



Oregon Environmental Literacy Plan: Toward a Sustainable Future

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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

“... the “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

Since the earliest known evidence of people living in Oregon, our relationship with natural resources has defined the Oregon way of life. From Douglas-fir trees to Chinook salmon, our landscapes, waterways, coast, and wildlife have inspired our stories, our livelihood and our legacy. Oregon’s natural resources serve as a foundation of our state’s economy, and have created a dynamic heritage, one that we want to ensure and sustain for 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 towards protecting our heritage for years to come, the State of Oregon passed legislation to create this environmental literacy plan (HB2544), designed to ensure that every student in Oregon becomes a lifelong steward of their environment and community, willing and able to exercise the rights and responsibilities of environmental citizenship, choosing to interact frequently with the outdoor environment, equipped with multifaceted knowledge of our relationship to the environment and its resources, and prepared to address challenges with sound decisions for our future.

The Legislative Charge

As required by HB2544 (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 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.

In addition, the Legislature directed the Plan to identify:

- 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.

Finally, the Legislature directed the Plan to define (See Appendix B for the definitions):

- Environmental Literacy
- Climate Change
- Healthy Lifestyles

The Plan is specifically directed to state leaders to serve as a roadmap for action that





supports statewide efforts towards the development and implementation of education for environmental literacy. It is intended for use by schools and districts, as action at these fundamental levels of the educational system is essential for the Plan's success. The Plan is also intended to serve and support teachers, nonformal educators, community partners and other interested parties as they develop and

implement locally relevant education for environmental literacy programs and activities.

The Need for Environmental Literacy

Oregon's natural resources serve as a foundation of our state's economy and have created a dynamic heritage, one that we want to ensure and sustain for generations. Preparing Oregon's children to protect this valuable legacy and to understand their relationship to it is challenged by the fact that many of our youth are utterly disconnected from the natural environment. Our education system often does not provide students with all the knowledge, skills, perspectives and values needed to consider whole systems, to develop a sense of place, or to pursue our responsibility to shared resources (the commons) and each other.

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

While education for environmental literacy helps develop the knowledge and skills necessary to address complex environmental issues, it also contributes to student academic achievement.

Quantitative and qualitative studies highlight the immense benefits of an integrative environmental education framework. In one study, 92 percent of comparisons indicated that students who were taught using an environmental framework "academically outperform their peers in traditional programs." Additionally, evidence gathered from the same study of 40 schools indicates that students learn more effectively within an environment-based context than within a traditional educational framework. Some observed benefits include:

- Better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies.
- Reduced discipline and classroom management problems.

- Increased engagement and enthusiasm for learning.
- Greater pride and ownership in accomplishments.

Education for environmental literacy is essential for enhancing student learning and developing student problem solving skills. It helps cultivate responsible and engaged citizens. Education for environmental literacy results in students being prepared to address the challenges, adjustments and opportunities that will be present in their lives.

Additionally, 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.

Development of the Oregon Environmental Literacy Plan

A comprehensive process involving a broad spectrum of diverse stakeholders and interests was used in the development of this plan. As required by the legislation, the Governor appointed an eleven-member Oregon Environmental Literacy Plan Task Force, including members from Oregon Department of Education, Oregon University System, 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 the process, small working groups were 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."

Our vision of Oregon in the year 2030, when the Plan has been supported and implemented for 20 years, is:

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, are able to examine issues from multiple perspectives, and exercise the rights and responsibilities of being 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 needs to be integrated throughout the curriculum in every classroom in Oregon with connected, sustained opportunities for students to participate in outdoor learning experiences. To facilitate this process, Environmental Literacy Strands were developed that articulate a comprehensive content and skills learning framework (see Chapter 3). Environmentally literate students, upon graduation from twelfth grade, will demonstrate proficiency in each of the five strand areas, with evidence that these proficiencies were acquired outdoors.

Alignment of the Environmental Literacy Strands with Oregon Academic Standards is a recommended next step. Once the strands and standards are aligned, it will be possible to identify where the learning content for cultivating environmentally literate citizens is supported. Intent was given to using language in the Environmental Literacy Strands that appears in both state and national standards. We recommend that these strands be incorporated across all curricular areas and grade levels in support of existing Oregon Academic Standards.

The following learning strands were developed to support the cultivation of environmentally literate students achieved by integrating in and out of the classroom experiences:

Summary of Environmental Literacy Strands

- 1) **Understand the physical and biological world, and our interdependent relationship with it**
Understands Earth systems' characteristics, including physical, ecological and human systems and how these interconnected systems affect individual and societal well-being
- 2) **Understand and apply systems thinking concepts and tools**
Analyzes and applies the properties

of systems thinking to Earth's physical, ecological and human systems now and to inform future considerations

- 3) **Sense of place, region, nation, and global community**
Understands sense of place as the connection between people and a place and that sense of place encompasses the interrelationships among patterns of human settlement, social and cultural relationships, and the natural world
- 4) **Investigate, plan and create a sustainable future**
Understands importance of vision, imagination, planning, and civic action to the ability to address challenges and create a sustainable future
- 5) **Understand and achieve personal and civic responsibility**
Understand the rights, roles, responsibilities and actions associated with leadership and participation toward healthy environments and sustainable communities

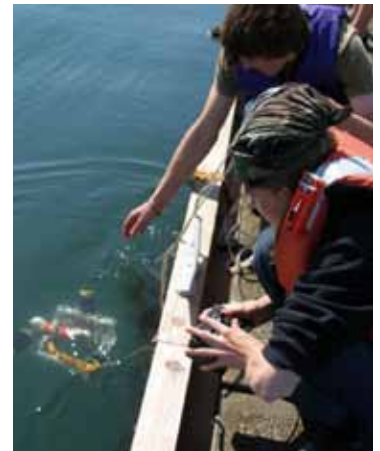
Graduation Requirements

(Adapted from Oregon Department of Education) In January of 2007, the Oregon State Board of Education voted to adopt new high school graduation requirements. These new requirements are designed to better prepare each student for success in college, work, and citizenship. To earn a diploma, students will need to successfully complete the credit requirements, demonstrate proficiency in essential skills, and meet the personalized learning requirements. Students will also have the option to earn credit for proficiency.

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

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

In adopting the new diploma requirements, the Oregon State Board of Education stated the following: "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 of the classroom where hours of instruction may vary, through documentation of prior learning, by appropriate examination, or by any combination thereof. Credit for Proficiency is acutely suited to support education for environmental literacy as a vehicle in student pursuit of the Oregon Diploma.

Essential skills, Personal Learning, and Credit for Proficiency all present flexible options for aligning existing graduation requirements with the Plan. Examples for how skill requirements might be met and assessed through environmental literacy activities should be further developed and disseminated. In developing these examples, priority for skills and activities should be given to the Plan's Environmental Literacy Strand components that are not satisfied by existing Oregon Academic Standards. Final consideration should be given to creating a new graduation requirement for environmental literacy, following Maryland's proposed plan as an example (Robelen, 2010). We further recommend that specific graduation requirements be developed to include outdoor experiences.



PROFESSIONAL DEVELOPMENT

Schools play a critical role in the preparation of environmentally literate students. Teachers, in particular, hold a large responsibility for guiding the learning experiences that lead to environmental citizenship. Although there are numerous examples of individual teachers, whole schools, and districts integrating environmental literacy into their curricula throughout Oregon, we are still shy of satisfying our ultimate goal of building an environmentally literate citizenry.

Designing and implementing an effective environmental literacy program requires both a unique set of understandings and skills, and support services. To be successful, teachers need access to intentional professional development opportunities that will facilitate the development and delivery of comprehensive, cohesive environmental literacy experiences both in and outside the classroom. Teachers need to know how and be supportive in satisfying educational requirements by taking students outside to participate in applied learning. Professional development opportunities must include improving teachers' environmental (and related subject) content knowledge, skill in teaching about environmental issues, and field-based pedagogical skills.

Although lessons in environmental literacy are encouraged to take place 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 instruction of the core subjects to benefit students through applied learning opportunities.

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

Guiding Principles of Environmental Literacy Professional Development

Professional development for environmental literacy is built from 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 administrators, teachers and support personnel at all levels.

Systems of Support for Environmental Literacy Programming

To facilitate teacher professional development in environmental literacy, various systems of support are recommended, including but not limited to: policy; school-community partnerships; communities of practice; curricular and material support systems; involvement of school facilities and operations; training of administrators and all other school/district staff, and funding.

Best Practices of 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 purpose – programs focus on the environment and sustainability.

Educator Competencies for Environmental Literacy

Educators must be able to plan and implement high-quality, developmentally appropriate programs focusing on the environmental literacy learning of all students. Effective educators possess the understandings and skills associated with environmental literacy and instruction. They are willing and able to

implement research-based environmental literacy programs designed to 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
- Encouragement for the discovery of “sense of self” – teach 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. In order to determine whether this is happening, we need to assess the change of student environmental literacy over time and strive toward its 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. Assessments should also be aligned with existing assessment tools, structures, systems and survey instruments as often as possible to maximize the efficiency and sustainability of our efforts. The assessment process should be collaborative, transparent, and clearly communicated with all stakeholders.

Environmental literacy assessment strategies should be designed to: (see Chapter 5 for details)

- Measure the knowledge, skills and motivation of students to make responsible decisions that consider their relationships to natural systems, communities and future generations.
- Integrate environmental literacy assessment within existing tools and/or assessment 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 aspects of this Plan are occurring throughout Oregon schools, implementation of the following is recommended in order to allow for a more strategic and unified approach towards fully integrating the Plan into all schools across Oregon.

Stakeholder Engagement

Implementation of the Plan will involve all aspects of the K-12 system. A wide variety of stakeholders should be involved with each aspect of plan implementation. If support and integration at any level is missing the effort will not reach its potential, and will most-likely be short-lived. See Chapter 6 for a detailed listing and recommend 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: establish a statewide Plan Coordinator; create Regional Coordinator positions; identify and define the roles for each level of the school system; provide outreach to all school-system levels; and conduct an inventory of current efforts.

**Professional Development:**

Explore and refine activities related to environmental literacy professional development including: conduct an inventory of existing professional development efforts that provide opportunities for outdoor learning both in-school and non-school settings; establish the competencies, characteristics and best practices of good, quality professional development; create and implement

strategies to fill identified statewide professional development gaps; explore ways to assess the effectiveness of professional development; and consider the creation of endorsements and/or certification programs.

Resources:

Identify, develop or refine digital libraries/portals to house environmental literacy resources, including where classrooms can go for outdoor learning, so they are available and easily accessible statewide.

Regional Hubs:

Support the development of regional hubs that facilitate integration of the Plan at the local level. Create a template for regional hub development and assist regional coordinators in their efforts to establish hubs including support for conducting needs assessments.

Coordination with Oregon Initiatives:

Coordinate Plan implementation with the Oregon Green Jobs Growth Plan as well as other statewide initiatives.

Environmental Literacy Strands:

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

Pre-Service Teacher Preparation:

Evaluate environmental literacy content in Oregon's 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 assessment to identify which education for Environmental Literacy Strands and delivery practices are not currently supported with professional development. Develop and implement a plan to fill the gaps.

Support Services:

Provide appropriate planning support and release/substitute time for teachers, create an implementation strategy which prioritizes actions that build a community of practice within schools/districts across communities and throughout the state, and support mentoring opportunities that encourage teacher to teacher learning.

School Facilities:

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

Assessment:

Develop strategies for promoting staff expertise in how environmental literacy is measured.

Funding to Implement the Oregon Environmental Literacy Plan

Funding is critical to successful integration of the Plan. The following actions are recommended:

Funding Development:

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

Funds Management:

Create a Plan 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

Since the earliest known evidence of people living in Oregon, our relationship with natural resources has defined the Oregon way of life. From Douglas-fir trees to Chinook salmon, our landscapes, waterways, coast, and wildlife have inspired our stories, our livelihood and our legacy. Oregon's natural resources serve as a foundation of our state's economy, and have created a dynamic heritage, one that we want to ensure and sustain for 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 towards protecting our heritage for years to come, the State of Oregon passed legislation to create this environmental literacy plan (HB2544), designed to ensure that every student in Oregon becomes a lifelong steward of their environment and community, willing and able to exercise the rights and responsibilities of environmental citizenship, choosing to interact frequently with the outdoor environment, equipped with multifaceted knowledge of our relationship to the environment and its resources, and prepared to address challenges with sound decisions for our future.

The Legislative Charge

As required by HB2544 (see Appendix E for the complete bill), the goals of the Oregon Environmental Literacy Plan (the Plan) are to:

- 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.
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environmental issues in the classroom and skill in teaching environmental issues in settings outside of the classroom.

In addition, the Legislature directed the Plan to identify:

- The academic content standards, content areas and courses or subjects.
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- How the Department of Education will measure the environmental literacy of students.
- 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.
- How the Plan will be implemented, including securing funding and other necessary support.
- How to encourage educational agencies and public schools to participate in environmental education programs.

Finally, the Legislature directed the Plan to define (See Appendix B for the definitions):

- Environmental Literacy
- Climate Change
- Healthy Lifestyles

The Plan is specifically directed to state leaders to serve as a roadmap for action that supports statewide efforts towards the development and implementation of education for environmental literacy. It is intended for use by schools and districts, as action at these fundamental levels of the educational system is essential for the Plan's success. The Plan is also intended to serve and support teachers, nonformal educators, community partners and other interested parties as they develop and implement locally relevant education for environmental literacy programs and activities.

The Need for Environmental Literacy

Oregon's natural resources and related industries support 37%* of our economy.

* Combined analysis performed by the Oregon Department of Agriculture



Approximately 550,000 Oregonians work in natural resource-related fields or jobs supported by those industries and comprise one-third of the state's employment. 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, supporting their mental and physical well-being. The health of our ecosystems is necessary to maintain our fresh water and air, and to support our agricultural, forests, and fisheries sectors.

Our population continues to grow, increasing demand on a limited number of resources. Today, as we strive to understand the interrelationships between environment, society and our economy, we are faced with major sustainability challenges which students must be prepared to understand and address.

All Oregonians need to be equipped to:

- Ensure that the air remains safe and clean to breathe;
- Provide abundant clean water to grow and process food, provide safe drinking water and provide places to play and cool down;
- Meet energy needs and explore use of renewable and sustainable methods;
- Protect working farms and forests;
- Restore and protect the health of watersheds and ocean and provide high quality habitat for fish and wildlife;
- Identify and plan for natural hazards; and
- 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 challenged by the fact that many of them are utterly disconnected from the natural environment. Our education system often does not provide them with all of the knowledge, skills, perspectives and values needed to consider whole systems, to develop a sense of place, or to pursue our responsibility to shared resources (the commons) and each other.

A recent Kaiser Family Foundation study reports that on a typical day, eight to eighteen year olds in the United States spend more than seven and a half hours consuming electronic media (Kaiser Family Foundation, 2010). Another report from 1997-2003 found that the number of children ages nine to twelve engaging in outdoor activities such as hiking, walking, fishing, beach play and gardening declined 50% (Hofferth, 2008). It is a fact that

children in the United States are spending less time playing outside than at any time in our nation's history (Clemens, 2004). The result is that they are losing a direct relationship to the natural world and its resources.

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

An education that promotes environmental literacy and engages students with important current issues tends to more deeply engage students, leading to improved academic performance.

While education for environmental literacy helps develop the knowledge and skills necessary to address complex environmental issues, it also contributes to student academic achievement.

Quantitative and qualitative studies highlight the immense benefits of an integrative environmental education framework. In one study, 92 percent of comparisons indicated that students who were taught using an environmental framework "academically outperform their peers in traditional programs." Additionally, evidence gathered from the same study of 40 schools indicates that students learn more effectively within an environment-based context than within a traditional educational framework. Some observed benefits include:

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

Education for environmental literacy is essential for enhancing student learning and developing student problem solving skills. It helps create responsible and engaged citizens. Education for environmental literacy results in students being prepared to address the challenges, adjustments and opportunities that will be present in their lives.

Additionally, 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.

Oregon is a leader in the Green Economy and is currently developing the Oregon Green Jobs Growth Plan, which delves into the role of our K-12 system to growing this sector. Many of the understandings and skills necessary for green jobs can and should be developed through education for environmental literacy activities.

Creating an environmental literacy plan will provide the framework for school systems to expand and improve their environmental education programs. A state environmental literacy plan will:

- Ensure that education for environmental literacy activities are aligned with student graduation requirements and help achieve state education goals.
- Ensure that education for environmental literacy is fully, efficiently and appropriately integrated into formal education systems.
- Ensure that teacher professional development opportunities in education for environmental literacy are aligned with student achievement goals in environmental literacy.
- Ensure that every Oregon child is provided meaningful opportunities to learn in the outdoors as part of the regular school curriculum.
- Ensure consistency, accuracy, and excellence in environmental content knowledge.
- Engage underserved communities through an inclusive process so that all stakeholders are beneficiaries of education for environmental literacy in schools.
- Ensure that nonformal environmental education providers, state natural resource agencies, community organizations, and other partners are involved 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 non-human 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 demonstrates 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 (HB2544 – Appendix E), a state policy calling 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.

In addition to state policy makers, NOCLI has support from the Oregon Department of Education. According to State Superintendent of Public Instruction, Susan Castillo (quoted just prior to the passage of NOCLI):

"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 (HB2544) 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."

– State Superintendent of Public Instruction, Susan Castillo

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

"... the "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



The NOCLI Act calls for a Plan that provides for a K-12 continuum of quality educational opportunities to 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 graduate as critical thinkers, ecological problem solvers and engaged citizens. It also ensures that every student connects with nature, and understands the impact of human behaviors on our 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 needed for the future.

Having an environmental literacy plan in place will 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 played a prominent role in advocating for NCLI. The national NCLI Coalition is represented by nearly 1500 business, health, youth, faith, recreational, and environmental and educational groups representing over 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 to 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. The legislation would provide new funding for environmental education, particularly to develop rigorous standards, train teachers and to develop state environmental literacy plans. It also proposes giving states that develop such environmental literacy plans access to additional funds. Tied to this federal initiative, Oregon has the potential to earn \$1-2 million in new funding to support the implementation of the Plan.

Development of Oregon's Environmental Literacy Plan

A comprehensive process involving a broad spectrum of diverse stakeholders and interests was used in the development of this plan. As required by the legislation, the Governor appointed an eleven-member Oregon Environmental Literacy Plan Task Force,

including members from Oregon Department of Education, Oregon University System, 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 the process, small working groups were formed to accomplish specific tasks related to the development of the Plan (see Appendix A for a complete list of participants).

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 the preparation of this plan. In particular, Developing a State Environmental Literacy Plan (NAAEE, 2008) was used as a guide to the overall structure. In addition to Oregon State 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, teams of specialists and community members contributed many hours of their time to fulfill the requirements of HB2544. 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 comprised of educational and environmental specialists and the general public convened to provide feedback 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 active 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 & Essential Underpinnings

Vision Statement

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

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, are able to examine issues from multiple perspectives, and exercise the rights and responsibilities of being an environmentally literate citizenry.

Our vision for students

Students become lifelong stewards of their environment and community, 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 what a sustainable future looks like
- Understand the dynamics of systems and change
- Recognize the need for diversity in all systems
- Become applied, lifelong learners
- Provide a workforce ready to create a successful and sustainable future

Our vision for schools and districts

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

Schools and districts that foster environmentally literate students:

- Regularly utilize 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 level to the next
- Regularly assess students' environmental literacy
- Support healthy options for children before, during and after the school day including nutritional food choices, non-structured play areas/ times, and walking/biking to school

Our vision for communities

Communities partner 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 to use the community as a learning laboratory for students
- 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 off of the 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 from a core of key principles that inform its approach to education. Some of these important underpinnings (NAAEE, 2010) are:

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 a process of building knowledge and skills. Environmental literacy depends on a personal commitment to apply skills and knowledge to help ensure environmental quality and quality of life. Personal commitment begins with an awareness of what immediately surrounds them. Instructors foster learners’ innate curiosity and enthusiasm, providing them with early and continuing opportunities to explore their environment. Outdoor and community-based instructional strategies are used to engage students in direct discovery of the world around them.

Balanced approach:

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



The importance of where one lives:

Beginning close to home, learners forge connections with, explore, and understand their immediate surroundings. The sensitivity, knowledge, and skills needed for this local connection provides a base for moving out into larger systems, broader issues, and an 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 opportunities for integration and works best when infused across the curriculum, rather than being treated as a separate discipline or subject area.

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, technologies—impact the total environment. Since we are a part of nature rather than outside it, we are challenged to recognize the ramifications of our interdependence.

Lifelong learning:

Critical and creative thinking, decision making, and communication, as well as collaborative learning, are emphasized. 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 and are most effective when relevant to the real world.

Systems:

Systems help make sense of a large and complex world. A system is made up of parts. Each part can be understood separately. The whole, however, is understood only by understanding the relationships and interactions among the parts. The human body can be understood as a system; so can galaxies. Organizations, individual cells, communities of animals and plants, and families can all be understood as systems. And systems can be nested within other systems.

21st Century Skills

(critical thinking, creative thinking, collaboration, communication skills):

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

Furthermore, this document is grounded in these principles:

- Education is essential to the development of sustainable communities and 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 their communities will be our future leaders - capable of ensuring the health and livelihood of all of Oregon for generations.
- Access to nature promotes social and emotional well-being and cognitive development.

Partnerships

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

Although the intent for 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, non-profit organizations, and businesses, and the community at large.

School missions across the state enumerate “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 helping local stakeholders meet ecological and community objectives.

The Plan recognizes and builds off of successful programs that both educate and equip students to understand and address community issues in informed, thoughtful, and innovative ways --ultimately contributing to the community’s long-term health and vitality. With the Plan, we seek to create a framework that provides students with opportunities for meaningful experiential learning and academic achievement; teachers with programs and partners to help support state mandated educational goals; and local agencies and groups the opportunity to reach out and engage youth in real issues.

Chapter 3: Educational Standards and Graduation Requirements

To be effective, education for environmental literacy needs to be integrated throughout the curriculum in every classroom in Oregon with connected, sustained opportunities for students to participate in outdoor learning experiences. To facilitate this process, the following Environmental Literacy Strands were developed that articulate a comprehensive content and skills learning framework. Environmentally literate students, upon graduation from twelfth grade, will demonstrate proficiency in each of these five strand areas with evidence that these proficiencies were acquired outdoors.



Alignment of the Environmental Literacy Strands with Oregon Academic Standards is a recommended next step. Once the strands and standards are aligned, it will be possible to identify where the learning content for cultivating environmentally literate citizens is supported. Intent was given to using language in the Environmental Literacy Strands that appears in both state and national standards. We recommend that these strands be incorporated across all curricular areas and grade levels in support of existing Oregon Academic Standards.

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

Summary of Environmental Literacy Strands

- 1) **Understand the physical and biological world, and our interdependent relationship with it**
 - a. Structure, function, interaction and change in living and non-living systems
 - b. Structure, function and relationships of human systems to the environment and sustainability
 - c. Interrelationships between people and the environment
- 2) **Understand and apply systems thinking concepts and tools**
 - a. Systems as context for thinking and action
 - b. Implications and consequences
 - c. Strategic responsibilities of systems thinking
 - d. Shifting mental models and paradigms
- 3) **Sense of place, region, nation, and global community**
 - a. Characteristics of their region and/or community
 - b. Interconnectedness in regions and the global community
 - c. School community
- 4) **Investigate, plan and create a sustainable future**
 - a. Work with flexibility, creativity, and openness
 - b. Investigate and analyze strategies that address challenges and create sustainable futures
 - c. Decision-making and citizen action
- 5) **Understand and achieve personal and civic responsibility**
 - a. Recognize citizens' rights and responsibilities of participation and leadership in both local and global contexts
 - b. Apply self confidence in their effectiveness as citizens (self efficacy)
 - c. Accept personal responsibility for the effects of individual and group actions
 - d. Understand the commons and its relationship to personal and civic responsibility
 - e. Understand consumption and consumer choices

1) **Understand the physical and biological world, and our interdependent relationship with it**

Understands Earth systems' characteristics, including physical, ecological and human systems and how these interconnected systems affect individual and societal well-being

a. Structure, function, interaction and change in living and non-living systems, such as:

→ Dynamic and interconnected nature of Earth's living environment, including:

- Structure and function of organisms, populations, communities, ecosystems, biomes
- Principles of ecology – biodiversity, carrying capacity, habitat sources and sinks, population dynamics, ecosystem change
- Heredity and evolution – species change and the process of natural selection
- Matter and energy flow in organisms – processes by which plants and animals obtain energy and materials for growth and metabolism, biogeochemical cycling
- Interdependence of plants, animals, and environment, and how adaptation influences survival

→ Dynamic and interconnected nature of Earth's physical systems, including:

- Structure and composition of Earth's atmosphere, geosphere, and hydrosphere
- Changes in matter – physical and chemical properties of elements and compounds, global carbon cycle
- Energy – transfer of energy, transformation and conservation, laws of thermodynamics
- Cycling of matter and energy between system components over time
- Evidence for geologic, climatic, and environmental changes over time
- Climate – Sun Earth relationships, processes that drive and regulate climate variability, interrelationships of climate and other Earth physical and living systems
- Ocean – influence on weather and climate, interrelationships of ocean and other Earth physical and living systems

b. Structure, function and interconnected nature of human systems to the environment and sustainability, such as:

→ Political systems, including:

- Organization, responsibilities, and interrelationships – local, state and federal governments
- Personal and political rights of citizenship
- Participatory responsibilities of citizens
- How government is influenced and changed by support and dissent of individuals, groups, and international organizations
- How nations interact with each other
- Concepts of political power, authority, conflict and conflict management

→ Economic systems, including:

- Uneven distribution of limited resources, allocation of resources, trade-offs and how choices result in both costs and benefits to individuals and society, opportunity costs
- Histories, philosophies and patterns of different economic systems and activity and their effects on environment, equity, prosperity and diversity of cultures
- Relationship between ecological, economic and social systems
- Life cycle analysis and assessment, economic input-output analysis
- Human choices about consumption, production, distribution and disposal of goods and services and their effect on the sustainability of earth's natural, economic and social systems
- Interdependence of the global economy and the role it plays in environmental policy, availability of goods and services
- Economic indicators of sustainability

→ Places and regions: Their characteristics and the connections between them, including:

- Spatial concepts of location, distance, direction, scale, movement and region
- Major physical and human features of the Earth
- Physical and human characteristics of places and regions
- Why places and regions are important to human identity



- Causes of human migration (e.g., density, food and water supply, transportation and communication systems) and its effects (e.g., impact on physical and human systems)
- Economic, cultural, and environmental factors that influence changes in population, and consequences of the resulting increases or decreases in population
- How differing points of view, self-interest, and global distribution of natural resources play a role in conflict over territory
- Geographic results of resource use and management programs and policies



- Understand the influence of individual and group actions on the environment, and how groups can work to promote and balance interests
 - Understand societal values and principles; shared and conflicting societal values
- c. Interrelationships between people and the environment, such as:
- How changes in the environment affect human systems, including:
 - Culture and language
 - Economic systems
 - Political systems
 - Social interactions
 - How human activities and systems (social, cultural, political, and economic) change the environment, including:
 - Physical systems – atmosphere, ocean, climate, soil, landforms
 - Living systems – ecosystems, biodiversity, carrying capacity
 - Ability of humans to shape and control the environment by creating knowledge and developing new technologies, including:
 - Agricultural and food systems
 - Transportation systems
 - Waste management systems
 - Communication systems
 - Energy systems
 - Human habitation systems
 - Relationship between environmental quality and human health and well-being, including:
 - Air quality
 - Water quality and quantity
 - Ability to produce and access nutritious food
 - Climate change
 - Disease vectors
 - Natural disasters
 - Relationship of the environment to national security, including:
 - Energy sources
 - Food security
 - Climate change
 - Global connections, including ways in which the world's environmental, social, economic, cultural, and political systems are linked
 - Dependence of humans on renewable and nonrenewable natural

resources for life, sustenance and a suitable quality of life

→ How personal and group actions affect the sustainability of Earth's physical, living and human systems

2) Understand and apply systems thinking concepts and tools

Analyzes and applies the properties of systems thinking to Earth's physical, ecological and human systems now and to inform future considerations

a. Systems as context for thinking and action, such as:

→ System structure, including:

- Whole system and its component parts and structures, complex wholes are made up of smaller sub-systems (hierarchy)
- Key interrelationships among component parts and structures (interdependence)
- Tracing component parts and relationships "upstream"

→ Systems are dynamic – how systems develop and change over time

→ Concepts of systems thinking, including:

- Change over time
- Feedback
- Circular causality
- Boundaries
- Equilibrium
- Doubling time, linear growth and exponential change
- Unintended consequences
- Interdependencies
- Flow
- Inputs and outputs, open system, closed system

→ Tools for systems thinking, including:

- Behavior over time graphs
- Connection circles
- Causal loops
- Stock flow diagrams
- Modeling

→ Habits of a systems thinker, including:

- Surfaces and tests assumptions
- Uses understanding of system structure to identify possible leverage actions
- Recognizes the impact of time delays when exploring cause and effect relationships
- Identifies the circular nature of complex cause and effect relationships

- Recognizes that a system's structure generates its behavior
- Considers how mental models affect current reality and the future
- Considers both short and long-term consequences of actions
- Considers an issue fully and resists the urge to come to a quick conclusion
- Changes perspectives to increase understanding
- Checks results and changes actions if needed: "successive approximation"
- Observes how elements within systems change over time, generating patterns and trends
- Finds where unintended consequences emerge
- Seeks to understand the "big picture"

b. Implications and consequences, such as:

- Make choices, read feedback and plan actions to achieve positive systemic impacts
- Identify and define reinforcing and balancing feedback loops within a system
- Track existing causal relationships within the system and over time
- Define how their own actions affect the systems they are in
- Understand how one event can influence another
- Delays in systems; causes and effects are not closely related in time and space in a system
- Reasonably predict intended consequences, and reasonably predict and prepare for unintended consequences
- Make choices by considering implications and consequences of those choices on the economic, ecological and social systems within which he/she lives

c. Strategic responsibilities of systems thinking, such as:

- Envision, design, plan, act and assess with whole systems in mind
- Recognize that a system's structure generates its behavior and automatically focus on upstream problem identification and structural /design flaws
- Identify leverage points with the greatest impact to identify where to intervene in the system
- Ask probing questions when things don't turn out as planned





d. Shifting mental models and paradigms, such as:

- Recognize mental models as guiding constructs that change over time with new knowledge and applied insight
- Identify and question assumptions
- Awareness of how mental models limit our thinking
- Consider an issue fully
- Evolve mental models when proven necessary

3) **Sense of place, region, nation, and global community**

Understands sense of place as the connection between people and a place and that sense of place encompasses the interrelationships among patterns of human settlement, social and cultural relationships, and the natural world

a. Characteristics of their region and/or community, such as:

- Natural features of the region/ community, including:
 - Flora, fauna and geologic formations
 - Climate
- Cultural and economic heritage and current character of the place in which they live, including:
 - Livelihoods associated with the regional economy
 - Local food and transportation systems, in past and currently

b. Interconnectedness in regions and the global community, such as:

- Relationship between regional habitats and human development patterns
- Assess consequences over time, evaluate alternatives
- Research, gather and collect stories through interviews with community members
- Identify emerging themes and patterns

- Continuity and changes of a local place over time
- Ecological systems in the region. Interdependencies, benefits and threats to them and us, associated with human behavior
- Application of knowledge of this region to study of others in other parts of the world
- Interdependence among food systems at the local, regional, national, and global scales
- Interdependence among renewable and nonrenewable resource use at the local, regional, national, and global scales

c. School community, such as:

- Environmental, social and economic impact of facility and operations (input and outputs) on town, and on world, and recommendations to improve performance
- Sources and sinks of materials and energy used in school
- Triple bottom line impact analysis on inputs and outputs
- Goal setting and future visioning for school
- Indicators of success
- Rights, roles and responsibilities to achieve success
- Create model sustainable school
- Design, plan, implement and assess school sustainability initiatives

4) **Investigate, plan and create a sustainable future**

Understands importance of vision, imagination, planning, and civic action to the ability to address challenges and create the desired future

a. Work with flexibility, creativity, and openness, such as:

- Develop skills to create a healthy and sustainable future, including:
 - Utilize out of the box thinking to address problems in the service of their vision
- Recognize and value the strength in diversity, including:
 - Recognize and work against prejudice and discrimination
 - Demonstrate the ability to communicate and collaborate cross-culturally
 - Appreciation for cross cultural similarities and differences

→ Ability to work with people who have different perspectives, including:

- Seek to determine the interests that underlie people's positions and behaviors

→ Forming and evaluating personal views, including:

- Identify their own mental models about the world and recognize that mental models are guiding constructs that change over time with new knowledge and applied insight
- Articulate multiple sides of an issue
- Communicate, evaluate and justify their own views
- Evaluate personal beliefs and values using criteria such as personal wellbeing, equity, social and environmental welfare, economic vitality, and concern for other living beings
- Consider viewpoints that differ from their own, and information that challenges their positions
- Evaluate whether and how differing viewpoints might affect their own views

b. Evaluate accuracy and reliability of information sources, including:

→ Apply basic logic and reasoning skills to evaluate completeness and reliability in a variety of information sources

→ Identify logical errors and spurious statements in everyday situations such as political speeches about the environment or commercial advertising

→ Look for and explain flaws such as faulty or misleading use of statistics, misrepresentation of data or biased selection of data to support a claim

→ Explain why some research results are judged to be more credible than are others

→ Identify sources of bias in interpretation, funding sources, and research procedures

c. Investigate and analyze strategies that address challenges and create desired futures, such as:

→ Apply research and analytical skills to their investigation, including:

- Define and clearly articulate the investigation

- Identify key individuals and groups involved
- Examine contextual elements that shape the topic under investigation and identify historical antecedents or contemporary parallels
- Exhibit the drive to discover new territory
- Goal setting
- Developing indicators to measure movement toward or away from goals



→ Evaluate the consequences of specific environmental changes, conditions, and issues for human and ecological systems, including:

- Use the idea of cumulative effects to explain why one set of 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 solutions and courses of action, including:

- Synthesis different perspectives, types of data, and means of analysis to propose solutions or courses of actions
- Apply knowledge from functional relationships, modeling, and statistical analysis to evaluate different approaches or courses of action
- Use methods such as cost/benefit analysis, cumulative effects analysis, environmental impact analysis, ethical analysis, and risk analysis
- Propose action strategies that are likely to be effective in particular situations and for particular purposes



d. Decision-making and citizen action, such as:

→ Evaluate the need for action, including:

- Evaluate whether action is warranted in specific situations, accounting for factors such as available evidence about the concern and proposed solutions; scale of the concern; legal, social, economic, and ecological consequences; and alternatives to citizen action
- Identify different forms of action that citizens can take, including consumer choices, resource use choices, writing letters to the editor, drafting legislation/ordinances/policies, communicating with decision-makers, environmental stewardship projects
- Speculate about the likely effects of specific actions and the likelihood these actions will resolve a specific concern
- Evaluate whether personal involvement in particular actions is warranted, considering factors such as their own values, skills, resources and commitment
- Communicate decisions clearly, articulating well-reasoned arguments supporting their views and decisions

→ Plan and take action, including:

- Envision a desired endpoint
- Work hard to achieve goals
- Develop plans for individual and collective action

- Articulate clear reasons and goals for action
- Articulate measures for success consistent with their abilities and the capabilities of the groups involved
- Decide whether the plan should be implemented immediately or at another time, modified or abandoned; and carry through with action when appropriate

→ Evaluate the results of actions, including:

- Continuously improve their work
- Be accountable for their actions (and inaction) as well as predict and be accountable for the long and short term consequences of those actions
- Embrace making change, improving, innovating and experimenting
- Consider intended and unintended consequences of action
- Analyze actions, evaluating apparent effects in terms of action goals, ethics, and broader societal goals
- Articulate “lessons learned” from taking action

5) Understand and achieve personal and civic responsibility

Understand the rights, roles, responsibilities and actions associated with leadership and participation toward healthy environments and sustainable communities

a. Recognize citizens' rights and responsibilities of participation and leadership in both local and global contexts, including:

- Individual rights and societal interests
- Personal, political, and economic rights such as acquiring, using and selling property, the right to vote, freedom of speech and assembly
- Responsibilities such as accepting responsibility for the consequences of one's actions, obeying the law, and respecting the rights and interests of others
- Consider whether individuals' civic obligations require them to subordinate their personal interests or desires for the public good
- Importance of trust, patience, self-discipline, respect and open-mindedness to individuals and society

b. Apply self confidence in their effectiveness as citizens (self efficacy), such as:



- Believe in their ability to succeed
- Examples where citizen action has had an effect on environmental quality and sustainability
- Examples where students of their own age have had an effect on environmental quality and sustainability
- Ways in which their actions have made a difference

c. Accepting personal responsibility for the effects of individual and group actions, such as:

- Identify and describe some of the effects that they and the groups they belong to (e.g., family or school class) have on the environment and on humans and other living beings
- Describe actions in terms of their effects that reach into the future
- Global responsibility, equity
- Importance of fulfilling personal responsibilities for themselves, society, people in other places and other living beings
- Willingness to work individually and collectively toward resolution of environmental concerns and to participate thoughtfully and effectively in decision-making
- Importance of equity, cooperation, teamwork, conflict resolution and consensus building in addressing regional and global challenges
- Intergenerational responsibility, including:
 - Distinguish between long term and short term goals
 - Effect of actions on future generations
 - Ways in which actions will benefit the seventh generation
 - Intended and unintended consequences

d. Understand the commons and its relationship to personal and civic responsibility, such as:

- Distinguish between public, private and common
- Distinguishing characteristics of a commons; types of measures required to keep different types of commons healthy
- Understand various commons around the world, and how they are cared for
- Engage with questions about possession, welfare and future of the commons



e. Understand consumption and consumer choices, such as:

- Impact of their own consumption choices on health of a place
- Media's role in shaping and influencing consumption patterns
- Consumption practices over time
- Responsibility of consumer decisions

Graduation Requirements

(Adapted from Oregon Department of Education) In January of 2007, the Oregon State Board of Education voted to adopt new high school graduation requirements. These new requirements are designed to better prepare each student for success in college, work, and citizenship. To earn a diploma, students will need to successfully complete the credit requirements, demonstrate proficiency in essential skills, and meet the personalized learning requirements. Students will also have the option to earn credit for proficiency. A phase-in schedule (2007 – 2014) has been created to allow students, families, schools and teachers to adequately prepare to meet these new requirements.

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

- 1) Read and comprehend a variety of text
- 2) Write clearly and accurately
- 3) Apply mathematics in a variety of settings



- 4) Listen actively and speak clearly and coherently
- 5) Think critically and analytically
- 6) Use technology to learn, live, and work
- 7) Demonstrate civic and community engagement
- 8) Demonstrate global literacy
- 9) Demonstrate personal management and teamwork skills

Students are also responsible for Personal Learning which includes:

- Plan and Profile – With the help of adults, students develop a plan for the classes and experiences they will need 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 workplace and community.
- Extended Application – Students apply knowledge and skills related to their interests and goals by demonstrating critical thinking, problem solving, or inquiry in real-world contexts.

An environmental literacy context should be used to support students in satisfying their personalized learning diploma requirement, in learning beyond the classroom and forming connections to the adult world.

In adopting the new diploma requirements, the Oregon State Board of Education stated the following: “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.” In order to enhance the relevance of education for students, the State Board also broadened the definition of what could qualify as courses that meet 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 as long as they meet the content threshold of Algebra I or higher. Similar flexibility is encouraged in courses offered for science credit. The addition of recognizing “Environmental Literacy” as a context to assist students in satisfying diploma requirements in math and science by demonstrating proficiency should also be explored.

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

Students may demonstrate proficiency inside the classroom, outside of the classroom where hours of instruction may vary, through documentation of prior learning, by appropriate examination, or by any combination thereof. Credit for Proficiency is acutely suited to support education for environmental literacy as a vehicle in student pursuit of the Oregon Diploma.

Essential skills, personal learning, and Credit for Proficiency all present flexible options for aligning existing graduation requirements with the Plan. Examples for how skill requirements might be met and assessed through environmental literacy activities should be further developed and disseminated. In developing these examples, priority for skills and activities should be given to the Plan Environmental Literacy Strand components that are not satisfied by existing Oregon Academic Standards. Final consideration should be given to creating a new graduation requirement for environmental literacy following Maryland’s proposed plan as an example (Robelen, 2010). We further recommend that graduation requirements be developed to include outdoor experiences.

Chapter 4: Professional Development

Schools play a critical role in the preparation of environmentally literate students. Teachers, in particular, hold a large responsibility for guiding the learning experiences that lead to environmental citizenship. Although there are numerous examples of individual teachers, whole schools and districts integrating environmental literacy into their curriculum throughout Oregon, more needs to be done if we are to meet our ultimate goal of an environmentally literate citizenry.

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

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

Guiding Principles of Environmental Literacy Professional Development

Professional development for environmental literacy is built from a core of guiding principles:

- All school personnel (administrators, teachers, and support staff) are integrally involved in fostering students' environmental literacy.
- A systematic approach to environmental literacy is taken when curriculum and instruction are planned, implemented and coordinated at all levels: district, school, and classroom.
- A systematic approach to professional development for environmental literacy is taken when professional development programs are planned, implemented and coordinated at all levels: district, school and classroom.
- To support a systematic approach to environmental literacy, professional development should be designed to meet the needs of administrators, teachers and support personnel, and should not be limited to the classroom teachers alone.

Systems of Support 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 rely upon a variety of networks and support systems to plan and implement a comprehensive and cohesive curriculum dedicated to the development of environmental literacy. To facilitate this teacher work, various systems of support are recommended, including but not limited to: policy; school-community partnerships; communities of practice; curricular and material support systems; involvement of school facilities and operations; and training of administrators and all other school/district staff and funding. (See Chapter 6, Environmental Literacy Plan Implementation)

Best Practices of 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 purpose – programs focus on the environment and sustainability. The following represents proposed best practices for integrating environmental literacy into the school:

- Focus is on the environment and sustainability:
 - The ultimate goal is environmental literacy and fostering participatory citizenship.
 - The whole school, including its infrastructure (e.g., 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 appropriate.
- Learning is interdisciplinary – integrated across science, math, reading, writing, social studies and art, and 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
 - Uses the natural world and home community to identify, address and solve problems
 - Encourages hands-on interactions with the natural world
- Partnerships with local agencies, non-profit organizations, 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 – students-to-students, teachers-to-students, etc.
 - An understanding of personal stages of change in teaching practice
 - An appreciation of differing world views and global and cultural 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 focusing on the environmental literacy learning of all students. Effective educators possess the understandings and skills associated with environmental literacy and instruction. They are willing and able to implement research-based environmental literacy programs designed to 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 understandings and skills as outlined in the Environmental Literacy Strands (Chapter 3). They:
 - 1) Understand the physical and biological world, and our interdependent relationship with it
 - 2) Understand and apply systems thinking concepts and tools
 - 3) Sense of place, region, nation, and global community
 - 4) Investigate, plan and create a sustainable future
 - 5) Understand and achieve personal and civic responsibility

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 but not limited to the out of doors
 - Use a variety of teaching methods and strategies 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, project-based learning
 - Allow students the opportunity to observe, explore, discover and experience
 - Facilitate systems thinking
 - Use the community or place as the text for learning
 - Provide students with experiences that create deep and lasting connections
 - Give students the opportunity to investigate and address real community issues
 - Build intrinsic motivation in students to guide their own powerful, learning experiences
 - Engage in long-term evidence-based investigative studies
 - Provide students with opportunities to participate in valuable work beyond the classroom
- Educators understand the importance of a safe and conducive learning environment both indoors and outside. They:
 - Demonstrate concern for learner safety in designing, planning and implementing instruction, especially experiences that

are hands-on or that take place outside the classroom.

- Identify, create, and use diverse settings for environmental literacy instruction appropriate to different subject matter and available resources
- Facilitate learning in a variety of settings including, school yard, field settings, community settings, museums, zoos, demonstration sites, outdoor schools and other places
- Plan and implement instruction that first links content to learners' immediate surroundings and experience then expands learners' horizons as appropriate 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 close-by local applied learning sites
- Engage with community, state and national partners
- Use a variety of tools for environmental observation, measurement, and monitoring
- Identify ways in which the community can be used as a resource, including local businesses, service organizations, government agencies, nonprofit organizations, and others 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 identified opportunities to integrate environmental literacy into their curriculum
- Organize instruction and, when appropriate, integrate instruction, around environmental contexts and themes
- Build multi-disciplinary experiences

Fostering Learning

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

- Relate the idea of lifelong learning to instruction practices that engage learners

in taking responsibility for their own learning and expectations for achievement

- Instill instruction with a sense of the importance and excitement of the content
- 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 explore a variety of answers

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

- Identify and use ways to encourage flexibility, creativity, and openness, considering the assumptions and interpretations that influence the conclusions that learners and others draw about the environment and environmental and sustainability issues
- Relate learners' capacity for collaborative work to their ability to function as responsible and effective citizens
- Implement 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 that in the news, or breakthroughs in scientific understanding) and learner questions and interests
- Blend a variety of instructional methods and activities to meet instructional objectives
- Work collaboratively with other educators and discipline areas, adapting instructional approaches as needed to blend or complement instructional styles and to meet shared environmental literacy goals

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 their



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 identifying potential sources of bias in information
- Commit to creating a classroom atmosphere that is open to inquiry
- Identify and differentiate among informational sources and instructional materials on the basis of their factual accuracy and bias
- Select and use materials that together present a range of differing viewpoints, ethical positions and interpretations where there are differences of opinion or competing scientific explanations

→ Educators can articulate a rationale for environmental literacy. They:

- Develop a well-articulated rationale for environmental literacy instruction that describes key benefits to students 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 environmental literacy professional development opportunities. They:

- Express the need for professional development, identify immediate professional development needs, and identify potential providers to meet these needs.
- Participate in selected professional development that strengthens their environmental literacy, fosters reflection on practice, and improves environmental literacy instructional skills
- Engage in a reflective process to improve environmental literacy teaching and learning. They incorporate information gained from assessment results and feedback from students, parents and education professionals into their reflective process.
- Identify, access, and use technology based resources in support of their environmental education professional development.

→ Educators identify sources for instructional materials and funds, including public and private 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
- Clearly communicate fundamental, evidenced-based information
- Teach content and skills by using an interdisciplinary process, inquiry, and application
- Provide opportunities for educators to fully participate as learners in inquiry, field strategies, issues investigations, etc.
- Practice civil discourse to engage in difficult issues
- Provide curricular/support materials to supplement training and ensure an ease of transference into the classroom

→ Developmentally appropriate lessons

- Ensure age suitable learning by matching instructional materials to the ages of learners being taught
- Scaffold experiences and concepts
 - Demonstrate for educators how to build the foundation of learning experiences in early years and expand them as students mature – what starts small as a schoolyard investigation in 1st grade can develop into problem solving and schoolyard restoration projects in 5th grade
 - Provide instructional strategies that help to manage cognitive loads; (i.e., introduce inquiry in 5th grade using 4th 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 providing educators with the resources they need to feel comfortable and prepared

→ Inquiry-based learning

- Provide first hand experiences that give

educators opportunities to explore, ask their own questions, investigate, collect information

- Demonstrate how child-directed and teacher-directed inquiry lessons are structured
- Provide opportunities for educators to participate as active learners, practicing 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 experiences

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

- Promote the social and emotional learning domains
- Foster respectful and trusting learning environments
 - Student-to-student, teacher-to-student, etc.
 - Model a sense of caring and respect
 - Respect for elders
 - Respectful engagement
 - Model caring and kindness

→ Community partners

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



Chapter 5: Assessment of Environmental Literacy

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

The ultimate goal of this Plan is to improve the environmental literacy of Oregon students throughout the state. In order to determine whether this is

happening, we need to assess the change of student environmental literacy over time and strive towards its continual improvement. Assessments should therefore be based on the definition of environmental literacy in this plan and student mastery of the five proposed environmental literacy learning strands, and the relative impact of outdoor experiences on these outcomes. Assessments should also be aligned with the Office of Assessment’s existing assessment tools, structures, systems and survey instruments as often as possible to maximize the efficiency and sustainability of our efforts. The assessment process should be collaborative, transparent, and clearly communicated with all stakeholders.

Environmental literacy assessment strategies should be designed to:

→ Measure the knowledge, skills and motivation of students to make responsible decisions that consider their relationships to natural systems, communities and future generations.

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

Measuring Student Environmental Literacy

In order to know whether the environmental literacy of students is improving, we need to measure their knowledge, skills and motivation to make responsible decisions that consider their relationships to natural systems, communities and future generations. Considerations for conducting student environmental literacy assessment include:

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

Existing Assessment Opportunities

Integrating environmental literacy assessment within existing tools and/or assessment systems will ensure the efficiency and sustainability of measurement while enhancing existing structures. Some existing resources worth considering for the integration of environmental literacy assessment include:

- **Oregon Assessment of Knowledge and Skills (OAKS)** – OAKS is the Oregon online statewide assessment system used to assess student mastery of Oregon content standards. It would be fundamentally worthwhile to explore content in OAKS to determine whether the 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 its innovative crosswalk 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 types of work samples that local school districts are to 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). It is possible that environmental literacy may fit within an existing work sample requirement. If not, 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 and may provide parameters for how a school or district could create a customized scoring guide for environmental literacy to meet their local needs (e.g., Tillamook may be interested in creating a Local Assessment Option using their local dairy farm for a project). Scoring guides have been developed by ODE and include writing, speaking, mathematics

problem solving, scientific inquiry/ engineering design, and social science.

→ **National Environmental Literacy Assessment** – The National Environmental Literacy Assessment is a baseline study of middle school student understanding of the environment. Completed in 2008, this study creates an understanding of how much middle school students in the United States 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 represent a potential avenue to administer sample surveys or sponsor gatherings on environmental literacy assessment (perhaps as a pre-conference day during an existing conference).

→ **Operational and Facility Assessments** – A number of assessments and tools exist and are being used in Oregon that can assist schools and districts to gauge the success of sustainability efforts. Consideration should be given to developed tools such as the Sustainable Oregon Schools Initiative’s (SOSI) sustainability assessment tools, Healthy School Environments Assessment Tool (HealthySEAT) from the U.S. Environmental Protection Agency and Sustainability Competency & Opportunity Rating and Evaluation (SCORE). The Oregon Green Schools Association also has a toolbox of resource conservation assessment resources including a step-by-step guide to conducting a waste audit.



Chapter 6: Environmental Literacy Plan Implementation

Selected elements of education for environmental literacy already exist in some Oregon districts and classrooms, however the reality is that only a small portion of students



have the opportunity to participate in meaningful, field-based educational experiences within their home community and within the context of the environment, and no district has integrated all content areas and elements of environmental literacy education at a core

level. It may take years to fully implement all aspects of this environmental literacy plan but ultimately, we want to see the following come to fruition:

- Oregon's environmental literacy plan is integrated across disciplines and grade levels in all K-12 institutions.
- Every grade level has aspects of environmental literacy built into the curriculum at the school and district level.
- Every graduating K-12 student in Oregon can demonstrate proficiency in all Environmental Literacy Strands.
- Every K-12 student has education experiences outside the classroom throughout their educational career.
- Communities or regions self-organize to determine how to support the cultivation of environmentally literate citizens through their local schools.
- Every Oregonian is part of a self-organized community or region.
- Oregon's Environmental Literacy Plan is supported by local communities and regions.
- Every student influences the impacts of 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 aspects of the K-12 system. Each of the following stakeholders should be involved with each aspect of implementation:

- Oregon Superintendent of Public Instruction and the Department of Education

- State curriculum specialists (e.g. Social Studies, Science, Math, Language Arts, etc.)
- ESDs and school districts
- All school district staff, including administrators and non-teaching staff
- Individual schools, and individual teachers of all grade levels and subjects
- Independent, charter and home-school networks
- State and local school boards
- Teacher preparation colleges and universities
- Non-profit and government entities
- Parents and students
- Schools-related associations

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

Recommendations for Implementation of the Plan

The following steps are recommended. Action for some recommended step can happen as sufficient funding for implementation is identified and secured. The following timeline matrix is broken into annual quarters through 2011, then years through 2014. Continued exploration of the following factors will allow for a more detailed construction and 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 with time. As opportunities arise, such as update periods for state standards, they should be utilized as appropriate. Other useful tools and information should 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 further 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, teacher, business, task force members | | | | | | | | |
| 2 | Council considers the following request called out in 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 of the position, then identifies the statewide coordinator. | | | | | | | | |
| 4 | (Statewide Coordinator & Council) Identify and define the roles for each level of the school system in order to fully and successfully integrate the content, delivery of, professional development for, 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 and synergies between local, regional and state level efforts. | | | | | | | | |
| 6 | (Regional Coordinators) Hire for regional coordinator positions → 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, s, 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 | Inventory of current efforts Conduct a comprehensive statewide survey of existing efforts in order to identify environmental literacy models and resources. Include successful delivery of the various strands, successful inclusion of the facility and operations and assessment of learning. In addition to all levels of the K-12 system, include higher education institutions and organizations providing non-formal education. Process the findings so that the 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 after 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 their specific role in creating environmentally literate graduates. → Use the National Council for Staff Development Standards as a basis for designing professional development programs and experiences (see Appendix C). | | | | | | | | |
| 10 | (Professional development) Establish the competencies, characteristics and best practices of good, quality professional development. | | | | | | | | |
| 11 | (Professional development) Create and implement strategies to fill identified 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/internships for teachers (Community Supported Agriculture farms, scientists, etc.) | | | | | | | | |
| 12 | (Professional development) Explore ways to measure professional development – both formal and non-formal; consider endorsements and/or certification programs. | | | | | | | | |
| 13 | (Resources) Identify, develop or refine digital libraries/portals such as Oregon Department of Education, Environmental Education Association of Oregon (EEAO) website and Sustainable Oregon Schools Initiative website (SOSI), to house the state inventory of environmental literacy resources. The libraries/portals should provide: → Easily accessible and searchable collections of vetted materials and lesson plans → Links to Oregon Department of Education standards → Directory of local partners, grant or other funding opportunities, 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 the digital libraries/portals so they are available statewide, and advertise them. Innovative programs that demonstrate the provision of environmental literacy as proposed in this plan should be held up as models to inspire and enable action from others. → Identify central points from which they can be readily accessed at all levels including the Oregon Department of Education, ESD, school districts, schools, teachers and communities. | | | | | | | | |
| 15 | (Regional hubs) Create a template for regional hub development. Include: → Criteria to help regions organize themselves around resources to ensure that the activities mentioned in this document are available and accessible at the local level. → Parameters for establishing regional boundaries. Consider defining regions according to ESDs, networks of watersheds, and/or county governances. → Partnership support with schools/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 and kits, tools, live animals, monitoring equipment, shovels, boots, and other. | | | | | | | | |

| | | 4Q 2010 | 1Q 2011 | 2Q 2011 | 3Q 2011 | 4Q 2011 | 2012 | 2013 | 2014 |
|----|---|------------|------------|------------|------------|------------|------|------|------|
| 16 | (Regional hubs) Support regional coordinators in establishing regional hubs in order to facilitate integration of the Plan at the local level. This will maximize input of available 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 current efforts and initiatives in Oregon. To the extent that the literacy plan can be strategically connected to initiatives such as the West Coast Governors Agreement for Ocean Health, Oregon's Youth Bill of Rights, the Oregon Initiative for Climate Change, Ocean Literacy, Climate Literacy, Forest Literacy, Agricultural Literacy, OWEB and The Oregon Plan for Salmon and Watersheds and other state initiatives, Education for Sustainability, the Sustainable Oregon School Initiative, sustainability education work in ESD, etc., the more streamlined our related efforts will be. | | | | | | | | |
| 20 | (Strands and Standards) Cross-reference/align the Environmental Literacy Strands with Oregon standards and diploma requirements. Once the strands and standards are aligned, it will be possible to identify 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 Oregon university schools of education programs. Develop and implement a strategy to prepare pre-service teachers. | | | | | | | | |
| 23 | (Assessment) Explore existing assessments like OAKS and scoring guides to determine whether environmental literacy can be measured using these assessments. | | | | | | | | |
| 24 | (Assessment) Develop examples for how graduation skill requirements might be satisfied through an environmental literacy activity. 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 the Plan learning strands that are not determined to be satisfied by existing Oregon standards. | | | | | | | | |
| 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 possible research topics that might lie tangentially to this project for further exploration. | | | | | | | | |
| 28 | Create a new graduation requirement for environmental literacy and outdoor learning. | | | | | | | | |

| | | 4Q 2010 | 1Q 2011 | 2Q 2011 | 3Q 2011 | 4Q 2011 | 2012 | 2013 | 2014 |
|--|--|------------|------------|------------|------------|------------|------|------|------|
| Schools and School District-based Activities | | | | | | | | | |
| 29 | (Professional development) Conduct school/district needs assessment to identify which education for environmental literacy strands and delivery practices are not currently supported with adequate professional development opportunities (the gaps). | | | | | | | | |
| 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 remain informed about and to share available professional development opportunities. → Use the 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 which will prioritize actions that will build, encourage, and support a community of practice within schools/districts where teams of teachers, administrators, and partners work together to improve instruction and implement environmental literacy instruction. | | | | | | | | |
| 33 | Support mentoring opportunities that encourage peer to peer learning amongst 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 – cultivate an understanding of how to measure environmental literacy. | | | | | | | | |
| Teacher Activities | | | | | | | | | |
| <i>While the Plan does not dictate activities for teachers specifically, it creates a state and district infrastructure and a system of professional development that will enable teachers to provide and assess for education for environmental literacy.</i> | | | | | | | | | |
| 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 Plan fund management/advisory team. | | | | | | | | |
| 39 | Regional coordinators work with statewide coordinator to create regional budgets based on needs assessments for implementing the Plan, then determine statewide funding needs. | | | | | | | | |

| | | 4Q 2010 | 1Q 2011 | 2Q 2011 | 3Q 2011 | 4Q 2011 | 2012 | 2013 | 2014 |
|----|---|------------|------------|------------|------------|------------|------|------|------|
| 40 | <p>Identify potential funding sources for Plan implementation including:</p> <ul style="list-style-type: none"> → Local: Parent Teacher Associations, non-profits, businesses, education association chapters, Rotary Clubs, local & regional government, community groups, etc. → State: The Oregon Community Foundation, Meyer Memorial Trust, Oregon Business Association, Oregon Watershed Enhancement Board (OWEB), other state agencies and foundations. → Federal: No Child Left Inside Act, Innovation Fund, Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), etc. | | | | | | | | |
| 41 | <p>Identify an entity to hold the funds and an agency for grant administration.</p> <ul style="list-style-type: none"> → Consider other agencies or existing granting programs which may enter into an Inter-Agency Agreement with ODE regarding grant administration. → If the funds are held by ODE, apply/revise administrative rules for implementation funds. Consider encouraging ODE to develop rules through a public hearing process. | | | | | | | | |
| 42 | <p>Establish a grant program focused on equitable, regional distribution of funds, possibly with two scales of grant-making.</p> <ul style="list-style-type: none"> → Develop guidelines for accessing Plan funds. → Small grants disbursed to individual teachers and classrooms. → Larger regional grants might go to a regional hub, ESD, a school district, a school, a watershed, etc. → Consider 3-year grant cycles to support planning and implementation. → The decision-making entity should be on the local level for small grants and on the state level for regional grants. | | | | | | | | |



Appendix A: Task Force, Working Groups & 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

Department of Environmental Quality

John Falk

Oregon State University, College of Science (Governor Appointee – Institute of Natural Resources)

Tom Gaskill

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 Brennen

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

Rachel Goetzelman

Oregon Coast Aquarium & Oregon Sea Grant

Charis Henrie

Oregon Zoo

Faith Jones

Springwater Environmental Sciences School

Tami Kerr

Oregon Ag in the Classroom Foundation

Trish Mace

Oregon Institute of Marine Biology

Aaron Miller

Washington Grade School

Jill Nishball

Oregon Parks & 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 |
| Rachel 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 |
| Rachel 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 policy makers:

Sponsor Representatives: Buckley and Gelsler

Cosponsor Representatives: Cannon, Dembrow, Harker, Komp, Read, Roblan, and VanOrman

Cosponsor Senators: Bonamici, Dingfelder, Morrisette, Rosenbaum, and Walker



Appendix B: Glossary



Climate Change is 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, re-arrangement of continents through plate tectonic motions, or anthropogenic modifications of the atmosphere (US Global Change Research Program, 2009).

Climate Science Literacy is an understanding of your influence on climate and climate's influence on you and society. A climate-literate person:

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

Environmental Literacy is 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) Enhance good nutritional choices as outlined in the USDA dietary guidelines
- 2) Engage in meaningful outdoor school learning experiences
- 3) Encourage active family and individual experiences that connect students with the outdoors, such as growing a garden, hiking, fishing and other outdoor 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 are aligned 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 help sustain continuous improvement. (Data-Driven)
- Uses multiple sources of information 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 starts 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 the process of devising solutions to the social and environmental problems they will confront as adults. By doing so, this distinct curricular approach can increase students' engagement with learning and enhance their academic achievement" (Smith & Sobel, 2010). Place- and community-based education uses the environment as a text for learning.

Many districts, schools, and teachers throughout Oregon and beyond 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 in the world around encourages learning that is meaningful and real 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

Fundamental to this type of applied education are: an authentic community context for student work, numerous community partners, strong curricular connections, valued student-community products, and most of all, committed and passionate educators.

Common Denominators for Success Strategic Partnerships

– partnerships are critical for long-term funding and resource support. The key is in establishing as many touch points 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 a program from distinguishing when the only inspired teacher retires. Developing partnerships helps individuals ascertain relevance and longevity in their efforts.

Cultivating partnerships between school systems and communities will ensure that teachers and their students have the tools and resources they need to be successful in the pursuit of environmental literacy. Tom Horn, principal of the Al Kennedy Alternative School in Cottage Grove encourages "teachers to take students outside the classroom and of letting them know that establishing ties with community partners is a central rather than tangential part of their work" (Smith & Sobel, 2010, p. 115). Brian Goodwin, director of special programs for the North Wasco School District in The Dalles, Oregon agrees with Tom about the need to encourage or allow teachers to incorporate less conventional instructional strategies into their classroom and to connect with community partners to support their efforts.

Real and Dynamic Learning – providing students with opportunities to engage



in meaningful, place-based educational experiences benefits both learner and locale. Considerations for the experiences include:

- Fits within education goals: the student experience satisfies existing educational standards and diploma requirements towards academic achievement; the results are measurable
- Addresses 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
- Students direct the learning experience: youth are engaged in the decision making process
- Tied to vocational preparation: students 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 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 may be of assistance for teachers just beginning to integrate environmental literacy into their classroom:

- 1) Start small and find other teachers interested in doing a community project. Support and collaboration are critical for success as you begin this work.
- 2) Don't let issues such as transportation and funding stand in your way. Be creative and persistent and employ the resources of your community.

- 3) Getting to know community partners is a must, so be prepared to make calls and meet with potential partners. They are often more than willing to work with you and may have resources you can use.
- 4) Make sure that your class does not 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 joining the authentic work of your partner.
- 5) Be organized and plan ahead. You can never foresee all possibilities, but being organized helps you become more successful with students and partners.
- 6) Promote the program. It is not about you but 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 of ways that the program can sustain itself when you are no longer there.
- 9) Do not worry about having to know the content or being in charge of direct instruction. You will become a facilitator and 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. The teacher is no longer the “sage on the stage,” but instead is the “guide on the side.”
- 10) Remember it is about community! The work students do needs to have a context to it. They should come out of their study with a clear understanding of what their community is, how it can function, and possible roles for them to participate. Do not forget that this approach also fosters community building within the classroom and students become reconnected to themselves and to 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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Photos provided by:

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Oregon Sea Grant
Oregon Zoo ZAP Program
OSU Extension
Safe Routes to School
South Slough National Estuarine Research Reserve
The Environmental Center
The Freshwater Trust
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Tualatin Hills Park & Recreation District
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Urban Nature Overnights
Wallowa Resources – Wallowa Mountain Institute

