear, bias, or exaggeration.





→ Engage in informed and respectful deliberation on local, state, tribal, national and global issues:

- Demonstrate knowledge of diverse cultural, linguistic and artistic expressions.
- Communicate and collaborate cross-culturally.
- Work with people who have different perspectives.
- Seek to identify the interests that underlie people's positions and behaviors.
- Cooperate productively in work teams to identify and solve problems.
- Display initiative and demonstrate respect for other team members while completing tasks.
- Exhibit a strong work ethic, including responsibility and reliability.
- Apply upstream problem identification and systems thinking.

→ Think creatively to make previously unrecognized connections:

- Explore connections, consider analogies, and synthesize ideas to arrive at new ways of thinking.
- Explore concepts that connect economic opportunities and job creation with sustainable communities and a healthier environment (e.g., innovations in food production, energy generation and use, transportation, and water management).

- Generate new ideas by making novel connections between concepts.
- Demonstrate flexibility.
- Take opportunities to express ideas and emotions.

b. Assess the accuracy and reliability of information sources. Evaluate the quality of information from primary and secondary sources.

- Gather and organize relevant data.
- Use basic logic and reasoning skills to evaluate the reliability of information.
- Identify logical errors and spurious statements in everyday communications, such as advertising and political rhetoric.
- Look for and explain logical flaws in arguments, such as faulty or misleading use of statistics; misrepresentation of data; and biased selection of data to support a claim (cherry-picking).
- Explain why some research results are more credible than others.
- Identify sources and evidence of bias in interpretation, funding sources, and research procedures.

c. Identify and analyze strategies that address challenges and create desired futures. Investigate problems, evaluate possible solutions, and propose actions.

- Investigate differing perspectives on a current issue:
 - Consult various unbiased sources to define and clarify the dimensions of the issue.
 - Develop a method to explore relationships between key dimensions of the issue.
 - Identify key individuals and groups, including those who are affected by the issue.
 - Explain various perspectives on the issue and the reasoning behind them.
 - Examine contextual elements that shape the issue, and identify historical antecedents or contemporary parallels.
 - Analyze the characteristics, causes and consequences of the issue.
 - Develop and use indicators to measure movement toward or away from goals.
 - Use the concept of cumulative effects to explain why specific changes or human actions cannot be considered in isolation from others.



- Identify the most upstream problems to address within their sphere of influence.

→ Identify and evaluate alternative courses of action, and propose solutions or support actions:

- Synthesize various perspectives, data, and methods of analysis to devise solutions or actions.
- Use knowledge of functional relationships, modeling, and statistical analysis to evaluate options.
- Use cost/benefit analysis, cumulative effects analysis, environmental impact analysis, ethical analysis, risk analysis and related methods.
- Propose and justify actions that are likely to be effective.

d. Demonstrate effective decision-making and citizen action. Analyze options, plan actions, evaluate outcomes, and reach evidence-based conclusions.

→ Evaluate the need for action:

- Decide whether action is warranted, based on available evidence about the issue and proposed solutions; the scale of the concern; the legal, social, economic and ecological consequences; and alternatives to citizen action.
- Identify options for citizen action, including consumer choices; resource use choices; writing letters to the editor; drafting legislation, ordinances or policies; environmental stewardship projects; and communicating with decision-makers.
- Speculate on the probable effects of specific actions and the likelihood that they will resolve the problem.
- Decide whether to take personal action, based on their own values, skills, resources and commitments.
- Communicate decisions clearly and support them with reasoned arguments.

→ Plan and take action:

- Envision a desired endpoint.
- Articulate clear reasons and goals for action.
- Develop a plan for individual and collective action.
- Set measurements for success that are consistent with the abilities of the groups involved.



- Decide whether to modify the plan—and when and whether to implement it—and take appropriate action.

→ Identify, compare and evaluate results (outcomes and responses) to reach an evidence-based conclusion:

- Analyze the long- and short-term consequences of action and inaction.
- Consider the intended and unintended effects of action and inaction on themselves, others and the environment.
- Evaluate the apparent effects of actions in terms of action goals, societal goals, and ethics.
- Articulate lessons learned.
- Account for any difficulties in evaluating the results of actions.

Graduation Requirements (adapted from Oregon Department of Education)

In January 2007, the Oregon State Board of Education voted to adopt new high school graduation requirements that will better prepare each student for success in college, work and citizenship. To earn a diploma, students must complete the credit requirements, show proficiency in essential skills, and meet personalized learning requirements. Students will also have the option of earning credit for proficiency. The phase-in schedule (2007 to 2014) allows students, families, schools and teachers to prepare for these new requirements.

Proficiency in essential skills could be demonstrated through environmental literacy. Essential skills are “process skills” that cross



academic disciplines and are embedded in the content standards. They are not content-specific and can be applied in a variety of courses, subjects and settings.

Essential skills include:

- 1) Reading and comprehending a variety of texts
- 2) Writing clearly and accurately
- 3) Applying mathematics in a variety of settings
- 4) Listening actively and speaking clearly and coherently
- 5) Thinking critically and analytically
- 6) Using technology to learn, live and work
- 7) Civic and community engagement
- 8) Demonstrating global literacy
- 9) Demonstrating personal management and teamwork skills

Students are also responsible for Personal Learning, which includes:

- **Plan and Profile.** With adult help, students develop a plan for classes and experiences they require to prepare for their post-high school goals. They will document their progress and accomplishments along the way.
- **Career-Related Learning Experiences.** Students participate in experiences that connect the classroom with the workplace and community.
- **Extended Application.** Students apply knowledge and skills relating to their interests and goals by demonstrating critical thinking, problem-solving or inquiry in real-world contexts.

An environmental literacy context should support students in satisfying their personalized learning diploma requirement, in learning beyond the classroom, and in connecting with the adult world.

In adopting the new diploma requirements, the Oregon State Board of Education noted, “A key feature of the future diploma will be wider use

of proficiency, ensuring that all students will have the opportunity to choose to earn credit by demonstrating proficiency.”

To enhance the relevance of education for students, the State Board also broadened the definition of courses that meet the math and science requirements of the diploma. In a decision paper published in 2007, the Board endorsed the concept of meeting math requirements through courses such as Integrated Math, Applied Math, Construction Math, and Business Math, provided they meet the content threshold of Algebra I or higher. Similar flexibility is encouraged in courses offered for science credit. Recognizing environmental literacy as a context to help students satisfy diploma requirements by demonstrating proficiency in math and science should also be explored.

As these new requirements are phased in, many districts are considering alternatives to traditional academic coursework in math, science, and language arts. Oregon has been working to enhance mathematics, science and other core academic concepts embedded in Career & Technical Education (CTE), in conjunction with the national Math-in-CTE curriculum integration model sponsored by the National Center for Research in Career and Technical Education. CTE program courses, integrated academic course sequences, and project-based learning are delivery models in which students earn full or partial credit by meeting academic area content expectations. These approaches give students the opportunity to show proficiency by applying academic content in real-world situations.

Students may demonstrate proficiency inside the classroom; outside the classroom (where hours of instruction may vary); by documenting prior learning; by appropriate examination; or through any combination of the above. Thus, Credit for Proficiency is well suited to support education for environmental literacy as a vehicle for student pursuit of the Oregon diploma.

Essential skills, Personal Learning, and Credit for Proficiency are flexible options for aligning existing graduation requirements with the Plan. Examples of requirements that can be met and assessed through environmental literacy activities should be further developed and disseminated. In developing examples, priority for skills and activities should be given to Environmental Literacy Strand components that are not satisfied by current Oregon Academic Standards.

Also, a new graduation requirement for environmental literacy should be considered, following the example of Maryland’s proposed plan (Robelen, 2010). Last, we recommend that graduation requirements include outdoor experiences.



Chapter 4: Professional Development

Schools play a critical role in the preparation of environmentally literate students. Teachers, in particular, have a responsibility to guide learning experiences that lead to good environmental citizenship. Although many individual teachers, as well as entire schools and districts, have integrated environmental literacy into their curricula, more needs to be done if we are to achieve our ultimate goal of an environmentally literate citizenry.

The creation of an effective professional development plan for environmental literacy is predicated on a series of interrelated considerations (summarized below, followed by details for each). With each of the following points in mind, a comprehensive environmental literacy professional development program can be designed and implemented:

- Guiding Principles of Environmental Literacy Professional Development
- Support Systems for Environmental Literacy Programming
- Best Practices for Environmental Literacy Instruction
- Educator Competencies for Environmental Literacy
- Key Characteristics of Professional Development

Guiding Principles of Environmental Literacy Professional Development

A systematic approach to professional development for environmental literacy is built on these guiding principles:

- All school personnel (administrators, teachers and support staff) are integrally involved in fostering students' environmental literacy.
- Curriculum and instruction are planned, implemented and coordinated at the district, school and classroom levels.
- Professional development programs are planned, implemented and coordinated at the district, school and classroom levels.
- Professional development should meet the needs of all administrators, teachers and support personnel; it should not be limited solely to classroom teachers.

Support Systems for Environmental Literacy Programming

Although the implementation of environmental literacy lies primarily in the hands of teachers, they do not work in a vacuum. Teachers must

rely on networks and support systems to plan and implement a comprehensive and cohesive environmental literacy curriculum. Support systems recommended to facilitate teachers' professional development in environmental literacy include policy; school-community partnerships; communities of practice; curricular and material support systems; involvement of school facilities and operations; training of all administrators and school/district staff; and funding.

Designing and implementing an effective environmental literacy program requires a unique set of understandings and skills, as well as adequate support services. To be successful, teachers need access to professional development opportunities that facilitate the development and delivery of comprehensive and cohesive environmental literacy experiences, both inside and outside the classroom. Teachers must be skilled and supportive in satisfying educational requirements by taking students outside to participate in applied learning. Therefore, professional development opportunities should improve teachers' content knowledge in environmental science and related subjects; their skill in teaching about environmental issues; and their field-based pedagogical skills.

Best Practices for Environmental Literacy Instruction

Best practices for teaching environmental literacy—with an emphasis on going beyond the classroom walls—overlap with best practices for many other curricular areas. The primary difference is their focus on the environment and sustainability.

Proposed best practices for integrating environmental literacy into the school are as follows:

- Focus is on the environment and sustainability:
 - The ultimate goal is environmental literacy and fostering participatory citizenship.
 - The whole school, including its infrastructure (i.e., buildings and grounds; energy, water and material resource management; food systems; transportation), is integral to the development of environmental literacy.
 - Practice is applied to the whole school/district culture.
- Instruction and learning take place in a variety of settings, making appropriate use of the classroom, school, outdoors, community and state as needed.



- Learning is interdisciplinary; it is integrated across science, math, reading, writing, social studies and art, and it incorporates initiatives such as STEM and career pathways.
- Curriculum/activities are tied directly to educational standards and diploma requirements (especially the essential skills).
- Instruction supports evidence-based exploration and investigation:
 - Emphasis is on the inquiry process.
 - Learning is student-driven.
 - Instruction uses the natural world and home community as contexts for identifying, addressing and solving problems.
 - Teachers encourage hands-on interaction with the natural world.



- Partnerships with local agencies, nonprofits, businesses, resource professionals and others are forged and sustained.
- Instruction fosters a respectful, supportive learning environment that nurtures:
 - An understanding of multiple perspectives
 - Caring relationships (student to student, student to teacher, etc.)
 - An understanding of the personal stages of change in teaching practice
 - An appreciation of differing global and cultural worldviews and perspectives
- Education extends beyond school; students share learning with families, partners and other community members

Educator Competencies for Environmental Literacy (NAAEE, 2010)⁹

Educators must be able to plan and implement high-quality, developmentally appropriate programs that foster environmental literacy learning for all students. Effective educators have the understanding and skills associated with environmental literacy and instruction. They are willing and able to implement research-based environmental literacy programs that improve the learning of all students. Environmental literacy educators must possess competencies in environmental literacy; planning and implementing instruction for environmental literacy; fostering learning; assessment; and professional responsibilities.

Environmental literacy

→ Educators possess the understanding and skills outlined in Chapter 3: Environmental Literacy Strands. They:

- 1) Understand and apply systems thinking concepts, habits and tools
- 2) Understand the characteristics of Earth's physical, living and human systems
- 3) Understand the interconnectedness of people and the environment
- 4) Understand and accept personal and civic responsibility
- 5) Are prepared to investigate, plan and create a sustainable future

Planning and implementing instruction for environmental literacy

→ Educators are familiar with and can employ a range of instruction methods. They:

- Use a variety of settings to teach, especially the outdoors.
- Use a variety of teaching methods and strategies that are appropriate for the environmental content and context, including hands-on observation and discovery; inquiry; community-based action research and problem-solving; service learning; problem-based learning; and project-based learning.
- Give students opportunities to observe, explore, discover and experience.
- Facilitate systems thinking.
- Use community or place as the text for learning.
- Provide students with experiences that create deep and lasting connections.
- Give students opportunities to investigate and to address real community issues.

- Build intrinsic motivation in students to guide powerful learning experiences.
- Engage in long-term, evidence-based investigative studies.
- Give students opportunities to participate in valuable work beyond the classroom.

→ Whether indoors or outside, educators understand the importance of a safe and conducive learning environment. They:

- Demonstrate concern for learner safety in designing, planning and implementing instruction, especially in regards to experiences that are hands-on or take place outside the classroom.
- Identify, create and use diverse settings for environmental literacy instruction that are appropriate to the subject matter and the available resources.
- Facilitate learning in a variety of settings, including schoolyards, field settings, community settings, museums, zoos, demonstration sites and outdoor schools.
- Plan and implement instruction that first links content to learners' immediate surroundings and experience, and then expands their horizons to larger environmental issues and contexts.

→ Educators are familiar with a range of curricular materials, resources, technologies and settings for use in environmental literacy instruction. They:

- Describe the characteristics of effective environmental literacy instructional materials, resources, technologies and settings.
- Identify nearby applied-learning sites.
- Engage with community, state and national partners.
- Use a variety of tools for environmental observation, measurement and monitoring.
- Identify ways of using the community as a resource, including local businesses, service organizations, government agencies, nonprofit organizations, and other groups that may participate in and support instructional programs.

→ Educators seek opportunities to integrate environmental literacy into standards-based curricula and school programs. They:

- Integrate environmental literacy into standards-based curricula and school programs.
- Work with colleagues to enhance opportunities to integrate environmental literacy into their curriculum.

- Organize instruction—and, when appropriate, integrate instruction—around environmental contexts and themes.
- Build multidisciplinary experiences.

Fostering learning

→ Educators know how to create a climate in which learners are intellectually stimulated and motivated to learn about the environment and sustainability. They:

- Relate lifelong learning to instruction practices that encourage learners to take responsibility for their own learning and expectations for achievement.
- Instill a sense of the importance and excitement of the content into their teaching.
- Provide opportunities for experiences that increase learners' awareness of—and enthusiasm for—the natural and human-designed environment.
- Identify and use instructional techniques that encourage learners to ask questions and to explore various answers.

→ Educators maximize learning by fostering openness and collaboration among learners. They:

- Identify and use ways to encourage flexibility, creativity and openness, while considering the assumptions and interpretations that influence the conclusions that learners and others draw about environmental and sustainability issues.
- Relate learners' capacity for collaborative work to their ability to function as responsible and effective citizens.
- Use management techniques that foster independent and productive group work.
- Include diverse cultures, races, genders, social groups, ages and perspectives with respect, equity, and an acknowledgement of the value of such diversity.
- Use diverse backgrounds and perspectives as instructional resources.

→ Educators know how to augment proper planning with the flexibility that allows them to take advantage of new instructional opportunities. They:

- Modify instructional plans and approaches, when appropriate, to take advantage of unexpected opportunities (e.g., new developments in community issues; recent events or phenomena in the news; or breakthroughs in scientific understanding), as well as learner questions and interests.



- Blend a variety of instructional methods and activities to meet instructional objectives.
- Work collaboratively with other educators and in other discipline areas, adapting instructional approaches as needed to blend or complement instructional styles and to meet shared environmental literacy goals.
- Commit to creating a classroom atmosphere that is open to inquiry.
- Identify and differentiate between informational sources and instructional materials on the basis of their factual accuracy and bias.
- Select and use materials that collectively present a range of differing viewpoints, ethical positions and interpretations in cases where there are legitimate differences of opinion or competing scientific explanations.

Assessment

- Educators understand the importance of tying assessment to learning.
- Educators are familiar with ways of incorporating assessment into environmental literacy instruction.
- Educators know how to use instructional experiences and assessments to improve future instruction.
- Educators integrate assessment that meets the needs of diverse students into environmental literacy instruction.



Professional responsibilities

- Educators understand their responsibility to provide environmental literacy instruction that is appropriate, constructive and aligned with state standards.
- Educators understand that their commitment is to provide accurate, balanced and effective instruction—not to promote a particular view about environmental conditions, issues or actions. They:
 - Implement instructional techniques for presenting differing viewpoints and theories in a balanced manner, and for identifying potential sources of bias in information.

- Educators can articulate a rationale for environmental literacy. They:
 - Develop a cogent rationale for environmental literacy instruction—one that describes key benefits and the importance of an environmentally literate citizenry.
 - Describe the multiple roles that alliances and partnerships play in advocacy efforts for K-12 environmental literacy.
- Educators engage in professional development opportunities for environmental literacy. They:
 - Express the need for professional development, identify immediate professional development needs, and identify potential providers to meet these needs.
 - Participate in professional development that strengthens their environmental literacy, fosters reflection on practice, and improves their instructional skills.
 - Engage in a reflective process to improve environmental literacy teaching and learning. They incorporate information



from assessment results and feedback from students, parents and education professionals into the reflective process.

- Identify, access and use technology-based resources that support their professional development in environmental education.

→ Educators identify sources for instructional materials and funds, including grants.

Key Characteristics of Professional Development*¹¹

Providers of professional development programs support educators by providing the following critical content and skills in their trainings:

→ Content information and process skills

- Align content and skills to the Environmental Literacy Strands.
- Align content and skills to the Educator Competencies for Environmental Literacy.
- Communicate evidence-based information.
- Teach content and skills through interdisciplinary inquiry and application.
- Provide opportunities for educators to fully participate as learners in inquiry, field strategies, issue investigations and so forth.
- Practice civil discourse.
- Provide curricular and support materials to supplement training and ensure ease of transference into the classroom.

→ Developmentally appropriate lessons

- Ensure age-suitable learning by matching instructional materials to the ages of learners.
- Scaffold experiences and concepts:
 - Demonstrate for educators how to build the foundation of learning experiences in early years and how to expand them as students mature (e.g., a schoolyard investigation in first grade can develop into problem-solving and schoolyard restoration projects in fifth grade).
 - Use instructional strategies that help to manage cognitive loads (e.g., introduce inquiry in fifth grade using fourth-grade concepts).

→ Engaging, hands-on activities

- Provide safe environments where educators can take risks to understand the balance between trust and control.

→ Tools and techniques to engage students in outdoor learning

- Present learning opportunities in the natural and built environment—within and around

the school—to help educators locate easily accessible learning settings.

- Build efficacy by giving educators the resources they need to feel prepared.

→ Inquiry-based learning

- Provide firsthand experiences that give educators opportunities to explore, ask their own questions, investigate, and collect information.
- Demonstrate how child- and teacher-directed inquiry lessons are structured.
- Give educators opportunities to participate as active learners, and to practice inquiry and essential skills.

→ State standards, essential skills and diploma requirements

- Exhibit ties to educational standards and diploma requirements.
- Show connections between topics, standards, disciplines, and career preparation.
- Use essential skills and diploma requirements to support civic and global learning.

→ Encourage the discovery of “sense of self,” and teach about connecting with the individual

- Promote social and emotional learning domains:
 - Foster respectful engagement and trust in learning environments (student to student, teacher to student, etc.).
 - Model caring, kindness and respect for elders and peers.

→ Community partners

- Provide guidance on recruiting and training chaperones, and working with local partners and volunteers.
- Demonstrate collaboration, and provide trainings in coordination with other entities.
- Offer internships with appropriate professionals and scientists.



Chapter 5: Assessment of Environmental Literacy

Educational assessment is the process of documenting knowledge, skills, beliefs and attitudes in measurable terms. It can focus on the individual learner; the learning community (i.e., a class, workshop, or other organized group of learners); an institution; or the educational system as a whole. According to Academic Exchange Quarterly, “Studies of a theoretical or empirical



nature (including case studies, portfolio studies, exploratory, or experimental work) addressing the assessment of learner aptitude and preparation, motivation and learning styles, learning outcomes in achievement and satisfaction in different educational contexts are all welcome, as are studies addressing issues of measurable standards and benchmarks.”

The ultimate goal of the Plan is to improve the environmental literacy of all Oregon students. To determine whether this is happening, we need to assess changes in student environmental literacy over time, while striving toward continual improvement.



Assessments should be based on the definition of environmental literacy in this Plan, student mastery of the five Environmental Literacy Strands, and the relative impact of outdoor experiences on these outcomes (see Chapter 5 for details). To maximize the efficiency and sustainability of our efforts, assessments should also align with existing assessment tools, structures, systems and survey instruments wherever possible. The assessment process should be collaborative, transparent, and clearly communicated to all stakeholders.

Environmental literacy assessment strategies should:

- Integrate environmental literacy assessment with existing tools and systems to ensure the efficiency and sustainability of measurement while enhancing existing structures.
- Determine the impact of outdoor experiences on student learning.

Measuring Student Environmental Literacy

To determine whether students’ environmental literacy is improving, we need to measure their knowledge, their skills, and their motivation to base responsible decisions on their relationships to natural systems, communities and future generations. Considerations for measuring student environmental literacy include:

- Allowing regions, districts and education service districts (ESDs) to determine exactly what they want to measure and how.
- Gathering baseline data to assess the status of student environmental literacy, and measuring changes over time.
- Establishing community profiles and determining degrees of support.
- Gathering baseline data on the amount and quality of outdoor learning, and measuring changes over time.

Existing Assessment Opportunities

Integrating an environmental literacy assessment into existing tools or assessment systems will ensure the efficiency and sustainability of measurement while enhancing existing structures. Resources worth considering for the integration of environmental literacy assessment include:

- **Oregon Assessment of Knowledge and Skills (OAKS).** OAKS is the statewide online system used to assess student mastery of Oregon content standards. It would be worthwhile to explore content in OAKS to determine whether its assessment questions support the five Environmental Literacy Strands. The opportunity may well exist to embed a set of questions specific to environmental literacy for schools and districts integrating the Plan. Embedding an environmental literacy component into state assessments could strengthen the state program for assessment through an innovative convergence of Environmental Literacy Strands, Oregon standards, and existing assessment tools.
- **Work samples.** “A work sample is a representative sample of individual student work (e.g., research paper, statistical experiment, speaking presentation) that is scored using an official state

scoring guide (i.e., writing, speaking, mathematics problem solving, scientific inquiry, and social science analysis). Since 2000, the Oregon State Board of Education has identified the number and type of work samples that local school districts must collect and score. When the State Board approved OAR 581-022-0615 Assessment of Essential Skills in June 2008, they provided for the continued use of work samples under the new graduation requirements. Under the new OAR, students may use work samples to meet both the Essential Skills graduation requirement and the annual local performance assessment requirement” (Oregon Department of Education, 2010). Environmental literacy may fit within an existing work sample requirement. Otherwise, it may be possible to create a new framework for environmental literacy work samples.

- **Scoring guides for work samples.** The Oregon Department of Education (ODE) has created scoring guides to assist teachers in scoring student work samples. A Local Assessment Option is currently in progress by ODE; this may provide parameters for a school or district that wishes to create a locally customized scoring guide for environmental literacy (e.g., Tillamook may wish to create a Local Assessment Option using their local dairy farm as a project). Scoring guides developed by ODE include writing; speaking; mathematics problem-solving; scientific inquiry and engineering design; and social science.
- **National Environmental Literacy Assessment.** This is a baseline study of middle school students’ understanding of the environment. Completed in 2008, this study provides insight into how much U.S. middle school students currently understand

about the environment. It was conducted by North American Association for Environmental Education (NAAEE) with support from the U.S. Environmental Protection Agency (EPA) Office of Environmental Education and the National Oceanographic and Atmospheric Administration (NOAA) Office of Education. This reliable and valid instrument could be adapted for use in Oregon.

- **Institutional organizations.** The Oregon School Boards Association (OSBA) and the Confederation of School Administrators (COSA) may provide opportunities for exposure and support. They also represent a potential avenue for administering sample surveys or sponsoring gatherings on environmental literacy assessment (e.g., as a pre-conference day during an existing conference).
- **Operational and facility assessments.** A number of assessments and tools currently used in Oregon could help schools and districts gauge the success of sustainability efforts. Examples include the Sustainable Oregon Schools Initiative’s (SOSI) sustainability assessment tools; the Healthy School Environments Assessment Tool (HealthySEAT) from the U.S. Environmental Protection Agency; and Sustainability Competency & Opportunity Rating and Evaluation (SCORE). Also, the Oregon Green Schools Association has a variety of assessment tools on resource conservation, including a step-by-step guide to conducting a waste audit.



Chapter 6: Environmental Literacy Plan Implementation



Although certain elements of education for environmental literacy are already being used in some Oregon districts and classrooms, only a small percentage of students have the opportunity to participate in meaningful, field-based environmental education experiences within their home community; currently, no

district has integrated all content areas and core elements of environmental literacy education. It may take years to fully implement all aspects of this environmental literacy plan. But ultimately, we want to see the following visions come to fruition:

- Oregon's environmental literacy plan is integrated across disciplines and grades in all K-12 institutions.
- Every grade builds aspects of environmental literacy into the curriculum at the school and district level.
- Every graduating K-12 student can demonstrate proficiency in all Environmental Literacy Strands.
- All K-12 students have learning experiences outside the classroom throughout their educational career.
- Communities or regions self-organize to determine how to cultivate environmentally literate citizens through local schools.
- Every Oregonian is part of a self-organized community or region.
- Oregon's Environmental Literacy Plan is supported by all communities and regions.
- All students influence their subsequent jobs, families and organizations through the knowledge, skills, perspectives and values they demonstrate as environmentally literate citizens.

Stakeholders

Implementation of the Plan will involve all levels of the K-12 system. Each of the following stakeholders should be involved with every aspect of implementation:

- Oregon Superintendent of Public Instruction and the Department of Education

- State curriculum specialists (e.g., social studies, science, math, and language arts)
- ESDs and school districts
- All school district staff, including administrators and non-teaching staff
- Individual schools and teachers of all grades and subjects
- Independent, charter and homeschool networks
- State and local school boards
- Teacher preparation colleges and universities
- Nonprofit and government entities
- Parents and students
- School-related associations

Each of these entities has a crucial role to play. Goals, content, planning and training must be integrated at the state and district level with the support of top administrators. Schools should provide day-to-day implementation. Individual teachers must be environmentally literate in order to pass the content on to their students. Other school staff can support the effort through whatever position they have. Community partnerships are an important element. If integrated support at any of these levels is missing, the effort will not reach its full potential and will most likely be short-lived.

Recommendations for Plan Implementation

These recommended steps can be taken as sufficient funding for implementation is identified and secured. The following timeline matrix is broken into annual quarters through 2011, and then into years through 2014. Continued exploration of these factors will allow a more detailed implementation of the Plan:

- Statewide Infrastructure to Educate for Environmental Literacy in Oregon
- Schools and School District-Based Activities
- Funding to Implement the Oregon Environmental Literacy Plan

This plan is intended to change over time. As opportunities arise—such as update periods for state standards—they should be utilized as appropriate. Other useful tools and information should also be incorporated as they become available.



Statewide Infrastructure to Educate for Environmental Literacy in Oregon

 = Quarter/Year to Implement		4Q 2010	1Q 2011	2Q 2011	3Q 2011	4Q 2011	2012	2013	2014
1	Establish an Oregon Environmental Literacy Council → Consider a Governor Executive Order or partnership agreement with ODE. → Council will work to refine the Plan and to coordinate the implementation timeline. → Council should include members with direct knowledge of the school system and of the Plan's component areas. Consider representatives from ODE, ESD, school district, teachers, businesses and task force members.								
2	Council considers the following goal of the legislation: "How to encourage educational agencies and public schools to participate in environmental education programs."								
3	(Statewide plan coordinator) Council defines responsibilities for a statewide coordinator; explores partnership possibilities; drafts a funding and long-term stability plan for the position; and identifies the statewide coordinator.								
4	(Statewide coordinator and Council) Identify and define the roles for each level of the school system in order to fully integrate content, delivery, professional development, and assessment of environmental literacy.								
5	(Regional coordinators) Council and statewide coordinator create descriptions for regional coordinator positions. The regional coordinators will work with the statewide coordinator to ensure efficiency in communication, as well as synergy between local, regional and state efforts.								
6	(Regional coordinators) Hire regional coordinators → Consider requesting proposals from regions or districts. → Consider integrating the positions within existing entities.								
7	Provide outreach to all school system levels—including the Oregon Department of Education, school districts, schools, teachers and communities—regarding education for environmental literacy, its benefits and the Plan. Implementation of this item may include hosting feedback forums throughout the state.								
8	Conduct a comprehensive statewide inventory of current efforts in order to identify environmental literacy models and resources. Include successful delivery of the five strands; successful inclusion of facilities and operations; and assessment of learning. In addition to all levels of the K-12 system, include higher education institutions and organizations providing nonformal education. Process the findings so that effective models and resources can be honored and shared. This inventory should: → Use an existing sampling structure and best practices to survey across the state to identify the existing terrain. (Consider modeling on The Economic Research Service of the U.S. Department of Agriculture.) → Include a variety of existing programs and resources (curricular, programmatic, funding, etc.). → Evaluate participation levels in the various efforts (success). → Gauge degree of administrator interest and support. → Identify which models and case studies can be prepared for sharing (include contact information).								

		4Q 2010	1Q 2011	2Q 2011	3Q 2011	4Q 2011	2012	2013	2014
9	(Professional development) Inventory existing relevant professional development programs and resources in the state, and identify gaps. → Consider needs for all staff types to enable them to fulfill specific roles in creating environmentally literate graduates. → Use National Council for Staff Development standards as a basis for designing professional development programs and experiences (see Appendix C).								
10	(Professional development) Establish competencies, characteristics and best practices for quality professional development.								
11	(Professional development) Create and implement strategies to fill statewide professional development gaps with opportunities that can be accessed statewide to support education for environmental literacy. → Consider regional scale for workshops and institutions (ESD, higher education institutions, etc.). → Identify resource professionals, programs and institutions that can provide field experiences or internships for teachers (community-supported agriculture farms, scientists, etc.).								
12	(Professional development) Explore ways to measure formal and nonformal professional development; consider endorsements and certification programs.								
13	(Resources) Identify, develop or refine digital libraries and portals—such as the Oregon Department of Education, Environmental Education Association of Oregon (EEAO) and Sustainable Oregon Schools Initiative (SOSI) websites—to house the state inventory of environmental literacy resources. Digital libraries and portals should provide: → Accessible and searchable collections of vetted materials and lesson plans → Links to Oregon Department of Education standards → Directories of local partners; grants or other funding opportunities; and field trip sites → Case studies from all levels that support environmental literacy → Opportunity for users to write reviews								
14	(Resources) Upload environmental literacy resources to digital libraries and portals so that they are available statewide, and advertise them. Innovative programs that demonstrate the fundamentals of environmental literacy as proposed in this Plan should be held up as models to inspire and facilitate action from others. → Identify central points from which resources can be readily accessed at all levels, including the Oregon Department of Education, ESD, school districts, schools, teachers and communities.								

		4Q 2010	1Q 2011	2Q 2011	3Q 2011	4Q 2011	2012	2013	2014
15	(Regional hubs) Create a template for regional hub development that includes: → Criteria to help regions organize themselves around resources to ensure that the activities mentioned in the Plan are locally accessible → Parameters for establishing regional boundaries. Consider defining regions according to ESDs, networks of watersheds, and/or county governances. → Partnership support with schools and districts; community organizations; businesses; and government agencies. Provide frameworks to support the development of mutually beneficial partnerships. → Suggestions for creating regional lending libraries for shared instruction materials, as well as kits, tools, live animals, monitoring equipment, shovels, boots, and other educational resources.								
16	(Regional hubs) Support regional coordinators in establishing regional hubs to facilitate local integration of the Plan and to maximize the input of community resources.								
17	Support regional coordinators in conducting needs assessments.								
18	Coordinate Plan implementation with the activities listed in the K-12 section of the Oregon Green Jobs Growth Plan.								
19	Connect, align and coordinate the Plan with current efforts and initiatives in Oregon, such as the West Coast Governors Alliance on Ocean Health; Oregon's Youth Bill of Rights; the Oregon Initiative for Climate Change; Oregon Watershed Enhancement Board and The Oregon Plan for Salmon and Watersheds; Education for Sustainability; Sustainable Oregon Schools Initiative and other state initiatives; ocean literacy; climate literacy; forest literacy; and agricultural literacy.								
20	(Strands and standards) Cross-reference and align the Environmental Literacy Strands with Oregon standards and diploma requirements. Once the strands and standards are aligned, it will be possible to identify areas where the learning content for cultivating environmentally literate citizens is supported.								
21	(Strands and standards) Identify opportunities and create a plan to fill any gaps in the standards and diploma requirements. Utilize the Department of Education's periodic education standards review process to integrate content into state standards.								
22	Evaluate environmental literacy content in programs at Oregon university schools of education. Develop and implement a strategy to prepare pre-service teachers.								
23	(Assessment) Explore existing assessment systems, such as OAKS and scoring guides, to determine whether they can measure environmental literacy.								
24	(Assessment) Develop examples that show how graduation skill requirements can be satisfied through environmental literacy activities. Credit by Proficiency, Personal Learning and Essential Skills present flexible options for aligning requirements with the Plan. Priority for skills and activities should be given to Environmental Literacy Strand components that are not satisfied by current Oregon Academic Standards.								

		4Q 2010	1Q 2011	2Q 2011	3Q 2011	4Q 2011	2012	2013	2014
25	(Assessment) Create new assessment instruments as needed.								
26	(Assessment) Develop and implement a detailed prescription for assessing the environmental literacy of Oregon students.								
27	Identify and explore research topics that relate tangentially to this project.								
28	Create a new graduation requirement for environmental literacy and outdoor learning.								
Schools and School District-Based Activities									
29	(Professional development) Conduct school/district needs assessment to identify gaps: Which education for environmental literacy strands and delivery practices are not currently supported with adequate professional development opportunities?								
30	(Professional development) Develop and implement a plan to fill the education for environmental literacy gaps in the school/district professional development plan. → Consider needs for all district staff to enable them to fulfill their specific role in cultivating environmentally literate graduates. → Use environmental literacy digital libraries/portals to stay informed about and to share available professional development opportunities. → Use National Council for Staff Development Standards as a basis for designing professional development programs and experiences (see Appendix C).								
31	Provide appropriate planning support and release/substitute time for teachers engaged in providing environmental literacy experiences.								
32	Create an implementation strategy that prioritizes actions that build, encourage and support a community of practice within schools/districts, so that teachers, administrators and partners work together to improve and implement environmental literacy instruction.								
33	Support mentoring opportunities that encourage peer-to-peer learning among classroom teachers and resource professionals.								
34	Strive to make the facility sustainable to support education for environmental literacy.								
35	(Assessment) Develop strategies for promoting staff expertise in environmental literacy, and cultivate an understanding of how to measure environmental literacy.								
Teacher Activities									
Although the Plan does not specifically dictate activities for teachers, it creates a state and district infrastructure and a system of professional development that will enable teachers to provide and assess education for environmental literacy.									
Funding to Implement the Oregon Environmental Literacy Plan									
36	Find funding to support a statewide coordinator position.								
37	Find funding to support regional coordinator positions.								
38	The Council and statewide coordinator determine the role and membership of a fund management/advisory team for the Plan.								

		4Q 2010	1Q 2011	2Q 2011	3Q 2011	4Q 2011	2012	2013	2014
39	Regional coordinators work with the statewide coordinator to create regional budgets based on needs assessments for implementing the Plan, and to determine statewide funding needs.								
40	Identify potential funding sources for Plan implementation, including: → Local: Parent-Teacher Associations, nonprofits, businesses, education association chapters, Rotary Clubs, government, community groups, etc. → State: The Oregon Community Foundation, Meyer Memorial Trust, Oregon Business Association, Oregon Watershed Enhancement Board (OWEB), etc. → Federal: No Child Left Inside Act, Innovation Fund, Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), etc.								
41	Identify an entity to hold the funds and an agency for grant administration. → Consider other agencies or existing granting programs that could enter into an interagency agreement with ODE regarding grant administration. → If implementation funds are held by ODE, apply/revise administrative rules. Consider encouraging ODE to develop rules through a public hearing process.								
42	Establish a grant program focused on equitable regional distribution of funds, possibly with two scales of grantmaking. → Develop guidelines for accessing Plan funds. → Disburse small grants to individual teachers and classrooms. → Larger regional grants might go to a regional hub, ESD, school, school district, watershed, etc. → Consider three-year grant cycles to support planning and implementation. → Decision-making should be on the local level for small grants and on the state level for regional grants.								



Appendix A: Task Force, Working Groups and Legislative Sponsors



Appointed Environmental Literacy Task Force Members

Chairperson

Traci Price The Freshwater Trust & The Environmental Education Association of Oregon (governor appointee - nonprofit organization that advances environmental education)

Vice-chair

Jon Yoder Salem-Keizer School District (appointed by the Superintendent of Public Instruction)

Members

Keith Anderson Oregon Department of Environmental Quality
 John Falk Oregon State University, College of Science (governor appointee – Institute of Natural Resources)
 Tom Gaskill Oregon Department of State Lands – South Slough National Estuarine Research Reserve
 Rick Hargrave Oregon Department of Fish and Wildlife
 Kaety Hildenbrand Oregon State University, Oregon Sea Grant (appointment by the State Marine Board)
 Jim Quiring Oregon Department of Forestry (appointment by the State Forester)
 Brent Searle Oregon Department of Agriculture
 John Sheehan Metro (governor appointee – Local Park and Recreation Association)
 Kyleen Stone Oregon Parks and Recreation Department

Task force facilitation provided by Nancy Hertzberg, Decisions Decisions.
 Administrative assistance provided by Stephanie Parks, Oregon Department of Education.

With input from the following Working Groups

Educational Standards & Diploma Requirements

Tom Gaskill Task force
 Traci Price Task force
 Jon Yoder Task force
 Nancy Hertzberg Task force facilitator
 Kristy Aserlind Place-based education advocate
 Kristin Atman Tualatin Hills Park and Recreation District
 Dara Brennan Springfield Public Schools
 Randy Choy The Oregon Community Foundation
 Ryan Collay Oregon State University – SMILE Program
 Peg Cornell Crescent Valley High School
 Carolyn Devine Oregon Watershed Enhancement Board
 Susan Duncan Concerned citizen
 Rachael Goetzelman Oregon Coast Aquarium & Oregon Sea Grant
 Charis Henrie Oregon Zoo
 Faith Jones-Paulus Springwater Environmental Sciences School
 Tami Kerr Oregon Agriculture in the Classroom Foundation
 Trish Mace Oregon Institute of Marine Biology
 Aaron Miller Washington Grade School
 Jill Nishball Oregon Parks and Recreation Department
 Dan Prince Multnomah ESD Outdoor School
 Michelle Ratcliffe Oregon Department of Agriculture
 Susan Sahnaw Oregon Natural Resources Education Program
 Anne Schuster Corvallis School Board
 Bora Simmons National Project for Excellence in Environmental Education



Teacher Professional Development

Traci Price	Task force
John Sheehan	Task force
Susan Cross	Jefferson Nature Center
Alison Heimowitz	Clackamas Community College/EEAO
Susan Sahnaw	Oregon Natural Resources Education Program
Bora Simmons	National Project for Excellence in Environmental Education
Greg Smith	Lewis & Clark College

Implementation

Traci Price	Task force
Kyleen Stone	Task force
Brent Searle	Task force
Ed Armstrong	Tillamook School District
Lara Christensen	The Oregon Community Foundation
Carolyn Devine	Oregon Watershed Enhancement Board
Norie Dimeo-Ediger	Oregon Forest Resources Institute
Rachael Goetzelman	Oregon Coast Aquarium & Oregon Sea Grant
Michelle Ratcliffe	Oregon Department of Agriculture
Lori Stole	Sustainable Oregon Schools Initiative

Assessment

John Falk	Task force
Traci Price	Task force
Susan Duncan	Concerned citizen
Rachael Goetzelman	Oregon Coast Aquarium & Oregon Sea Grant
Michelle Ratcliffe	Oregon Department of Agriculture
Bill Stewart	Gladstone School District
Rick Zenn	World Forestry Center



The NOCLI Act included sponsorship from the following policymakers:

Sponsor Representatives:	Buckley and Gelser
Cosponsor Representatives:	Cannon, Dembrow, Harker, Komp, Read, Roblan, and VanOrman
Cosponsor Senators:	Bonamici, Dingfelder, Morrisette, Rosenbaum, and Walker



Appendix B: Glossary



Climate change. A significant and persistent change in the mean state of the climate or its variability. Climate change occurs in response to changes in some aspect of earth's environment: these include regular changes in Earth's orbit about the sun, rearrangement of continents through plate tectonic motions, or anthropogenic modifications of the atmosphere (US Global Change Research Program, 2009).

Climate science literacy. An understanding of human influence on climate and climate's influence on individuals and society. A climate-literate person:

- Understands the essential principles of Earth's climate systems
- Knows how to assess scientifically credible information about climate and climate change in a meaningful way
- Is able to make informed and responsible decisions with regard to actions that may affect climate (US Global Change Research Program, 2009)

Environmental literacy. An individual's understanding, skills and motivation to make responsible decisions that consider his or her relationships to natural systems, communities and future generations.

ESD. Education Service District.

Healthy lifestyles. Choices, behaviors and attitudes that contribute to physical, mental and emotional well-being. For example:

- 1) Enhancing good nutritional choices as outlined in the USDA dietary guidelines
- 2) Engaging in meaningful learning experiences at outdoor school.
- 3) Encouraging active family and individual experiences that connect students with the outdoors, such as gardening, hiking, fishing and other recreational activities.

ODE. Oregon Department of Education.



Appendix C: National Staff Development Council Standards

NATIONAL STAFF DEVELOPMENT COUNCIL STANDARDS FOR STAFF DEVELOPMENT (REVISED 2001)

Context Standards

Staff development that improves the learning of all students:

- Organizes adults into learning communities whose goals align with those of the school and district. (Learning Communities)
- Requires skillful school and district leaders who guide continuous instructional improvement. (Leadership)
- Requires resources to support adult learning and collaboration. (Resources)

Process Standards

Staff development that improves the learning of all students:

- Uses disaggregated student data to determine adult learning priorities, monitor progress, and sustain continuous improvement. (Data-driven)
- Uses multiple information sources to guide improvement and demonstrate its impact. (Evaluation)
- Prepares educators to apply research to decision-making. (Research-based)
- Uses learning strategies appropriate to the intended goal. (Design)
- Applies knowledge about human learning and change. (Learning)
- Provides educators with the knowledge and skills to collaborate. (Collaboration)

Content Standards

Staff development that improves the learning of all students:

- Prepares educators to understand and appreciate all students; create safe, orderly and supportive learning environments; and hold high expectations for their academic achievement. (Equity)
- Deepens educators' content knowledge; provides them with research-based instructional strategies to assist students in meeting rigorous academic standards; and prepares them to use various types of classroom assessments appropriately. (Quality Teaching)
- Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement)



<http://www.nsd.org/standards/index.cfm>
(Retrieved August 25, 2010)

Appendix D: Place- and Community-Based Education



Place- and community-based education is an approach to teaching and learning that begins with the local. It addresses two critical gaps in the experience of many children now growing up in the United States: contact with the natural world, and contact with community. It offers a way to extend young people's attention beyond the classroom to the world as it actually is, and to engage them in devising solutions to the social and environmental problems they will confront as adults.

Place- and community-based education uses the environment as a text for learning. In doing so, this distinct curricular approach "can increase students' engagement with learning and enhance their academic achievement" (Smith & Sobel, 2010).

Many districts, schools and teachers in Oregon and elsewhere have implemented creative and effective ways to satisfy the teaching of educational content through the promotion of applied learning within the natural world and home community. Engaging students in investigation, inquiry, exploration and discovery of the world around them encourages real and meaningful learning while accommodating the role of youth as active citizens.



"For too long, students have not had the opportunity to take on their rightful role as citizens and members in the community. Combining the needs of the community with corresponding educational opportunities and experiences for students is a central feature of community-based education. Students need to be engaged in the work of the community and thus there will be an authentic context to their learning." —Jon Yoder²

The fundamental components of this type of applied education are an authentic community context for student work; numerous community partners; strong curricular connections; valued student-community products; and above all, committed and passionate educators.

Common Denominators for Success

Strategic partnerships

Partnerships are critical for long-term funding and resource support. The key is to establish as many touchpoints as possible between administrators, teachers, community partners and students. Finding and transforming individual "sparks" into lasting partnerships will ensure plenty of fuel to feed the fire for years, and prevent the program from dying out when the only inspired teacher retires. Developing partnerships also helps individuals recognize the relevance and longevity of their efforts.

Cultivating partnerships between school systems and communities ensures that teachers and students have the resources they need to be successful in the pursuit of environmental literacy.

Tom Horn, principal of Al Kennedy Alternative High School in Cottage Grove, encourages teachers "to take students outside the classroom," and emphasizes that "establishing ties with community partners is a central rather than tangential part of their work" (Smith & Sobel, 2010). Brian Goodwin, director of special programs for the North Wasco School District in The Dalles, agrees with Tom on the importance of encouraging teachers to incorporate unconventional instructional strategies and to connect with community partners who support their efforts.

Real and dynamic learning

Giving students opportunities to engage in meaningful, place-based educational experiences benefits both the learner and the locale.



Such experiences should:

- Fit within education goals. The student experience has measurable results and satisfies existing educational standards and diploma requirements toward academic achievement.
- Address real community needs. Learning experiences are directed by needs assessments in the community to identify real issues or opportunities; it is not a simulated experience.
- Allow students to direct the learning experience; engage youth in the decision-making process.
- Be tied to vocational preparation. Students should understand the importance of living and working in their home community by participating in experiences that can provide their future livelihood, including visits to living-working farms and forests.

Accessibility of resources

Teachers, schools, students and communities benefit from easy access to a variety of resources and to mechanisms for distributing those resources throughout their networks. Knowing what's available within a community or a school (including the expertise of individual teachers) is essential in creating opportunities.

Top Ten List Developed by Jon Yoder²

This top-ten list of advice will be useful for teachers who are just beginning to integrate environmental literacy into the classroom:

- 1) Start small, and find other teachers who are interested in doing a community project. Support and collaboration are critical for success as you begin this work.
- 2) Don't let issues like transportation and funding stand in your way. Be creative and persistent, and employ all available community resources.
- 3) Getting to know community partners is a must, so be prepared to make calls and meet with prospective partners. They will probably be more than willing to work with you, and they may have resources you can use.
- 4) Don't let your class become a work crew. The work you do should be the work of your partner. This is not a field trip or guest presentation, but authentic involvement in your partner's work.
- 5) Be organized and plan ahead. You can never foresee all possibilities, but staying organized will make you more successful with students and partners.
- 6) Promote the program. It's not about you; it's about the students and their capacity to serve as a resource for their community.
- 7) Involve students in the selection of their work and in designing their products. This may be the first time they have some control over their learning. It can be empowering for them.
- 8) As your work expands, think about ways for the program to sustain itself after you leave.
- 9) Don't worry about having to know the content, or being in charge of direct instruction. You will become a facilitator; instruction comes from the community partner and the curriculum resources you organize. One of the great joys of this approach is that you often get to learn along with your students. Sometimes, they can even teach you. In other words, the teacher is not the "sage on the stage," but the "guide on the side."
- 10) Remember: This is about community! The work students do must have a clear context. They should come out of their study knowing what their community is, how it functions and how they can participate. This approach also fosters community building within the classroom as students reconnect with themselves and each other.



Appendix E: House Bill 2544

75th OREGON LEGISLATIVE ASSEMBLY—2009 Regular Session

Enrolled House Bill 2544

Sponsored by Representatives BUCKLEY, GELSER; Representatives CANNON, DEMBROW, HARKER, KOMP, READ, ROBLAN, VANORMAN, Senators BONAMICI, DINGFELDER, MORRISETTE, ROSENBAUM, WALKER

CHAPTER

AN ACT

Relating to environmental education; and declaring an emergency.

Whereas environmental education is essential for enhancing student learning and developing student problem solving skills, especially in science; and

Whereas environmental education helps create responsible and engaged citizens; and

Whereas environmental education results in students' being prepared to address the challenges, adjustments and opportunities that will be present in their lives due to threats to human health, economic development, biological diversity and national security arising from environmental stresses; and

Whereas studies show that time spent outdoors for learning during the school day is critical to the intellectual, emotional and physical health of students and that providing students with quality opportunities to directly experience the natural world can improve students' overall academic performance, self-esteem, personal responsibility, community involvement, personal health and understanding of nature; and

Whereas this 2009 Act shall be known as the "No Oregon Child Left Inside Act"; now, therefore,

Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) The Oregon Environmental Literacy Task Force is established for the purpose of developing the Oregon Environmental Literacy Plan described in section 2 of this 2009 Act.

(2) The task force consists of 11 members as follows:

- (a) A member who is appointed by the Superintendent of Public Instruction;
- (b) A member who represents a nonprofit organization that advances environmental education in Oregon and who is appointed by the Governor;
- (c) A member who represents a local park and recreation association that provides environmental education in Oregon and who is appointed by the Governor;
- (d) A member who represents the Institute for Natural Resources created under ORS 352.239 and who is appointed by the Chancellor of the Oregon University System;
- (e) The Director of the Department of Environmental Quality, or a designee;
- (f) The State Parks and Recreation Director, or a designee;
- (g) The State Fish and Wildlife Director, or a designee;
- (h) The Director of the Department of State Lands, or a designee;
- (i) The State Forester, or a designee;
- (j) The Director of Agriculture, or a designee; and

(k) A member who represents the marine industry, as appointed by the State Marine Director.

(3) A majority of the members of the task force constitutes a quorum for the transaction of business.

(4) Official action by the task force requires the approval of a majority of the members of the task force.

(5) The task force shall elect one of its members to serve as chairperson.

(6) If there is a vacancy for any cause, the appointing authority shall make an appointment to become immediately effective.

(7) The task force shall meet at times and places specified by the call of the chairperson or of a majority of the members of the task force.

(8) The task force may adopt rules necessary for the operation of the task force.

(9) The task force shall submit a report, and may include recommendations for legislation, to an interim committee of the Legislative Assembly related to education no later than October 1, 2010.

(10) The Department of Education shall provide staff support to the task force.

(11) Members of the task force are not entitled to compensation, but may be reimbursed for actual and necessary travel and other expenses incurred by them in the performance of their official duties in the manner and amounts provided for in ORS 292.495. Claims for expenses shall be paid out of funds available to the Department of Education for purposes of the task force.

(12) All agencies of state government, as defined in ORS 174.111, are directed to assist the task force in the performance of its duties and, to the extent permitted by laws relating to confidentiality, to furnish such information and advice as the members of the task force consider necessary to perform their duties.

(13) The Department of Education may accept contributions of moneys and assistance from the United States Government or its agencies or from any other source, public or private, and agree to conditions placed on the moneys not inconsistent with the duties of the task force. All moneys received by the department under this subsection shall be deposited into the Department of Education Account established by ORS 326.115 to be used for the purposes of carrying out the duties of the task force.

SECTION 2. (1) The Oregon Environmental Literacy Task Force established by section 1 of this 2009 Act shall develop the Oregon Environmental Literacy Plan.

(2) The goals of the Oregon Environmental Literacy Plan are to:

(a) Prepare students to understand and address the major environmental challenges facing this state and country, including the relationship of the environment to national security, energy sources, climate change, health risks and natural disasters.

(b) Contribute to students establishing a healthy lifestyle by making outdoor experiences part of the regular school curriculum and creating programs that promote healthy lifestyles through outdoor recreation and sound nutrition.

(c) Create opportunities for enhanced and ongoing professional development of teachers by improving teachers' knowledge of environmental issues, skill in teaching environmental issues in the classroom and skill in teaching environmental issues in settings outside of the classroom.

(3) To achieve the goals described in subsection (2) of this section, the task force shall identify the following for the plan:

(a) The academic content standards, content areas and courses or subjects.

(b) The relationship of the plan to Oregon graduation requirements.

(c) How the Department of Education will measure the environmental literacy of students.

(d) The programs for professional development of teachers to improve the teachers' knowledge of environmental issues, skill in teaching environmental issues in the classroom and skill in teaching environmental issues in settings outside of the classroom.

(e) How the plan will be implemented, including securing funding and other necessary support.

(f) How to encourage educational agencies and public schools to participate in environmental education programs that:

(A) Improve teachers' knowledge of environmental issues, skill in teaching environmental issues in the classroom and skill in teaching environmental issues in settings outside of the classroom.

(B) Focus on the development of teachers' environmental knowledge and teaching skills as a career-long process that stimulates teachers' intellectual growth and upgrades teachers' proficiency in teaching about the environment.

(C) Develop teacher training curricula that focus on environmental education and are aligned with state and local academic content standards.

(D) Allow students to directly experience the outdoors by providing environmental education experiences that are based on outdoor activities and that use outdoor facilities.

(E) Incorporate field-based learning, place-based learning, service learning, outdoor learning or experimental learning.

(F) Integrate environmental education into the curricula by training teachers and administrators how to use field-based learning, place-based learning, service learning, outdoor learning and experimental learning and by encouraging and supporting teachers to use the training in the curricula.

(G) Provide activities and programs that advance environmental education, including interdisciplinary courses that integrate the study of natural, social and economic systems and the use of the environment as an integrating theme for a school curriculum.

(g) The meanings of key terms required for developing the plan, including the meanings of the terms "environmental literacy," "climate change" and "healthy lifestyles."

(4) For the purpose of developing the plan, the task force shall seek input from a variety of sources and viewpoints to allow equal weight for critical thinking and analysis related to environmental literacy.

SECTION 3. Sections 1 and 2 of this 2009 Act are repealed on the date of the convening of the next regular biennial legislative session.

SECTION 4. This 2009 Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this 2009 Act takes effect July 1, 2009.

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