

Oregon Environmental Literacy Plan –
Aligning the Oregon Environmental Literacy Strands & the Academic Standards

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Connecting Education for Environmental Literacy to the Curriculum

The *Oregon Environmental Literacy Plan: Toward a Sustainable Future* (OELP), first published in October 2010, articulates a vision for education for environmental literacy in Oregon schools (www.ode.state.or.us/gradelevel/hs/oregon-environmental-literacy-plan.pdf). The OELP was created in response to legislation (HB2544) passed by the State of Oregon and signed into law by Governor Ted Kulongoski on July 22, 2009. An eleven person Oregon Environmental Literacy Plan Task Force was appointed by the governor to develop the plan. The OELP provides a case for education for environmental literacy in Oregon, details a content and skills framework for environmental literacy, outlines the components of a professional development plan, describes the need for assessment of environmental literacy, and sets recommendations for the implementation of the OELP.

From the beginning it was recognized that to be effective, education for environmental literacy needs to be integrated throughout the curriculum in every classroom in Oregon and include sustained opportunities for students to participate in outdoor learning experiences. To facilitate this process, Environmental Literacy Strands were developed that describe a comprehensive content and skills learning framework. It is expected that environmentally literate students, upon graduation from twelfth grade, will demonstrate proficiency in each of the five strand areas.

It was also recognized that education for environmental literacy could not stand apart and that to be fully integrated into our schools, the Environmental Literacy Strands and the Oregon Academic Standards needed to be aligned. To make this integration explicit, a series of crosswalks have been developed. These crosswalks identify where the learning content for cultivating environmentally literate citizens is supported within the existing standards. These crosswalks are offered as a tool for teachers and other educators to use as they implement education for environmental literacy within their standards based curriculum.

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.

How This Document Was Produced

With the generous support from Gray Family Fund of the Oregon Community Foundation, a working group was formed to draft model crosswalks aligning the Environmental Literacy Strands to the science standards. Once the model science crosswalks were completed, work continued on drafting alignments with most of the academic standards (e.g., social sciences, mathematics, English Language Arts, educational technology) as well as the Oregon Essential Skills and the Work Sample Assessment Scoring Guides. A two day working meeting was held to review and revise each of these crosswalks to ensure their accuracy and usability (Appendix A: Alignment Working Groups).

This is a living document. As teachers and other educators use the crosswalks and provide feedback, they will be revised. Additionally, it is our intention to update crosswalks as the Oregon Department of Education adopts new standards and continues to define the Essential Skills.

Environmental Literacy Strands Overview

The Environmental Literacy Strands articulate a comprehensive content and skills learning framework for K-12 Oregon students. They describe the expectations environmentally literate students would demonstrate by the time they graduate from high school. It is important to note that they do not describe a curriculum or instructional strategies. The Environmental Literacy Strands are organized into five, broad areas:

1) Systems Thinking
2) Physical, Living and Human Systems
3) Interconnectedness of People and the Environment
4) Personal and Civic Responsibility
5) Investigate, Plan and Create a Sustainable Future

Each strand is further defined by specific elements that taken together describe what students should know and be able to do to meet strand expectations. For more detailed information about each of the Environmental Literacy Strands and its component parts, please refer to Appendix B.

The Five Environmental Literacy Strands and their Elements:

1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.

a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure.
b. Habits of the Systems Thinker. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools (see Appendix C – Systems Thinking).
c. Strategic responsibilities of systems thinking. Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.

2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.

a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.

3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.

a. **Sense of place, region, nation, and global community.** Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community.
b. **Interrelationship between the environment and human activities.** Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing.
c. **Resource distribution and use.** Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory.

4) **Personal and Civic Responsibility.** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.

a. **Rights and responsibilities of citizenship.** Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts.
b. **Sense of personal responsibility.** Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.

5) **Investigate, Plan and Create a Sustainable Future.** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.

a. **Work with flexibility, creativity, openness, and perseverance.** Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.
b. **Evaluate accuracy and reliability of information sources.** Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.
c. **Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.
d. **Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.

Connecting Environmental Literacy and the Common Core Standards for English Language Arts[1]

Oregon adopted the Common Core Standards for English Language Arts in October 2010. In doing so, Oregon joined other states in the pursuit of a common, standards-based education for our students, kindergarten through high school. Common standards can increase the likelihood that all students, no matter where they live, are prepared for success in college and the work place. Because skillful reading and writing are similar across the states, common standards make sense.

By applying the *Common Core State Standards (CCSS) for English Language Arts (ELA)* within the context of education for environmental literacy, teachers and other educators can prepare Oregon students to be proficient readers and writers. Because students need grade-level literacy skills to access full content in school, the emphasis in the Standards is to *learn to read and write* in English Language Arts and *to apply and develop those skills,* specific to the content, in all other classes, including those related to education for environmental literacy.

Instruction in the reading and writing standards customized for environmental literacy (see Appendix D), in addition to instruction in the English language arts standards, will make a critical difference for students. That is because the Standards for grade 6 and above are predicated on *all teachers* using their content area expertise to help students meet the particular challenges of reading and writing in their respective fields. It is important to note that the 6-12 literacy standards are not meant to replace content standards, but rather to supplement them.

[1] All of the discussion of connecting English Language Arts and education for environmental adapted literacy is directly from *STANDARDS FOR Literacy in History/Social Studies* and *STANDARDS FOR Literacy in Science and Technical Subjects*.

Connecting Environmental Literacy and the Common Core Standards for Mathematics

The Common Core State Standards for Mathematics (CCSSM) define a series of grade specific standards for mathematical content. As an example, Kindergarteners would be expected to "Understand that each successive number name refers to a quantity that is one larger," third graders would be expected to "Apply properties of operations as strategies to multiply and divide," while eighth graders would be expected to "Solve linear equations in one variable."

Education for environmental literacy provides opportunities for students to *apply* their mathematics content knowledge in real world situations. As students explore their communities and investigate the environment they will take measurements, calculate percentages, and graph findings; they will use mathematics. For example, students involved with an energy audit of their school will use mathematics as they determine heat loss and gain, the energy load of different appliances, and the amount of energy saved when lights are turned off. It would be expected that the Standards for Mathematical Content would be applied across the Environmental Literacy Strands.

The CCSSM also defines eight **Standards for Mathematical Practice**:
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

These practices represent an overarching set of mathematical processes and proficiencies that require students to reason, explain, model, and generalize. Education for environmental literacy depends on the use of these mathematical processes and proficiencies. Students will *apply* mathematics and mathematical reasoning as they collect information, work with mathematical models, create charts and graphs, and draw conclusions. As the crosswalk indicates, there is a strong relationship between specific elements of the Environmental Literacy Strands and the Standards for Mathematical Practice.

Alignment of the Environmental Literacy Strands and the Standards for Mathematical Practice

Environmental Literacy Strand	Standards for Mathematical Practice
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.** **b. Structure, function, interaction and change in living systems over time.** Explain the dynamic and interconnected nature of Earth's living environment. **c. Structure, function and interconnected nature of human systems over time.** Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**Mathematical Practices** 1. Make sense of problems and persevere in solving them. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain sense of place as the connection between people and a place and that sense of place	**Mathematical Practices** 1. Make sense of problems and persevere in solving them. 4. Model with mathematics. 5. Use appropriate tools strategically.

Environmental Literacy Strand	Standards for Mathematical Practice
encompasses the interrelationships among patterns of human settlement, social and cultural relationships, and the natural world. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community **b Interrelationship between the environment and human activities.** Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing, **c. Resource distribution and use.** Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	6. Attend to precision.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Standards for Mathematical Practices relate specifically to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown. **b. Evaluate accuracy and reliability of information sources.** Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias. **c. Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine	**Mathematical Practices** 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically.

Environmental Literacy Strand	Standards for Mathematical Practice
various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions. **d. Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Kindergarten

Environmental Literacy Strand	Kindergarten Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**K.1 Structure and Function:** The natural world includes living and non-living things. **K.1P.1** Compare and contrast characteristics of living and non-living things. **K.1L.1** Compare and contrast characteristics of plants and animals. **K.1E.1** Gather evidence that the sun warms land, air, and water **K.2 Interaction and Change:** Living and non-living things move. **K.2P.1** Examine the different ways things move. **K.2E.1** Identify changes in things seen in the sky. **K.3 Scientific Inquiry:** Science explores the natural world through observation. **K.3S.1** Explore questions about living and non-living things and events in the natural world. **K.4 Engineering Design:** Engineering design is used to design and build things. **K.4D.1** Create structures using natural or designed materials and simple tools. **K.4D.2** Show how components of designed structures can be disassembled and reassembled.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**K.1 Structure and Function:** The natural world includes living and non-living things. **K.1P.1** Compare and contrast characteristics of living and non-living things. **K.1E.1** Gather evidence that the sun warms land, air, and water. **K.2 Interaction and Change:** Living and non-living things move. **K.2E.1** Identify changes in things seen in the sky.

Environmental Literacy Strand	Kindergarten Science
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**K.1 Structure and Function:** The natural world includes living and non-living things. **K.1P.1** Compare and contrast characteristics of living and non-living things. **K.1L.1** Compare and contrast characteristics of plants and animals. **K.2 Interaction and Change:** Living and non-living things move. **K.2P.1** Examine the different ways things move.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**K.1 Structure and Function:** The natural world includes living and non-living things. **K.1P.1** Compare and contrast characteristics of living and non-living things. **K.1L.1** Compare and contrast characteristics of plants and animals. **K.1E.1** Gather evidence that the sun warms land, air, and water. **K.2 Interaction and Change:** Living and non-living things move. **K.2E.1** Identify changes in things seen in the sky.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	

Environmental Literacy Strand	Kindergarten Science
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards relate specifically to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**K.3 Scientific Inquiry:** Science explores the natural world through observation. **K.3S.2** Make observations about the natural world
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**K.3 Scientific Inquiry:** Science explores the natural world through observation. **K.3S.1** Explore questions about living and non-living things and events in the natural world.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	

Alignment of the Oregon Environmental Literacy Strands & Science Standards

First Grade

Environmental Literacy Strand	First Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**1.1 Structure and Function:** Living and non-living things have characteristics and properties. **1.1P.1** Compare and contrast physical properties and composition of objects. **1.1L.1** Compare and contrast characteristics among individuals within one plant or animal group. **1.1E.1** Examine characteristics and physical properties of Earth materials. **1.2 Interaction and Change:** Living and non-living things interact. **1.2P.1** Describe the motion of objects when a force is applied. **1.2L.1** Describe the basic needs of living things. **1.4 Engineering Design**: Engineering design is used to design and build things to meet a need. **1.4D.2** Demonstrate that designed structures have parts that work together to perform a function.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**1.1 Structure and Function:** Living and non-living things have characteristics and properties. **1.1P.1** Compare and contrast physical properties and composition of objects. **1.1E.1** Examine characteristics and physical properties of Earth materials. **1.2 Interaction and Change:** Living and non-living things interact. **1.2P.1** Describe the motion of objects when a force is applied.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**1.1 Structure and Function:** Living and non-living things have characteristics and properties. **1.1L.1** Compare and contrast characteristics among individuals within one plant or animal group. **1.2 Interaction and Change:** Living and non-living things interact. **1.2L.1** Describe the basic needs of living things.

Environmental Literacy Strand	First Grade Science
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**1.2 Interaction and Change:** Living and non-living things interact. **1.2L.1** Describe the basic needs of living things.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**1.4 Engineering Design:** Engineering design is used to design and build things to meet a need. **1.4D.1** Identify basic tools used in engineering design. **1.4D.2** Demonstrate that designed structures have parts that work together to perform a function. **1.4D.3** Show how tools are used to complete tasks every day.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards specifically relate to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**1.4 Engineering Design:** Engineering design is used to design and build things to meet a need. **1.4D.1** Identify basic tools used in engineering design.

Environmental Literacy Strand	First Grade Science
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**1.3 Scientific Inquiry:** Science explores the natural world using evidence from observations. **1.3S.2** Record observations with pictures, numbers, or written statements. **1.3S.3** Describe why recording accurate observations is important in science.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**1.3 Scientific Inquiry:** Science explores the natural world using evidence from observations. **1.3S.1** Identify and use tools to make careful observations and answer questions about the natural world. **1.3S.2** Record observations with pictures, numbers, or written statements.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Second Grade

Environmental Literacy Strand	Second Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**2.1 Structure and Function:** Living and non-living things vary throughout the natural world. **2.1L.1** Compare and contrast characteristics and behaviors of plants and animals and the environments where they live. **2.2 Interaction and Change:** Living and non-living things change. **2.2P.1** Compare and contrast how objects and materials respond to magnetic forces. **2.2L.1** Describe life cycles of living things. **2.4 Engineering Design:** Engineering design is a process used to design and build things to solve problems or address needs. **2.4D.2** Work with a team to complete a designed structure that can be shared with others.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**2.1 Structure and Function:** Living and non-living things vary throughout the natural world. **2.1L.1** Compare and contrast characteristics and behaviors of plants and animals and the environments where they live. **2.2 Interaction and Change:** Living and non-living things change. **2.2P.1** Compare and contrast how objects and materials respond to magnetic forces. **2.2E.1** Observe and record the patterns of apparent movement of the sun and the moon. **2.2E.2** Record and summarize daily and seasonal temperature changes.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**2.1 Structure and Function:** Living and non-living things vary throughout the natural world. **2.1L.1** Compare and contrast characteristics and behaviors of plants and animals and the environments where they live. **2.2 Interaction and Change:** Living and non-living things change.

Environmental Literacy Strand	Second Grade Science
	2.2L.1 Describe life cycles of living things.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**2.1 Structure and Function:** Living and non-living things vary throughout the natural world. **2.1L.1** Compare and contrast characteristics and behaviors of plants and animals and the environments where they live. **2.2 Interaction and Change:** Living and non-living things change. **2.2L.1** Describe life cycles of living things. **2.2E.1** Observe and record the patterns of apparent movement of the sun and the moon. **2.2E.2** Record and summarize daily and seasonal temperature changes.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**2.1 Structure and Function:** Living and non-living things vary throughout the natural world. **2.1L.1** Compare and contrast characteristics and behaviors of plants and animals and the environments where they live. **2.4 Engineering Design:** Engineering design is a process used to design and build things to solve problems or address needs. **2.4D.3** Describe an engineering design that is used to solve a problem or address a need.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	
b. Sense of personal responsibility. Identify and describe the notion of	**2.4 Engineering Design:** Engineering design is a process used to design and build things to solve problems or address needs.

Environmental Literacy Strand	Second Grade Science
personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**2.4D.3** Describe an engineering design that is used to solve a problem or address a need.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**2.4 Engineering Design:** Engineering design is a process used to design and build things to solve problems or address needs. **2.4D.1** Use tools to construct a simple designed structure out of common objects and materials. **2.4D.2** Work with a team to complete a designed structure that can be shared with others. **2.4D.3** Describe an engineering design that is used to solve a problem or address a need.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**2.4 Engineering Design:** Engineering design is a process used to design and build things to solve problems or address needs. **2.4D.3** Describe an engineering design that is used to solve a problem or address a need.

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Third Grade

Environmental Literacy Strand	Third Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**3.1 Structure and Function:** Living and non-living things vary in their characteristics and properties. **3.1P.1** Compare and contrast the properties of states of matter. **3.1L.1** Compare and contrast the characteristics of offspring and parents. **3.2 Interaction and Change:** Living and non-living things interact with energy and forces. **3.2P.1** Describe how forces cause changes in an object's position, motion, and speed. **3.2L.1** Compare and contrast the life cycles of plants and animals. **3.2E.1** Identify Earth as a planet and describe its seasonal weather patterns of precipitation and temperature. **3.4 Engineering Design:** Engineering design is a process that uses science to solve problems or address needs or aspirations. **3.4D.1** Identify a problem that can be addressed through engineering design, propose a potential solution, and design a prototype.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**3.1 Structure and Function:** Living and non-living things vary in their characteristics and properties. **3.1P.1** Compare and contrast the properties of states of matter. **3.2 Interaction and Change:** Living and non-living things interact with energy and forces. **3.2P.1** Describe how forces cause changes in an object's position, motion, and speed. **3.2E.1** Identify Earth as a planet and describe its seasonal weather patterns of precipitation and temperature.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**3.1 Structure and Function:** Living and non-living things vary in their characteristics and properties. **3.1L.1** Compare and contrast the characteristics of offspring and parents. **3.2 Interaction and Change:** Living and non-living things interact with energy and forces.

Environmental Literacy Strand	Third Grade Science
	3.2L.1 Compare and contrast the life cycles of plants and animals.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**3.1 Structure and Function:** Living and non-living things vary in their characteristics and properties. **3.1L.1** Compare and contrast the characteristics of offspring and parents.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**3.2 Interaction and Change:** Living and non-living things interact with energy and forces. **3.2L.1** Compare and contrast the life cycles of plants and animals. **3.2E.1** Identify Earth as a planet and describe its seasonal weather patterns of precipitation and temperature.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**3.1 Structure and Function:** Living and non-living things vary in their characteristics and properties. **3.1L.1** Compare and contrast the characteristics of offspring and parents. **3.2 Interaction and Change:** Living and non-living things interact with energy and forces. **3.2L.**1 Compare and contrast the life cycles of plants and animals. **3.2E.1** Identify Earth as a planet and describe its seasonal weather patterns of precipitation and temperature. **3.4 Engineering Design:** Engineering design is a process that uses science to solve problems or address needs or aspirations. **3.4D.2** Describe how recent inventions have significantly changed the way people live.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their	

Environmental Literacy Strand	Third Grade Science
importance in making choices within both the local and global contexts,	
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**3.4 Engineering Design:** Engineering design is a process that uses science to solve problems or address needs or aspirations. **3.4D.2** Describe how recent inventions have significantly changed the way people live.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**3.3 Scientific Inquiry:** Scientific inquiry is a process used to explore the natural world using evidence from observations and investigations. **3.3S.1** Plan a simple investigation based on a testable question, match measuring tools to their uses, and collect and record data from a scientific investigation. **3.3S.2** Use the data collected from a scientific investigation to explain the results and draw conclusions. **3.3S.3** Explain why when a scientific investigation is repeated, similar results are expected.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**3.4 Engineering Design:** Engineering design is a process that uses science to solve problems or address needs or aspirations. **3.4D.1** Identify a problem that can be addressed through engineering design, propose a potential solution, and design a prototype. **3.4D.2** Describe how recent inventions have significantly changed the way people live.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**3.4 Engineering Design:** Engineering design is a process that uses science to solve problems or address needs or aspirations. **3.4D.2** Describe how recent inventions have significantly changed the way people live.

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Fourth Grade

Environmental Literacy Strand	Fourth Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**4.1 Structure and Function:** Living and non-living things can be classified by their characteristics and properties. **4.1P.1** Describe the properties of forms of energy and how objects vary in the extent to which they absorb, reflect, and conduct energy. **4.1E.1** Identify properties, uses, and availability of Earth materials. **4.2 Interaction and Change**: Living and non-living things undergo changes that involve force and energy. **4.2P.1** Describe physical changes in matter and explain how they occur. **4.2L.1** Describe the interactions of organisms and the environment where they live. **4.2E.1** Compare and contrast the changes in the surface of Earth that are due to slow and rapid processes. **4.4 Engineering Design:** Engineering design is a process of using science principles to solve problems generated by needs and aspirations. **4.4D.2** Design, construct, and test a prototype of a possible solution to a problem using appropriate tools, materials, and resources. **4.4D.3** Explain how the solution to one problem may create other problems.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**4.1 Structure and Function:** Living and non-living things can be classified by their characteristics and properties. **4.1P.1** Describe the properties of forms of energy and how objects vary in the extent to which they absorb, reflect, and conduct energy. **4.1E.1** Identify properties, uses, and availability of Earth materials. **4.2 Interaction and Change:** Living and non-living things undergo changes that involve force and energy. **4.2P.1** Describe physical changes in matter and explain how they occur.

Environmental Literacy Strand	Fourth Grade Science
	4.2E.1 Compare and contrast the changes in the surface of Earth that are due to slow and rapid processes.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**4.1 Structure and Function:** Living and non-living things can be classified by their characteristics and properties. **4.1L.1** Compare and contrast characteristics of fossils and living organisms. **4.2 Interaction and Change:** Living and non-living things undergo changes that involve force and energy. **4.2L.1** Describe the interactions of organisms and the environment where they live.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**4.1 Structure and Function:** Living and non-living things can be classified by their characteristics and properties. **4.1E.1** Identify properties, uses, and availability of Earth materials. **4.2 Interaction and Change:** Living and non-living things undergo changes that involve force and energy. **4.2L.1** Describe the interactions of organisms and the environment where they live. **4.2E.1** Compare and contrast the changes in the surface of Earth that are due to slow and rapid processes.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**4.2 Interaction and Change:** Living and non-living things undergo changes that involve force and energy. **4.2L.1** Describe the interactions of organisms and the environment where they live. **4.2E.1** Compare and contrast the changes in the surface of Earth that are due to slow and rapid processes.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory.	**4.1 Structure and Function:** Living and non-living things can be classified by their characteristics and properties. **4.1E.1** Identify properties, uses, and availability of Earth materials.

Environmental Literacy Strand	Fourth Grade Science
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards relate directly to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**4.3 Scientific Inquiry:** Scientific inquiry is a process of investigation through questioning, collecting, describing, and examining evidence to explain natural phenomena and artifacts. **4.3S.3** Explain that scientific claims about the natural world use evidence that can be confirmed and support a logical argument. **4.4 Engineering Design:** Engineering design is a process of using science principles to solve problems generated by needs and aspirations. **4.4D.3** Explain how the solution to one problem may create other problems.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**4.4 Engineering Design:** Engineering design is a process of using science principles to solve problems generated by needs and aspirations. **4.4D.1** Identify a problem that can be addressed through engineering design using science principles. **4.4D.2** Design, construct, and test a prototype of a possible solution to a problem using appropriate tools, materials, and resources. **4.4D.3** Explain how the solution to one problem may create other problems.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Fifth Grade

Environmental Literacy Strand	Fifth Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**5.1 Structure and Function:** Living and non-living things are composed of related parts that function together to form systems. **5.1L.1** Explain that organisms are composed of parts that function together to form a living system. **5.2 Interaction and Change:** Force, energy, matter, and organisms interact within living and non-living systems. **5.2L.1** Explain the interdependence of plants, animals, and environment, and how adaptation influences survival. **5.4 Engineering and Design:** Engineering design is a process of using modifications in the world to meet human needs and aspirations. **5.4D.1** Using science principles describe a solution to a need or problem given criteria and constraints. **5.4D.2** Design and build a prototype of proposed engineering solution and identify factors such as cost, safety, appearance, environmental impact, and what will happen if the solution fails.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**5.1 Structure and Function**: Living and non-living things are composed of related parts that function together to form systems. **5.1E.1** Describe the Sun-Earth-Moon system. **5.2 Interaction and Change: Force, energy, matter, and organisms interact within living and non-living systems.** **5.2L.1** Explain the interdependence of plants, animals, and environmental, and how adaptation influences survival. **5.2E.1** Explain how energy from the sun affects Earth's weather and climate.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**5.1 Structure and Function:** Living and non-living things are composed of related parts that function together to form systems. **5.1L.1** Explain that organisms are composed of parts that function together to form a living system.

Environmental Literacy Strand	Fifth Grade Science
	5.2 Interaction and Change: Force, energy, matter, and organisms interact within living and non-living systems. **5.2L.1** Explain the interdependence of plants, animals, and environmental, and how adaptation influences survival.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**5.1 Structure and Function:** Living and non-living things are composed of related parts that function together to form systems. **5.1E.1** Describe the Sun-Earth-Moon system. **5.2 Interaction and Change:** Force, energy, matter, and organisms interact within living and non-living systems. **5.2L.1** Explain the interdependence of plants, animals, and environment, and how adaptation influences survival. **5.2E.1** Explain how energy from the sun affects Earth's weather and climate.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards relate directly to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in	

Environmental Literacy Strand	Fifth Grade Science
informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**5.4 Engineering and Design:** Engineering design is a process of using modifications in the world to meet human needs and aspirations. **5.4D.1** Using science principles describe a solution to a need or problem given criteria and constraints. **5.4D.2** Design and build a prototype of proposed engineering solution and identify factors such as cost, safety, appearance, environmental impact, and what will happen if the solution fails. **5.4D.3** Explain that inventions may lead to other inventions and once an invention exists, people may think of novel ways of using it.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Sixth Grade

Environmental Literacy Strand	Sixth Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**6.1 Structure and Function:** Living and non-living systems are organized groups of related parts that function together and have characteristics and properties. **6.1P.1** Describe physical and chemical properties of matter and how they can be measured. **6.1P.2** Compare and contrast the characteristic properties of forms of energy. **6.1.E.1** Describe and compare the properties and composition of the layers of Earth. **6.2 Interaction and Change:** The related parts within a system interact and change. **6.2L.2** Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources. **6.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, developing solutions, and evaluating proposed solutions. **6.4D.1** Define a problem that addresses a need and identify science principles that may be related to possible solutions. **6.4D.2** Design, construct, and test a possible solution to a defined problem using appropriate tools and materials. Evaluate proposed engineering design solutions to the defined problem.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**6.1 Structure and Function:** Living and non-living systems are organized groups of related parts that function together and have characteristics and properties. **6.1P.1** Describe physical and chemical properties of matter and how they can be measured. **6.1P.2** Compare and contrast the characteristic properties of forms of energy. **6.1.E.1** Describe and compare the properties and composition of the layers of Earth. **6.2 Interaction and Change:** The related parts within a system interact and change. **6.2E.1** Explain the water cycle and the relationship to landforms and weather.

Environmental Literacy Strand	Sixth Grade Science
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**6.2 Interaction and Change:** The related parts within a system interact and change. **6.2L.2** Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community.	**6.2 Interaction and Change:** The related parts within a system interact and change. **6.2L.2** Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**6.2 Interaction and Change:** The related parts within a system interact and change. **6.2E.1** Explain the water cycle and the relationship to landforms and weather. **6.2L.2** Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**6.2 Interaction and Change:** The related parts within a system interact and change. **6.2L.2** Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards relate directly to this strand.	

Environmental Literacy Strand	Sixth Grade Science
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**6.4 Engineering Design**: Engineering design is a process of identifying needs, defining problems, developing solutions, and evaluating proposed solutions. **6.4D.1** Define a problem that addresses a need and identify science principles that may be related to possible solutions. **6.4D.2** Design, construct, and test a possible solution to a defined problem using appropriate tools and materials. Evaluate proposed engineering design solutions to the defined problem.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**6.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, developing solutions, and evaluating proposed solutions. **6.4D.1** Define a problem that addresses a need and identify science principles that may be related to possible solutions. **6.4D.2** Design, construct, and test a possible solution to a defined problem using appropriate tools and materials. Evaluate proposed engineering design solutions to the defined problem.

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Seventh Grade

Environmental Literacy Strand	Seventh Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**7.2 Interaction and Change**: The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems. **7.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying constraints, developing solutions, and evaluating proposed solutions. **7.4D.1** Define a problem that addresses a need and identify constraints that may be related to possible solutions. **7.4D.2** Design, construct, and test a possible solution using appropriate tools and materials. Evaluate the proposed solutions to identify how design constraints are addressed.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.2** Describe the composition of Earth's atmosphere, how it has changed over time, and implications for the future. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems. **7.2E.4** Explain how landforms change over time at various rates in terms of constructive and destructive forces.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2L.2** Explain the processes by which plants and animals obtain energy and materials for growth and metabolism.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable

Environmental Literacy Strand	Seventh Grade Science
political, economic, social and cultural systems.	and non-renewable resources. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.2** Describe the composition of Earth's atmosphere, how it has changed over time, and implications for the future. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems. **7.2E.4** Explain how landforms change over time at various rates in terms of constructive and destructive forces.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.2** Describe the composition of Earth's atmosphere, how it has changed over time, and implications for the future. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems. **7.2E.4** Explain how landforms change over time at various rates in terms of constructive and destructive forces.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.2** Describe the composition of Earth's atmosphere, how it has changed over time, and implications for the future. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems. **7.2E.4** Explain how landforms change over time at various rates in terms of constructive and destructive forces.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their	

Environmental Literacy Strand	Seventh Grade Science
importance in making choices within both the local and global contexts,	
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**7.2 Interaction and Change:** The components and processes within a system interact. **7.2E.1** Describe and evaluate the environmental and societal effects of obtaining, using, and managing waste of renewable and non-renewable resources. **7.2E.3** Evaluate natural processes and human activities that affect global environmental change and suggest and evaluate possible solutions to problems.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**7.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying constraints, developing solutions, and evaluating proposed solutions. **7.4D.1** Define a problem that addresses a need and identify constraints that may be related to possible solutions. **7.4D.2** Design, construct, and test a possible solution using appropriate tools and materials. Evaluate the proposed solutions to identify how design constraints are addressed. **7.4D.3** Explain how new scientific knowledge can be used to develop new technologies and how new technologies can be used to generate new scientific knowledge.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**7.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying constraints, developing solutions, and evaluating proposed solutions. **7.4D.1** Define a problem that addresses a need and identify constraints that may be related to possible solutions. **7.4D.2** Design, construct, and test a possible solution using appropriate tools and materials. Evaluate the proposed solutions to identify how design constraints are addressed. **7.4D.3** Explain how new scientific knowledge can be used to develop new technologies and how new technologies can be used to generate new scientific knowledge.

Alignment of the Oregon Environmental Literacy Strands & Science Standards

Eighth Grade

Environmental Literacy Strand	Eighth Grade Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**8.2 Interaction and Change:** Systems interact with other systems. **8.2P.2** Explain how energy is transferred, transformed, and conserved. **8.2L.1** Explain how species change through the process of natural selection. Describe evidence for evolution. **8.2E.1** Explain how gravity is the force that keeps objects in the solar system in regular and predictable motion and describe the resulting phenomena. Explain the interactions that result in Earth's seasons. **8.2E.2** Describe the processes of Earth's geosphere and the resulting major geological events. **8.2E.3** Explain the causes of patterns of atmospheric and oceanic movement and the effects on weather and climate. **8.2E.4** Analyze evidence for geologic, climatic, environmental, and life form changes over time. **8.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying design criteria and constraints, developing solutions, and evaluating proposed solutions. **8.4D.1** Define a problem that addresses a need, and using relevant science principles investigate possible solutions given specified criteria, constraints, priorities, and trade-offs. **8.4D.2** Design, construct, and test a proposed engineering design solution and collect relevant data. Evaluate a proposed design solution in terms of design and performance criteria, constraints, priorities, and trade-offs. Identify possible design improvements. **8.4D.3** Explain how creating a new technology requires considering societal goals, costs, priorities, and trade-offs.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**8.2 Interaction and Change:** Systems interact with other systems. **8.2P.2** Explain how energy is transferred, transformed, and conserved. **8.2E.1** Explain how gravity is the force that keeps objects in the solar system in regular and predictable motion and describe the resulting phenomena. Explain the interactions that

Environmental Literacy Strand	Eighth Grade Science
	result in Earth's seasons. **8.2E.2** Describe the processes of Earth's geosphere and the resulting major geological events. **8.2E.3** Explain the causes of patterns of atmospheric and oceanic movement and the effects on weather and climate. **8.2E.4** Analyze evidence for geologic, climatic, environmental, and life form changes over time.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**8.2 Interaction and Change:** Systems interact with other systems. **8.2L.1** Explain how species change through the process of natural selection. Describe evidence for evolution. **8.2E.4** Analyze evidence for geologic, climatic, environmental, and life form changes over time.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**8.2 Interaction and Change:** Systems interact with other systems. **8.2E.2** Describe the processes of Earth's geosphere and the resulting major geological events. **8.2E.3** Explain the causes of patterns of atmospheric and oceanic movement and the effects on weather and climate. **8.2E.4** Analyze evidence for geologic, climatic, environmental, and life form changes over time.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**8.2 Interaction and Change:** Systems interact with other systems. **8.2E.4** Analyze evidence for geologic, climatic, environmental, and life form changes over time.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	

Environmental Literacy Strand	Eighth Grade Science
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**8.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying design criteria and constraints, developing solutions, and evaluating proposed solutions. **8.4D.1** Define a problem that addresses a need, and using relevant science principles investigate possible solutions given specified criteria, constraints, priorities, and trade-offs. **8.4D.3** Explain how creating a new technology requires considering societal goals, costs, priorities, and tradeoffs.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**8.3 Scientific Inquiry**: Scientific inquiry is the investigation of the natural world based on observations and science principles that includes proposing questions or hypotheses and designing procedures for questioning, collecting, analyzing, and interpreting multiple forms of accurate and relevant data to produce justifiable evidence-based explanations and new explorations. **8.3S.2** Organize, display, and analyze relevant data, construct an evidence-based explanation of the results of a scientific investigation, and communicate the conclusions including possible sources of error. Suggest new investigations based on analysis of results. **8.3S.3** Explain how scientific explanations and theories evolve as new information becomes available.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**8.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying design criteria and constraints, developing solutions, and evaluating proposed solutions. **8.4D.1** Define a problem that addresses a need, and using relevant science principles investigate possible solutions given specified criteria, constraints, priorities, and trade-offs. **8.4D.2** Design, construct, and test a proposed engineering design solution and collect relevant data. Evaluate a proposed

Environmental Literacy Strand	Eighth Grade Science
	design solution in terms of design and performance criteria, constraints, priorities, and tradeoffs. Identify possible design improvements. **8.4D.3** Explain how creating a new technology requires considering societal goals, costs, priorities, and trade-offs.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**8.4 Engineering Design:** Engineering design is a process of identifying needs, defining problems, identifying design criteria and constraints, developing solutions, and evaluating proposed solutions. **8.4D.1** Define a problem that addresses a need, and using relevant science principles investigate possible solutions given specified criteria, constraints, priorities, and trade-offs. **8.4D.2** Design, construct, and test a proposed engineering design solution and collect relevant data. Evaluate a proposed design solution in terms of design and performance criteria, constraints, priorities, and tradeoffs. Identify possible design improvements. **8.4D.3** Explain how creating a new technology requires considering societal goals, costs, priorities, and trade-offs.

Alignment of the Oregon Environmental Literacy Strands & Science Standards

High School

Environmental Literacy Strand	High School Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**H.1 Structure and Function:** A system's characteristics, form, and function are attributed to the quantity, type, and nature of its components. **H.1E.2** Describe the structure and composition of Earth's atmosphere, geosphere, and hydrosphere. **H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2P.3** Describe the interactions of energy and matter including the law of conservation of energy. **H.2L.1** Explain how energy and chemical elements pass through systems. Describe how chemical elements are combined and recombined in different ways as they cycle through the various levels of organization in biological systems. **H.2L.2** Explain how ecosystems change in response to disturbances and interactions. Analyze the relationships among biotic and abiotic factors in ecosystems. **H.2E.1** Identify and predict the effect of energy sources, physical forces, and transfer processes that occur in the Earth system. Describe how matter and energy are cycled between system components over time. **H.2E.2** Explain how Earth's atmosphere, geosphere, and hydrosphere change over time and at varying rates. Explain techniques used to elucidate the history of events on Earth. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management. **H.4 Engineering Design**: Engineering design is a process of formulating problem statements, identifying criteria and constraints, proposing and testing possible solutions, incorporating modifications based on test data, and communicating the recommendations. **H.4D.1** Define a problem and specify criteria for a solution within specific constraints or limits based on science principles. Generate several possible solutions to a problem

Environmental Literacy Strand	High School Science
	and use the concept of trade-offs to compare them in terms of criteria and constraints. **H.4D.2** Create and test or otherwise analyze at least one of the more promising solutions. Collect and process relevant data. Incorporate modifications based on data from testing or other analysis. **H.4D.3** Analyze data, identify uncertainties, and display data so that the implications for the solution being tested are clear. **H.4D.4** Recommend a proposed solution, identify its strengths and weaknesses, and describe how it is better than alternative designs. Identify further engineering that might be done to refine the recommendations.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**H.1 Structure and Function:** A system's characteristics, form, and function are attributed to the quantity, type, and nature of its components. **H.1E.2** Describe the structure and composition of Earth's atmosphere, geosphere, and hydrosphere. **H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2P.3** Describe the interactions of energy and matter including the law of conservation of energy. **H.2L.1** Explain how energy and chemical elements pass through systems. Describe how chemical elements are combined and recombined in different ways as they cycle through the various levels of organization in biological systems. **H.2L.2** Explain how ecosystems change in response to disturbances and interactions. Analyze the relationships among biotic and abiotic factors in ecosystems. **H.2E.1** Identify and predict the effect of energy sources, physical forces, and transfer processes that occur in the Earth system. Describe how matter and energy are cycled between system components over time. **H.2E.2** Explain how Earth's atmosphere, geosphere, and hydrosphere change over time and at varying rates. Explain techniques used to elucidate the history of events on Earth. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2L.1** Explain how energy and chemical elements pass

Environmental Literacy Strand	High School Science
	through systems. Describe how chemical elements are combined and recombined in different ways as they cycle through the various levels of organization in biological systems. **H.2L.2** Explain how ecosystems change in response to disturbances and interactions. Analyze the relationships among biotic and abiotic factors in ecosystems.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**H.1 Structure and Function:** A system's characteristics, form, and function are attributed to the quantity, type, and nature of its components. **H.1E.2** Describe the structure and composition of Earth's atmosphere, geosphere, and hydrosphere. **H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2L.2** Explain how ecosystems change in response to disturbances and interactions. Analyze the relationships among biotic and abiotic factors in ecosystems. **H.2E.2** Explain how Earth's atmosphere, geosphere, and hydrosphere change over time and at varying rates. Explain techniques used to elucidate the history of events on Earth. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2E.2** Explain how Earth's atmosphere, geosphere, and hydrosphere change over time and at varying rates. Explain techniques used to elucidate the history of events on Earth. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management.

Environmental Literacy Strand	High School Science
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**H.2 Interaction and Change:** The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter. **H.2E.4** Evaluate the impact of human activities on environmental quality and the sustainability of Earth systems. Describe how environmental factors influence resource management.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Science Standards relate directly to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**H.4 Engineering Design:** Engineering design is a process of formulating problem statements, identifying criteria and constraints, proposing and testing possible solutions, incorporating modifications based on test data, and communicating the recommendations. **H.4D.1** Define a problem and specify criteria for a solution within specific constraints or limits based on science principles. Generate several possible solutions to a problem and use the concept of trade-offs to compare them in terms of criteria and constraints. **H.4D.2** Create and test or otherwise analyze at least one of the more promising solutions. Collect and process relevant data. Incorporate modifications based on data from testing or other analysis. **H.4D.3** Analyze data, identify uncertainties, and display data so that the implications for the solution being tested are clear. **H.4D.4** Recommend a proposed solution, identify its strengths and weaknesses, and describe how it is better than alternative designs. Identify further engineering that might be done to refine the recommendations.

Environmental Literacy Strand	High School Science
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**H.4 Engineering Design:** Engineering design is a process of formulating problem statements, identifying criteria and constraints, proposing and testing possible solutions, incorporating modifications based on test data, and communicating the recommendations. **H.4D.2** Create and test or otherwise analyze at least one of the more promising solutions. Collect and process relevant data. Incorporate modifications based on data from testing or other analysis.

Alignment of the Environmental Literacy Strands and Social Sciences[2]

Third Grade

Environmental Literacy Strand	Third Grade Social Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**Social Science Analysis** Explain various perspectives on an event or issue and the reasoning behind them. **SS.03.SA.03** Identify and compare different ways of looking at an event, issue, or problem. Identify and analyze an issue. **SS.03.SA.04** Identify how people or other living things might be affected by an event, issue, or problem. Select a course of action to resolve an issue. **SS.03.SA.05** Identify possible options or responses; then make a choice or express an opinion.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.03.GE.01** View and draw simple maps and pictures to locate, describe, and show movement among places. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.03.GE.02** Understand the purpose of maps, globes, and other geographic tools. Locate major physical and human (cultural) features of the Earth. **SS.03.GE.03** Identify major physical features and describe how they are represented on maps, globes, and other tools.

[2] The Oregon Board of Education adopted a new set of Social Sciences Standards in August 2011. These standards are effective as of the 2012-13 school year. Crosswalks to align the social Sciences Standards (K-12) to the Environmental Literacy Strands will be completed in the near future.

Environmental Literacy Strand	Third Grade Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by the physical environment.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.03.GE.01** View and draw simple maps and pictures to locate, describe, and show movement among places. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.03.GE.02** Understand the purpose of maps, globes, and other geographic tools. Locate major physical and human (cultural) features of the Earth. **SS.03.GE.03** Identify major physical features and describe how they are represented on maps, globes, and other tools. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by the physical environment.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**Civics and Government** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.03.CG.01** Identify essential ideas and values expressed in national symbols, heroes, and patriotic songs of the United States. Understand personal and political rights of citizens in the United States. **SS.03.CG.02** Identify rights that people have in their communities.

Environmental Literacy Strand	Third Grade Social Science
	Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.03.CG.03** Identify ways that people can participate in their communities and the responsibilities of participation. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.03.CG.04** Distinguish local and world issues. **Economics** Understand that resources are limited (e.g., scarcity). **SS.03.EC.01** Understand that limited resources make economic choice necessary. Apply economic concepts and principles to issues of personal finance. **SS.03.EC.02** Identify ways of making money to buy a desired product and what it will cost in time and energy for each option. **Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.03.GE.01** View and draw simple maps and pictures to locate, describe, and show movement among places. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.03.GE.02** Understand the purpose of maps, globes, and other geographic tools. Locate major physical and human (cultural) features of the Earth. **SS.03.GE.03** Identify major physical features and describe how they are represented on maps, globes, and other tools. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by

Environmental Literacy Strand	Third Grade Social Science
	the physical environment. **<u>History</u>** **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.03.HS.02** Understand events from local history.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**<u>Civics and Government</u>** Understand personal and political rights of citizens in the United States. **SS.03.CG.02** Identify rights that people have in their communities. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.03.CG.04** Distinguish local and world issues. **<u>Economics</u>** Understand that resources are limited (e.g., scarcity). **SS.03.EC.01** Understand that limited resources make economic choice necessary. Apply economic concepts and principles to issues of personal finance. **SS.03.EC.02** Identify ways of making money to buy a desired product and what it will cost in time and energy for each option. **<u>Geography</u>** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.03.GE.01** View and draw simple maps and pictures to locate, describe, and show movement among places. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.03.GE.02** Understand the purpose of maps, globes, and other geographic tools. Locate major physical and human (cultural) features of the Earth. **SS.03.GE.03** Identify major physical features and describe how they are represented on maps, globes, and other tools.

Environmental Literacy Strand	Third Grade Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by the physical environment. **History** **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.03.HS.02** Understand events from local history.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**Civics and Government** Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.03.CG.03** Identify ways that people can participate in their communities and the responsibilities of participation. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.03.CG.04** Distinguish local and world issues. **Economics** Understand that resources are limited (e.g., scarcity). **SS.03.EC.01** Understand that limited resources make economic choice necessary. **Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.03.GE.01** View and draw simple maps and pictures to locate, describe, and show movement among places. Locate major physical and human (cultural) features of the Earth. **SS.03.GE.03** Identify major physical features and describe how they are represented on maps, globes, and other tools. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g.,

Environmental Literacy Strand	Third Grade Social Science
	population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by the physical environment. **History** **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.03.HS.02** Understand events from local history.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**Civics and Government** Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.03.CG.04** Distinguish local and world issues. **Economics** Understand that resources are limited (e.g., scarcity). **SS.03.EC.01** Understand that limited resources make economic choice necessary. **Geography** Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.03.GE.04** Identify physical characteristics of places and compare them. Understand how people and the environment are interrelated. **SS.03.GE.05** Understand how peoples' lives are affected by the physical environment.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	**Civics and Government** Understand personal and political rights of citizens in the United States. **SS.03.CG.02** Identify rights that people have in their communities. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations.

Environmental Literacy Strand	Third Grade Social Science
	SS.03.CG.03 Identify ways that people can participate in their communities and the responsibilities of participation. **Economics** Understand that resources are limited (e.g., scarcity). **SS.03.EC.01** Understand that limited resources make economic choice necessary.
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**Civics and Government** Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.03.CG.03** Identify ways that people can participate in their communities and the responsibilities of participation. **Social Science Analysis** Identify and analyze an issue. **SS.03.SA.04** Identify how people or other living things might be affected by an event, issue, or problem.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**Social Science Analysis** Explain various perspectives on an event or issue and the reasoning behind them. **SS.03.SA.03** Identify and compare different ways of looking at an event, issue, or problem. Identify and analyze an issue. **SS.03.SA.04** Identify how people or other living things might be affected by an event, issue, or problem. Select a course of action to resolve an issue. **SS.03.SA.05** Identify possible options or responses; then make a choice or express an opinion.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**Social Science Analysis** Acquire and organize materials from primary and secondary sources. **SS.03.SA.02** Gather information relating to an issue or problem.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**History** **Historical Skills**: Interpret and reconstruct chronological relationships. **SS.03.HS.01** Understand calendar time sequences and chronological sequences within narratives. **Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.03.SA.01** Identify an issue or problem that can be studied.

Environmental Literacy Strand	Third Grade Social Science
	Acquire and organize materials from primary and secondary sources. **SS.03.SA.02** Gather information relating to an issue or problem. Explain various perspectives on an event or issue and the reasoning behind them. **SS.03.SA.03** Identify and compare different ways of looking at an event, issue, or problem. Identify and analyze an issue. **SS.03.SA.04** Identify how people or other living things might be affected by an event, issue, or problem. Select a course of action to resolve an issue. **SS.03.SA.05** Identify possible options or responses; then make a choice or express an opinion.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**Social Science Analysis** Select a course of action to resolve an issue. **SS.03.SA.05** Identify possible options or responses; then make a choice or express an opinion.

Alignment of the Environmental Literacy Strands and Social Sciences

Fifth Grade

Environmental Literacy Strand	Fifth Grade Social Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**Social Science Analysis** Explain various perspectives on an event or issue and the reasoning behind them. **SS.03.SA.03** Identify and compare different ways of looking at an event, issue, or problem. Identify and analyze an issue. **SS.03.SA.04** Identify how people or other living things might be affected by an event, issue, or problem. Select a course of action to resolve an issue. **SS.03.SA.05** Identify possible options or responses; then make a choice or express an opinion.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.05.GE.01** Define basic geography vocabulary such as concepts of location, direction, distance, scale, movement, and region using appropriate words and diagrams. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.05.GE.02** Examine and understand how to prepare maps, charts, and other visual representations to locate places and interpret geographic information. Locate major physical and human (cultural) features of the Earth. **SS.05.GE.03** Locate and identify on maps the continents of the world, the 50 states of the United States, and the major physical features of Oregon.

Environmental Literacy Strand	Fifth Grade Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.**04 Identify physical and human characteristics of regions in the United States and the processes that have shaped them. Analyze the 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). **SS.05.GE.05** Identify patterns of migration and cultural interaction in the United States. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases. Understand how people and the environment are interrelated. **SS.05.GE.07** Understand how physical environments are affected by human activities. **SS.05.GE.08** Understand how human activities are affected by the physical environment.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.05.GE.01** Define basic geography vocabulary such as concepts of location, direction, distance, scale, movement, and region using appropriate words and diagrams. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.05.GE.02** Examine and understand how to prepare maps, charts, and other visual representations to locate places and interpret geographic information. Locate major physical and human (cultural) features of the Earth. **SS.05.GE.03** Locate and identify on maps the continents of the world, the 50 states of the United States, and the major physical features of Oregon. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.04** Identify physical and human characteristics of regions in the United States and the processes that have shaped them.

Environmental Literacy Strand	Fifth Grade Social Science
	Analyze the 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). **SS.05.GE.05** Identify patterns of migration and cultural interaction in the United States. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases. Understand how people and the environment are interrelated. **SS.05.GE.07** Understand how physical environments are affected by human activities. **SS.05.GE.08** Understand how human activities are affected by the physical environment.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**Civics and Government** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.05.CG.01** Identify essential ideas of our republican form of government as expressed in the Declaration of Independence and the Constitution. Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.05.CG.02** Identify the primary functions of federal, state, and local governments. Understand the roles of the three branches of government and explain how their powers are distributed and shared. **SS.05.CG.03** Understand the roles and responsibilities of the three branches of government. Understand personal and political rights of citizens in the United States. **SS.05.CG.04** Identify the rights of U.S. citizens. Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.05.CG.05** Understand how citizens can learn about public issues. Understand how government is influenced and changed by support and dissent of individuals, groups, and international

Environmental Literacy Strand	Fifth Grade Social Science
	organizations. **SS.05.CG.06** Identify and give examples of how individuals can influence the actions of government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.05.CG.07** Recognize and give examples of how nations interact with one another through trade, diplomacy, cultural contacts, treaties, and agreements. Analyze major political systems of the world. **SS.05.CG.08** Understand that there are different ways for governments to be organized. **<u>Economics</u>** Understand that resources are limited (e.g., scarcity). **SS.05.EC.01** Understand that all economic choices have costs and benefits, and compare options in terms of costs and benefits. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.05.EC.02** Identify and give examples of the concepts of "trade-off" and "opportunity costs." Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.05.EC.03** Understand how supply and demand influence price, and how price increases or decreases influence the decisions of consumers. Understand the interdependence of the global economy and the role played by the United States. **SS.05.EC.04** Recognize examples of how nations interact economically. Understand how money makes it easier to trade, borrow, save, invest, and compare the value of goods and services. **SS.05.EC.05** Identify the characteristics of money and the advantages of its use over barter. **<u>Geography</u>** Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.05.GE.02** Examine and understand how to prepare maps, charts, and other visual representations to locate places and interpret geographic information.

Environmental Literacy Strand	Fifth Grade Social Science
	Locate major physical and human (cultural) features of the Earth. **SS.05.GE.03** Locate and identify on maps the continents of the world, the 50 states of the United States, and the major physical features of Oregon. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.04** Identify physical and human characteristics of regions in the United States and the processes that have shaped them. Analyze the 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). **SS.05.GE.05** Identify patterns of migration and cultural interaction in the United States. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases. Understand how people and the environment are interrelated. **SS.05.GE.07** Understand how physical environments are affected by human activities. **SS.05.GE.08** Understand how human activities are affected by the physical environment. **History** **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.05.HS.05** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history from pre-history through the period of the American Revolution. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.05.HS.06** Understand how individuals changed or significantly influenced the course of Oregon state history. **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.05.HS.07** Understand how individuals changed or significantly influenced the course of local history.

Environmental Literacy Strand	Fifth Grade Social Science
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**Civics and Government** Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.05.CG.07** Recognize and give examples of how nations interact with one another through trade, diplomacy, cultural contacts, treaties, and agreements. **Economics** Understand the interdependence of the global economy and the role played by the United States. **SS.05.EC.04** Recognize examples of how nations interact economically. **Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.05.GE.01** Define basic geography vocabulary such as concepts of location, direction, distance, scale, movement, and region using appropriate words and diagrams. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.05.GE.02** Examine and understand how to prepare maps, charts, and other visual representations to locate places and interpret geographic information. Locate major physical and human (cultural) features of the Earth. **SS.05.GE.03** Locate and identify on maps the continents of the world, the 50 states of the United States, and the major physical features of Oregon. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.04** Identify physical and human characteristics of regions in the United States and the processes that have shaped them. Analyze the 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). **SS.05.GE.05** Identify patterns of migration and cultural interaction in the United States.

Environmental Literacy Strand	Fifth Grade Social Science
	Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases. Understand how people and the environment are interrelated. **SS.05.GE.07** Understand how physical environments are affected by human activities. **SS.05.GE.08** Understand how human activities are affected by the physical environment. **History** **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.05.HS.05** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history from pre-history through the period of the American Revolution. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.05.HS.06** Understand how individuals changed or significantly influenced the course of Oregon state history. **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.05.HS.07** Understand how individuals changed or significantly influenced the course of local history.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**Economics** Understand that resources are limited (e.g., scarcity). **SS.05.EC.01** Understand that all economic choices have costs and benefits, and compare options in terms of costs and benefits. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.05.EC.02** Identify and give examples of the concepts of "trade-off" and "opportunity costs." **Geography** Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.04** Identify physical and human characteristics of regions in the United States and the processes that have shaped them. Analyze the 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).

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	SS.05.GE.05 Identify patterns of migration and cultural interaction in the United States. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases. Understand how people and the environment are interrelated. **SS.05.GE.07** Understand how physical environments are affected by human activities. **SS.05.GE.08** Understand how human activities are affected by the physical environment. **History** **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.05.HS.05** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history from pre-history through the period of the American Revolution. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.05.HS.06.02** Understand the interactions and contributions of the various people and cultures that have lived in or migrated to the area that is now Oregon from pre-history through the period of the American Revolution. **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.05.HS.07** Understand how individuals changed or significantly influenced the course of local history.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**Economics** Understand that resources are limited (e.g., scarcity). **SS.05.EC.01** Understand that all economic choices have costs and benefits, and compare options in terms of costs and benefits. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.05.EC.02** Identify and give examples of the concepts of "trade-off" and "opportunity costs." **Economics** Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.05.EC.03** Understand how supply and demand influence price, and how price increases or decreases influence the

Environmental Literacy Strand	Fifth Grade Social Science
	decisions of consumers. Understand the interdependence of the global economy and the role played by the United States. **SS.05.EC.04** Recognize examples of how nations interact economically. **<u>Geography</u>** Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.05.GE.04** Identify physical and human characteristics of regions in the United States and the processes that have shaped them. Analyze the 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). **SS.05.GE.05** Identify patterns of migration and cultural interaction in the United States. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.05.GE.06** Identify and give examples of issues related to population increases and decreases.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	**<u>Civics and Government</u>** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.05.CG.01** Identify essential ideas of our republican form of government as expressed in the Declaration of Independence and the Constitution. Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.05.CG.02** Identify the primary functions of federal, state, and local governments. Understand the roles of the three branches of government and explain how their powers are distributed and shared. **SS.05.CG.03** Understand the roles and responsibilities of the three branches of government.

Environmental Literacy Strand	Fifth Grade Social Science
	Understand personal and political rights of citizens in the United States. **SS.05.CG.04** Identify the rights of U.S. citizens. Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.05.CG.05** Understand how citizens can learn about public issues. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.05.CG.06** Identify and give examples of how individuals can influence the actions of government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.05.CG.07** Recognize and give examples of how nations interact with one another through trade, diplomacy, cultural contacts, treaties, and agreements. Analyze major political systems of the world. **SS.05.CG.08** Understand that there are different ways for governments to be organized.
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**Civics and Government** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.05.CG.01** Identify essential ideas of our republican form of government as expressed in the Declaration of Independence and the Constitution. Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.05.CG.05** Understand how citizens can learn about public issues. Understand how government is influenced and changed by support and dissent of individuals, groups, and international

Environmental Literacy Strand	Fifth Grade Social Science
	organizations. **SS.05.CG.06** Identify and give examples of how individuals can influence the actions of government.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.05.SA.01** Examine an event, issue, or problem through inquiry and research. Acquire and organize materials from primary and secondary sources. **SS.05.SA.02** Gather, use, and document information from multiple sources (e.g. print, electronic, human, primary, secondary). Explain various perspectives on an event or issue and the reasoning behind them. **SS.05.SA.03** Identify and study two or more points of view of an event, issue, or problem. Identify and analyze an issue. **SS.05.SA.04** Identify characteristics of an event, issue, or problem, suggesting possible causes and results.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**Social Science Analysis** Acquire and organize materials from primary and secondary sources. **SS.05.SA.02** Gather, use, and document information from multiple sources (e.g. print, electronic, human, primary, secondary). Explain various perspectives on an event or issue and the reasoning behind them. **SS.05.SA.03** Identify and study two or more points of view of an event, issue, or problem.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.05.SA.01** Examine an event, issue, or problem through inquiry and research. Acquire and organize materials from primary and secondary sources. **SS.05.SA.02** Gather, use, and document information from multiple sources (e.g. print, electronic, human, primary, secondary). Explain various perspectives on an event or issue and the

Environmental Literacy Strand	Fifth Grade Social Science
	reasoning behind them. **SS.05.SA.03** Identify and study two or more points of view of an event, issue, or problem. Identify and analyze an issue. **SS.05.SA.04** Identify characteristics of an event, issue, or problem, suggesting possible causes and results. Select a course of action to resolve an issue. **SS.05.SA.05** Identify a response or solution and support why it makes sense, using support from research.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**Social Science Analysis** Select a course of action to resolve an issue. **SS.05.SA.05** Identify a response or solution and support why it makes sense, using support from research.

Alignment of the Environmental Literacy Strands and Social Sciences

Eighth Grade

Environmental Literacy Strand	Eighth Grade Social Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making..	**Civic Government** Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.08.CG.06** Identify and give examples of how groups and organizations can influence the actions of government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.08.CG.07** Understand how actions of the U.S. government affect citizens of both the United States and other countries. **Economics** Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.08.EC.03** Understand how price is an incentive for both buyers and producers/sellers in the marketplace. Understand the interdependence of the global economy and the role played by the United States. **SS.08.EC.06** Identify and give examples of how the United States economy affects citizens of both the United States and other countries. **Geography** Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical

Environmental Literacy Strand	Eighth Grade Social Science
	environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity. **History** **Historical Skills**: Analyze cause and effect relationships, including multiple causalities. **SS.08.HS.02** Distinguish between cause and effect relationships and events that happen or occur concurrently or sequentially. **Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.08.SA.01** Clarify key aspects of an event, issue, or problem through inquiry and research. Explain various perspectives on an event or issue and the reasoning behind them. **SS.08.SA.03** Examine a controversial event, issue, or problem from more than one perspective. Identify and analyze an issue. **SS.08.SA.04** Examine the various characteristics, causes, and effects of an event, issue, or problem. Select a course of action to resolve an issue. **SS.08.SA.05** Consider two or more outcomes, responses, or solutions; identify their strengths and weaknesses; then conclude and justify which is the best.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.08.GE.01** Understand fundamental geography vocabulary such as concepts of distance, latitude, longitude, interdependence, accessibility, and connections. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.08.GE.02**. Read, interpret, and understand how to construct geographic representations to analyze information, understand spatial relationships, and compare places. Locate major physical and human (cultural) features of the Earth. **SS.08.GE.03** Locate and identify on maps and globes the regions of the world and their prominent physical features. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions.

Environmental Literacy Strand	Eighth Grade Social Science
	SS.08.GE.04 Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.08.GE.01** Understand fundamental geography vocabulary such as concepts of distance, latitude, longitude, interdependence, accessibility, and connections. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.08.GE.02** Read, interpret, and understand how to construct geographic representations to analyze information, understand spatial relationships, and compare places. Locate major physical and human (cultural) features of the Earth. **SS.08.GE.03** Locate and identify on maps and globes the regions of the world and their prominent physical features. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of

Environmental Literacy Strand	Eighth Grade Social Science
	population distribution, migration, and cultural diffusion and interactions. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**Civics and Government** Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.08.CG.05** Understand how citizens can make their voices heard in the political process. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.08.CG.06** Identify and give examples of how groups and organizations can influence the actions of government. **Economics** Understand that resources are limited (e.g., scarcity). **SS.08.EC.01** Understand incentives in a market economy that influence individuals and businesses in allocating resources (time, money, labor, and natural resources). Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.08.EC.02** Understand how trade-offs and opportunity costs can be identified and measured. Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.08.EC.03** Understand how price is an incentive for both buyers and producers/sellers in the marketplace. Understand economic concepts, principles, and factors affecting the allocation of available resources in an economy. **SS.08.EC.04** Understand how decisions regarding what to produce,

Environmental Literacy Strand	Eighth Grade Social Science
	how to produce, and for whom to produce are answered in various economic systems. Understand the interdependence of the global economy and the role played by the United States. **SS.08.EC.06** Identify and give examples of how the United States economy affects citizens of both the United States and other countries. **<u>Geography</u>** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.08.GE.01** Understand fundamental geography vocabulary such as concepts of distance, latitude, longitude, interdependence, accessibility, and connections. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.08.GE.02** Read, interpret, and understand how to construct geographic representations to analyze information, understand spatial relationships, and compare places. Locate major physical and human (cultural) features of the Earth. **SS.08.GE.03** Locate and identify on maps and globes the regions of the world and their prominent physical features. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places.

Environmental Literacy Strand	Eighth Grade Social Science
	SS.08.GE.08 Understand how changes in a physical environment affect human activity. **<u>History</u>** **World History**: Understand and interpret events, issues, and developments within and across eras of world history. **SS.08.HS.05** Understand the political, economic, and cultural impact, and lasting influence of early civilizations on world development. **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.08.HS.06** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history post-American Revolution through 1900. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.08.HS.07** Understand how various groups of people were affected by events and developments in Oregon state history. **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.08.HS.08** Understand the lasting influence of events and developments in local history.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**<u>Civics and Government</u>** Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.08.CG.07** Understand how actions of the U.S. government affect citizens of both the United States and other countries. Analyze major political systems of the world. **SS.08.CG.08** Understand various forms of government. **<u>Economics</u>** Understand that resources are limited (e.g., scarcity). **SS.08.EC.01** Understand incentives in a market economy that influence individuals and businesses in allocating resources (time, money, labor, and natural resources). Understand economic concepts, principles, and factors affecting the allocation of available resources in an economy. **SS.08.EC.04** Understand how decisions regarding what to produce, how to produce, and for whom to produce are answered in various economic systems.

Environmental Literacy Strand	Eighth Grade Social Science
	Understand the interdependence of the global economy and the role played by the United States. **SS.08.EC.06** Identify and give examples of how the United States economy affects citizens of both the United States and other countries. **<u>Geography</u>** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.08.GE.01** Understand fundamental geography vocabulary such as concepts of distance, latitude, longitude, interdependence, accessibility, and connections. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.08.GE.02** Read, interpret, and understand how to construct geographic representations to analyze information, understand spatial relationships, and compare places. Locate major physical and human (cultural) features of the Earth. **SS.08.GE.03** Locate and identify on maps and globes the regions of the world and their prominent physical features. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity. **<u>History</u>** **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events. **SS.08.HS.04** Evaluate data within the context in which it was created, testing its reliability, credibility, and bias. **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history.

Environmental Literacy Strand	Eighth Grade Social Science
	SS.08.HS.06 Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history post-American Revolution through 1900. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.08.HS.07** Understand how various groups of people were affected by events and developments in Oregon state history. **State & Local History:** Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.08.HS.08** Understand the lasting influence of events and developments in local history.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**Civics and Government** Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.08.CG.05** Understand how citizens can make their voices heard in the political process. **Economics** Understand that resources are limited (e.g., scarcity). **SS.08.EC.01** Understand incentives in a market economy that influence individuals and businesses in allocating resources (time, money, labor, and natural resources). Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.08.EC.02** Understand how trade-offs and opportunity costs can be identified and measured. Understand economic concepts, principles, and factors affecting the allocation of available resources in an economy. **SS.08.EC.04** Understand how decisions regarding what to produce, how to produce, and for whom to produce are answered in various economic systems. Understand the interdependence of the global economy and the role played by the United States. **SS.08.EC.06** Identify and give examples of how the United States economy affects citizens of both the United States and other countries. **Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.08.GE.01** Understand fundamental geography vocabulary such as concepts of distance, latitude, longitude, interdependence, accessibility, and connections.

Environmental Literacy Strand	Eighth Grade Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity. **History** **Historical Skills**: Analyze cause and effect relationships, including multiple causalities. **SS.08.HS.02** Distinguish between cause and effect relationships and events that happen or occur concurrently or sequentially. **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.08.HS.06** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history post-American Revolution through 1900. **State & Local History:** Understand and interpret events, issues, and developments in the history of one's family, local community, and culture. **SS.08.HS.08** Understand the lasting influence of events and developments in local history.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**Economics** Understand that resources are limited (e.g., scarcity). **SS.08.EC.01** Understand incentives in a market economy that influence individuals and businesses in allocating resources (time, money, labor, and natural resources). Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.08.EC.02** Understand how trade-offs and opportunity costs can be identified and measured.

Environmental Literacy Strand	Eighth Grade Social Science
	Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.08.EC.03** Understand how price is an incentive for both buyers and producers/sellers in the marketplace. Understand economic concepts, principles, and factors affecting the allocation of available resources in an economy. **SS.08.EC.04** Understand how decisions regarding what to produce, how to produce, and for whom to produce are answered in various economic systems. Understand the interdependence of the global economy and the role played by the United States. **SS.08.EC.06** Identify and give examples of how the United States economy affects citizens of both the United States and other countries. **Geography** Locate major physical and human (cultural) features of the Earth. **SS.08.GE.03** Locate and identify on maps and globes the regions of the world and their prominent physical features. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. Analyze the 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). **SS.08.GE.05** Identify and understand worldwide patterns of population distribution, migration, and cultural diffusion and interactions. **SS.08.GE.06** Identify economic, cultural, and environmental factors that affect population, and predict how the population would change as a result. Understand how people and the environment are interrelated. **SS.08.GE.07** Understand how human modification of the physical environment in a place affects both that place and other places. **SS.08.GE.08** Understand how changes in a physical environment affect human activity. **History** **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.08.HS.06** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history post-American Revolution through 1900.

Environmental Literacy Strand	Eighth Grade Social Science
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	**Civics and Government** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.08.CG.01** Understand the purposes of government as stated in the Constitution and the specific provisions that limit the power of government in order to protect the rights of individuals. Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.08.CG.02** Identify and distinguish how powers and responsibilities are distributed and balanced among the federal, state, and local levels. Understand the roles of the three branches of government and explain how their powers are distributed and shared. **SS.08.CG.03** Understand the powers of each branch of government as stated in the Constitution. Understand personal and political rights of citizens in the United States. **SS.08.CG.04** Understand citizens' rights and how the Constitution protects those rights. Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.08.CG.05** Understand how citizens can make their voices heard in the political process. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.08.CG.06** Identify and give examples of how groups and organizations can influence the actions of government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.08.CG.07** Understand how actions of the U.S. government affect citizens of both the United States and other countries. Analyze major political systems of the world. **SS.08.CG.08** Understand various forms of government.

Environmental Literacy Strand	Eighth Grade Social Science
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**Civics and Government** Understand participatory responsibilities of citizens in the community (voluntarism) and in the political process (becoming informed about public issues and candidates, joining political parties/interest groups/associations, communicating with public officials, voting, influencing lawmaking through such processes as petitions/initiatives). **SS.08.CG.05** Understand how citizens can make their voices heard in the political process. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.08.CG.06** Identify and give examples of how groups and organizations can influence the actions of government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.08.CG.07** Understand how actions of the U.S. government affect citizens of both the United States and other countries.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**History** **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events. **SS.08.HS.04** Evaluate data within the context in which it was created, testing its reliability, credibility, and bias. **Social Science Analysis** Acquire and organize materials from primary and secondary sources. **SS.08.SA.02** Gather, interpret, use, and document information from multiple sources, distinguishing facts from opinions and recognizing points of view. Explain various perspectives on an event or issue and the reasoning behind them. **SS.08.SA.03** Examine a controversial event, issue, or problem from more than one perspective. Identify and analyze an issue. **SS.08.SA.04** Examine the various characteristics, causes, and effects of an event, issue, or problem. Select a course of action to resolve an issue. **SS.08.SA.05** Consider two or more outcomes, responses, or solutions; identify their strengths and weaknesses; then conclude and justify which is the best.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality,	**History** **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events.

Environmental Literacy Strand	Eighth Grade Social Science
completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**SS.08.HS.04** Evaluate data within the context in which it was created, testing its reliability, credibility, and bias. **Social Science Analysis** Acquire and organize materials from primary and secondary sources. **SS.08.SA.02** Gather, interpret, use, and document information from multiple sources, distinguishing facts from opinions and recognizing points of view.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**Geography** Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.08.GE.02** Read, interpret, and understand how to construct geographic representations to analyze information, understand spatial relationships, and compare places. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.08.GE.04** Identify and compare physical and human characteristics of major regions and significant places in the world. **History** **Historical Skills**: Interpret and reconstruct chronological relationships. **SS.08.HS.01** Represent and interpret data and chronological relationships from history, using timelines and narratives. **Historical Skills**: Analyze cause and effect relationships, including multiple causalities. **SS.08.HS.02** Distinguish between cause and effect relationships and events that happen or occur concurrently or sequentially. **Historical Skills**: Understand, recognize, and interpret change and continuity over time. **SS.08.HS.03** Identify and give examples of chronological patterns and recognize them in related events over time. **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events. **SS.08.HS.04** Evaluate data within the context in which it was created, testing its reliability, credibility, and bias. **Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.08.SA.01** Clarify key aspects of an event, issue, or problem through inquiry and research. Acquire and organize materials from primary and secondary sources. **SS.08.SA.02** Gather, interpret, use, and document information from

Environmental Literacy Strand	Eighth Grade Social Science
	multiple sources, distinguishing facts from opinions and recognizing points of view. Explain various perspectives on an event or issue and the reasoning behind them. **SS.08.SA.03** Examine a controversial event, issue, or problem from more than one perspective. Identify and analyze an issue. **SS.08.SA.04** Examine the various characteristics, causes, and effects of an event, issue, or problem. Select a course of action to resolve an issue. **SS.08.SA.05** Consider two or more outcomes, responses, or solutions; identify their strengths and weaknesses; then conclude and justify which is the best.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**Social Science Analysis** Select a course of action to resolve an issue. **SS.08.SA.05** Consider two or more outcomes, responses, or solutions; identify their strengths and weaknesses; then conclude and justify which is the best.

Alignment of the Environmental Literacy Strands and Social Sciences

High School

Environmental Literacy Strand	High School Social Science
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**Civic Government** Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.HS.CG.06** Understand how government policies and decisions have been influenced and changed by individuals, groups, and international organizations. **Economics** Understand that resources are limited (e.g., scarcity) **SS.HS.EC.01** Understand how specialization and competition influence the allocation of resources. **Geography** Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment. **History** **Historical Skills:** Analyze cause and effect relationships, including multiple causalities. **SS.HS.HS.02** Compare and contrast institutions and ideas in history, noting cause and effect relationships. **Historical Skills**: Understand, recognize, and interpret change and continuity over time. **SS.HS.HS.03** Recognize and interpret continuity and/or change with respect to particular historical developments in the 20th century. **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events.

Environmental Literacy Strand	High School Social Science
	SS.HS.HS.04 Understand how contemporary perspectives affect historical interpretation. **<u>Social Science Analysis</u>** Define and clarify an issue so that its dimensions are well understood. **SS.HS.SA.01** Define, research, and explain an event, issue, problem, or phenomenon and its significance to society. Explain various perspectives on an event or issue and the reasoning behind them. **SS.HS.SA.04** Analyze an event, issue, problem, or phenomenon from varied or opposed perspectives or points of view. Identify and analyze an issue. **SS.HS.SA.05** Analyze an event, issue, problem, or phenomenon, identifying characteristics, influences, causes, and both short- and long-term effects. Select a course of action to resolve an issue. **SS.HS.SA.06** Propose, compare, and judge multiple responses, alternatives, or solutions; then reach a defensible, supported conclusion.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	**<u>Geography</u>** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.HS.GE.01** Understand and use geographic information using a variety of scales, patterns of distribution, and arrangement. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.HS.GE.02** Interpret and evaluate information using complex geographic representations. Locate major physical and human (cultural) features of the Earth. **SS.HS.GE.03** Locate and identify places, regions, and geographic features that have played prominent roles in historical or contemporary issues and events. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology, migration, and urbanization on them. Analyze the 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).

Environmental Literacy Strand	High School Social Science
	SS.HS.GE.05 Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.HS.GE.01** Understand and use geographic information using a variety of scales, patterns of distribution, and arrangement. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.HS.GE.02** Interpret and evaluate information using complex geographic representations. Locate major physical and human (cultural) features of the Earth. **SS.HS.GE.03** Locate and identify places, regions, and geographic features that have played prominent roles in historical or contemporary issues and events. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology, migration, and urbanization on them. Analyze the 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). **SS.HS.GE.05** Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population.

Environmental Literacy Strand	High School Social Science
	SS.HS.GE.06 Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**Civics and Government** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.HS.CG.01** Understand the purpose of laws and government, provisions to limit power, and the ability to meet changing needs as essential ideas of the Constitution. Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.HS.CG.02** Understand the interrelationship between local, state, and federal government. Understand the roles of the three branches of government and explain how their powers are distributed and shared. **SS.HS.CG.03** Understand how the branches of government have powers and limitations. Understand personal and political rights of citizens in the United States. **SS.HS.CG.04** Understand the role of the courts and of the law in protecting the rights of U.S. citizens. **SS.HS.CG.05** Understand the civic responsibilities of U.S. citizens and how they are met. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.HS.CG.06** Understand how government policies and decisions have been influenced and changed by individuals, groups, and international organizations. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.HS.CG.07** Understand the purposes and functions of major international organizations and the role of the United States in them. Analyze major political systems of the world. **SS.HS.CG.08** Understand how various forms of government function in different situations.

Environmental Literacy Strand	High School Social Science
	<u>Economics</u> Understand that resources are limited (e.g., scarcity). **SS.HS.EC.01** Understand how specialization and competition influence the allocation of resources. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.HS.EC.02** Understand a cost-benefit analysis of economic choices. Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.HS.EC.03** Understand how consumer demand and market price directly impact one another. Understand economic concepts, principles, and factors affecting the allocation of available resources in an economy. **SS.HS.EC.04** Evaluate different economic systems, comparing advantages and disadvantages of each. Understand the role of government and institutions (i.e., banks, labor unions) in various economic systems in an economy. **SS.HS.EC.05** Understand how government can affect the national economy through policy. **SS.HS.EC.06** Understand how government can affect international trade through tariffs, quotas and trade agreements. Understand the interdependence of the global economy and the role played by the United States. **SS.HS.EC.07** Understand the purposes and functions of major international economic organizations and the role of the United States in them. **<u>Geography</u>** Understand the spatial concepts of location, distance, direction, scale, movement, and region. **SS.HS.GE.01** Understand and use geographic information using a variety of scales, patterns of distribution, and arrangement. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.HS.GE.02** Interpret and evaluate information using complex geographic representations. Locate major physical and human (cultural) features of the Earth. **SS.HS.GE.03** Locate and identify places, regions, and geographic features that have played prominent roles in historical or contemporary issues and events.

Environmental Literacy Strand	High School Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology, migration, and urbanization on them. Analyze the 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). **SS.HS.GE.05** Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment. **History** **World History**: Understand and interpret events, issues, and developments within and across eras of world history. **SS.HS.HS.05** Understand the causes, characteristics, lasting influence, and impact of political, economic, and social developments in world history. **U.S. History**: Understand and interpret events, issues, and developments within and across eras of U.S. history. **SS.HS.HS.06** Understand how individuals, issues, and events changed or significantly influenced the course of U.S. history after 1900. **State & Local History**: Understand and interpret the history of the state of Oregon. **SS.HS.HS.07** Understand the causes, characteristics, and impact of political, economic, and social developments in Oregon state history. **State & Local History**: Understand and interpret events, issues, and developments in the history of one's family, local community, and

Environmental Literacy Strand	High School Social Science
	culture. **SS.HS.HS.08** Understand the causes, characteristics and impact, and lasting influence of political, economic, and social developments in local history.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**Civics and Government** Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.HS.CG.02** Understand the interrelationship between local, state, and federal government. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.HS.CG.07** Understand the purposes and functions of major international organizations and the role of the United States in them. **Economics** Understand that resources are limited (e.g., scarcity). **SS.HS.EC.01** Understand how specialization and competition influence the allocation of resources. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.HS.EC.02** Understand a cost-benefit analysis of economic choices. Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.HS.EC.03** Understand how consumer demand and market price directly impact one another. Understand the interdependence of the global economy and the role played by the United States. **SS.HS.EC.07** Understand the purposes and functions of major international economic organizations and the role of the United States in them. **Geography** Locate major physical and human (cultural) features of the Earth. **SS.HS.GE.03** Locate and identify places, regions, and geographic features that have played prominent roles in historical or contemporary issues and events.

Environmental Literacy Strand	High School Social Science
	Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology, migration, and urbanization on them. Analyze the 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). **SS.HS.GE.05** Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**<u>Economics</u>** Understand that resources are limited (e.g., scarcity). **SS.HS.EC.01** Understand how specialization and competition influence the allocation of resources. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.HS.EC.02** Understand a cost-benefit analysis of economic choices. **<u>Geography</u>** Locate major physical and human (cultural) features of the Earth. **SS.HS.GE.03** Locate and identify places, regions, and geographic features that have played prominent roles in historical or contemporary issues and events. Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology,

Environmental Literacy Strand	High School Social Science
	migration, and urbanization on them. Analyze the 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). **SS.HS.GE.05** Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**<u>Economics</u>** Understand that resources are limited (e.g., scarcity). **SS.HS.EC.01** Understand how specialization and competition influence the allocation of resources. Understand economic trade-offs and how choices result in both costs and benefits to individuals and society. **SS.HS.EC.02** Understand a cost-benefit analysis of economic choices. Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions, and government. **SS.HS.EC.03** Understand how consumer demand and market price directly impact one another. **<u>Geography</u>** Compare and analyze physical (e.g., landforms, vegetation, wildlife, climate, and natural hazards) and human (e.g., population, land use, language, and religion) characteristics of places and regions. **SS.HS.GE.04** Analyze changes in the physical and human characteristics of places and regions, and the effects of technology, migration, and urbanization on them. Analyze the causes of human migration (e.g., density, food and water supply, transportation and communication systems) and its

Environmental Literacy Strand	High School Social Science
	effects (e.g., impact on physical and human systems). **SS.HS.GE.05** Understand how worldwide transportation and communication patterns have affected the flow and interactions of people, ideas, and products. Understand economic, cultural, and environmental factors that influence changes in population, and evaluate the consequences of the resulting increases or decreases in population. **SS.HS.GE.06** Analyze and evaluate the impact of economic, cultural or environmental factors that result in changes to population of cities, countries, or regions. Understand how people and the environment are interrelated. **SS.HS.GE.07** Understand human modifications of the physical environment and analyze their global impacts and consequences for human activity. **SS.HS.GE.08** Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts,	**<u>Civics and Government</u>** Understand the origins, purposes, and functions of U.S. government, including the structure and meaning of the U.S. Constitution. **SS.HS.CG.01** Understand the purpose of laws and government, provisions to limit power, and the ability to meet changing needs as essential ideas of the Constitution. Understand the organization, responsibilities, and interrelationships of local, state, and federal governments in the United States. **SS.HS.CG.02** Understand the interrelationship between local, state, and federal government. Understand the roles of the three branches of government and explain how their powers are distributed and shared. **SS.HS.CG.03** Understand how the branches of government have powers and limitations. Understand personal and political rights of citizens in the United States. **SS.HS.CG.04** Understand the role of the courts and of the law in protecting the rights of U.S. citizens. **SS.HS.CG.05** Understand the civic responsibilities of U.S. citizens and how they are met. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.HS.CG.06** Understand how government policies and decisions

Environmental Literacy Strand	High School Social Science
	have been influenced and changed by individuals, groups, and international organizations. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.HS.CG.07** Understand the purposes and functions of major international organizations and the role of the United States in them.
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**Civics and Government** Understand personal and political rights of citizens in the United States. **SS.HS.CG.04** Understand the role of the courts and of the law in protecting the rights of U.S. citizens. **SS.HS.CG.05** Understand the civic responsibilities of U.S. citizens and how they are met. Understand how government is influenced and changed by support and dissent of individuals, groups, and international organizations. **SS.HS.CG.06** Understand how government policies and decisions have been influenced and changed by individuals, groups, and international organizations. Understand how nations interact with each other, how events and issues in other countries can affect citizens in the United States, and how actions and concepts of democracy and individual rights of the United States can affect other peoples and nations. **SS.HS.CG.07** Understand the purposes and functions of major international organizations and the role of the United States in them.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**Social Science Analysis** Explain various perspectives on an event or issue and the reasoning behind them. **SS.HS.SA.04** Analyze an event, issue, problem, or phenomenon from varied or opposed perspectives or points of view.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**Social Science Analysis** Acquire and organize materials from primary and secondary sources. **SS.HS.SA.02** Gather, analyze, use, and document information from various sources, distinguishing facts, opinions, inferences, biases, stereotypes, and persuasive appeals. **SS.HS.SA.03** Understand what it means to be a critical consumer of information.
c. Identify, investigate and analyze strategies that address challenges and create desired	**Geography** Understand the spatial concepts of location, distance, direction, scale, movement, and region.

Environmental Literacy Strand	High School Social Science
futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.	**SS.HS.GE.01** Understand and use geographic information using a variety of scales, patterns of distribution, and arrangement. Use maps and other geographic tools and technologies to acquire, process, and report information from a spatial perspective. **SS.HS.GE.02** Interpret and evaluate information using complex geographic representations. **History** **Historical Skills**: Interpret and reconstruct chronological relationships. **SS.HS.HS.01** Reconstruct, interpret, and represent the chronology of significant events, developments, and narratives from history. **Historical Skills**: Analyze cause and effect relationships, including multiple causalities. **SS.HS.HS.02** Compare and contrast institutions and ideas in history, noting cause and effect relationships. **Historical Skills**: Understand, recognize, and interpret change and continuity over time. **SS.HS.HS.03** Recognize and interpret continuity and/or change with respect to particular historical developments in the 20th century. **Historical Skills**: Identify and analyze diverse perspectives on and historical interpretation of historical issues and events. **SS.HS.HS.04** Understand how contemporary perspectives affect historical interpretation. **Social Science Analysis** Define and clarify an issue so that its dimensions are well understood. **SS.HS.SA.01** Define, research, and explain an event, issue, problem, or phenomenon and its significance to society. Acquire and organize materials from primary and secondary sources. **SS.HS.SA.02** Gather, analyze, use, and document information from various sources, distinguishing facts, opinions, inferences, biases, stereotypes, and persuasive appeals. **SS.HS.SA.03** Understand what it means to be a critical consumer of information. Explain various perspectives on an event or issue and the reasoning behind them. **SS.HS.SA.04** Analyze an event, issue, problem, or phenomenon from varied or opposed perspectives or points of view. Identify and analyze an issue. **SS.HS.SA.05** Analyze an event, issue, problem, or phenomenon,

Environmental Literacy Strand	High School Social Science
	identifying characteristics, influences, causes, and both short- and long-term effects. Select a course of action to resolve an issue. **SS.HS.SA.06** Propose, compare, and judge multiple responses, alternatives, or solutions; then reach a defensible, supported conclusion.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**Social Science Analysis** Select a course of action to resolve an issue. **SS.HS.SA.06** Propose, compare, and judge multiple responses, alternatives, or solutions; then reach a defensible, supported conclusion.

Alignment of the Oregon Environmental Literacy Strands and the K-12 Educational Technology Standards

During their investigations, students will have ample opportunities to use educational technology, including word processing, spreadsheets/databases, presentation software, digital/video cameras, scanners, scientific probes, graphing calculators, digital microscopes, and Internet resources.

Environmental Literacy Strand	All Grades
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**ET.1 Creativity and Innovation: Students demonstrate creative thinking and problem solving skills to develop innovative products and processes using (digital) technology.** **ET.1.A** Apply existing knowledge to forecast possibilities and generate new ideas, products or processes. **ET.1.B** Create original works as a means of personal or group expression. **ET.1.C** Develop or apply models and simulations to explore complex systems, issues and trends. **ET.2 Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, across the global community, to support individual learning and contribute to the learning of others.** **ET.2.A** Interact and collaborate with peers, experts, or others employing a variety of digital environments and media. **ET.2.B** Effectively communicate and publish to multiple audiences using a variety of media and formats. **ET.2.C** Engage with learners from other cultures to develop cultural understanding and global awareness. **ET.2.D** Contribute to project teams. Produce original works or solve problems in a team setting. **ET.4 Critical Thinking, Problem Solving and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.** **ET.4.A** Identify and define authentic problems and significant questions for investigation. **ET.4.B** Plan and manage activities to develop a solution or complete a project. **ET.4.C** Collect and analyze data to identify solutions and make informed decisions.

Environmental Literacy Strand	All Grades
	ET.4.D Use multiple processes and diverse perspectives to explore alternative solutions. **ET.6 Technology Operations and Concepts: Students utilize technology concepts and tools to learn.** **ET.6.B** Transfer current knowledge to learning of new technologies.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
None of the Educational Technology Standards relate directly to this strand.	
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
None of the Educational Technology Standards relate directly to this strand.	
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
None of the Educational Technology Standards relate directly to this strand.	
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown. **b. Evaluate accuracy and reliability of information sources.** Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias. **c. Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions. **d. Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement	**ET.1 Creativity and Innovation: Students demonstrate creative thinking and problem solving skills to develop innovative products and processes using (digital) technology.** ET.1.A Apply existing knowledge to forecast possibilities and generate new ideas, products or processes. ET.1.B Create original works as a means of personal or group expression. ET.1.C Develop or apply models and simulations to explore complex systems, issues and trends. **ET.2 Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, across the global community, to support individual learning and contribute to the learning of others.** ET.2.A Interact and collaborate with peers, experts, or others employing a variety of digital environments and media. ET.2.B Effectively communicate and publish to multiple audiences using a variety of media and formats. ET.2.C Engage with learners from other cultures to develop cultural understanding and global awareness. ET.2.D Contribute to project teams. Produce original works or solve problems in a team setting. **ET.3 Research and Information Fluency: Students select and apply digital tools to gather, evaluate, validate, and use information.** ET.3.A Plan strategies to guide inquiry. ET.3.B Locate, organize and use information ethically from a variety of sources and media.

Environmental Literacy Strand	All Grades
an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	ET.3.C Evaluate and select information sources and digital tools based on the appropriateness to specific tasks. ET.3.D Analyze, evaluate, and summarize information or data and report results. **ET.4 Critical Thinking, Problem Solving and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.** ET.4.A Identify and define authentic problems and significant questions for investigation. ET.4.B Plan and manage activities to develop a solution or complete a project. ET.4.C Collect and analyze data to identify solutions and make informed decisions. ET.4.D Use multiple processes and diverse perspectives to explore alternative solutions. **ET.5 Digital Citizenship: Students understand human, cultural, and societal issues related to digital technology and practice legal, ethical, and responsible behavior.** ET.5.A Advocate and practice safe, legal, and responsible use of information and digital technology. ET.5.B Model and practice a positive attitude toward using digital technology that supports collaboration, learning, and productivity. ET.5.C Demonstrate personal responsibility for lifelong learning. **ET.6 Technology Operations and Concepts: Students utilize technology concepts and tools to learn.** ET.6.A Select, use, and troubleshoot tools efficiently. ET.6.B Transfer current knowledge to learning of new technologies.

Alignment of the Oregon Environmental Literacy Strands & Health Education Standards
Third Grade, Fifth Grade, Eighth Grade, and High School

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.				
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.03.HE.01** Recognize the importance of variety and moderation in food selection and consumption. **HE.03.HE.02** Choose a variety of foods to eat from different food groups. **HE.03.HE.03** Advocate for more fruits and	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.05.HE.01** Explain how healthful eating habits can lead to wellness. **HE.05.HE.02** Describe how media, cultural and family influences encourage healthy eating practices.	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.08.HE.01** Explain the importance of variety and moderation in food selection and consumption. **HE.08.HE.02** Track progress toward achieving a short-term personal goal related to variety and moderation within health eating.	**Promotion of Environmental Health** **Acquire knowledge and skills to determine how protecting the environment impacts health for individuals and society.** **HE.HS.EH.01** Identify ways to prevent exposure to the sun, including tanning beds. **HE.HS.EH.02** Analyze influences that encourage young people to abstain from protecting oneself from the sun and influences that encourage the use of tanning beds. **Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth**

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
	vegetables at school.			**and energy and helps prevent chronic diseases.** **HE.HS.HE.03** Set a personal goal based on a dietary analysis to enhance health.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.				
None of the Health Education Standards relate specifically to this strand.				
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.				
None of the Health Education Standards relate specifically to this strand.				
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.				
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts, **b. Sense of personal responsibility.** Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.			**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.08.HE.01** Explain the importance of variety and moderation in food selection and consumption. **HE.08.HE.02** Track progress toward achieving a short-term personal goal related to variety and moderation within healthy	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.HS.HE.01** Describe dietary guidelines, food groups, nutrients and serving size for healthy eating habits. **HE.HS.HE.02** Critique the adequacy of own diet for key nutrients and identify foods that supply the identified nutrients. **HE.HS.HE.03** Set a personal goal based on a dietary

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
			eating.	analysis to enhance health. **Promotion Of Environmental Health** **Acquire knowledge and skills to determine how protecting the environment impacts health for individuals and society.** **HE.HS.EH.01** Identify ways to prevent exposure to the sun, including tanning beds. **HE.HS.EH.03** Communicate to others the importance of preventing exposure to UV rays and other harmful substances.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.				
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown. **b. Evaluate accuracy and**	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.03.HE.02** Choose a	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.05.HE.01** Explain	**Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.08.HE.01** Explain the importance of variety and moderation in food	**Promotion Of Environmental Health** **Acquire knowledge and skills to determine how protecting the environment impacts health for individuals and society.** **HE.HS.EH.01** Identify ways to prevent exposure to the sun, including tanning beds. **HE.HS.EH.02** Analyze

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias. **c. Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions. **d. Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	variety of foods to eat from different food groups. **HE.03.HE.03** Advocate for more fruits and vegetables at school. **Unintentional Injury Prevention** **Acquire knowledge and skills necessary to be safe at home, on the move, at school, at work and in the community and how to get help in case of injury.** **HE.03.IP.01** Identify safe behaviors when traveling to and from school and in the community. **HE.03. IP.02** Use a decision making model to plan ahead to avoid dangerous situations and injuries on the way to and from school.	how healthful eating habits can lead to wellness. **HE.05.HE.02** Describe how media, cultural and family influences encourage healthy eating practices.	selection and consumption. **HE.08.HE.02** Track progress toward achieving a short-term personal goal related to variety and moderation within health eating. **Unintentional Injury Prevention** **Acquire knowledge and skills necessary to be safe at home, on the move, at school, at work and in the community and how to get help in case of injury.** **HE.08.IP.01** Explain ways to reduce risk of injuries while traveling to and from school and in the community. **HE.08.IP.02** Identify rules and laws intended to prevent injuries. **HE.08.IP.03** Demonstrate personal responsibility to follow safety-related laws.	influences that encourage young people to abstain from protecting oneself from the sun and influences that encourage the use of tanning beds. **HE.HS.EH.03** Communicate to others the importance of preventing exposure to UV rays and other harmful substances. **Promotion Of Healthy Eating** **Acquire knowledge and skills to understand and practice healthful nutrition that contributes to growth and energy and helps prevent chronic diseases.** **HE.HS.HE.01** Describe dietary guidelines, food groups, nutrients and serving size for healthy eating habits. **HE.HS.HE.02** Critique the adequacy of own diet for key nutrients and identify foods that supply the identified nutrients. **HE.HS.HE.03** Set a personal goal based on a dietary analysis to enhance health.

Alignment of the Oregon Environmental Literacy Strands & Physical Education Standards
Third Grade, Fifth Grade, Eighth Grade, and High School

Much of the instruction for environmental literacy takes place out of doors and involves students directly in activities such as walking, hiking, gardening, and biking. Although students would not necessarily be involved with sport as part of environmental literacy instruction, they would be engaged in outdoor activities that can result in a physically active lifestyle and a lifetime of fitness.

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.				
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**Fitness for Lifetime Demonstrate knowledge of a physically active lifestyle.** **PE.03.FL.01** Identify changes in his/her body during moderate to vigorous exercise. **Self-Management and Social Behavior Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity.** **PE.03.SM.02** Identify positive ways to resolve conflict.	**Expressive and Efficient Moving Understand and apply movement concepts.** **PE.05.EE.03** Through feedback and practice, demonstrate improvement in performance of a new motor skill. **Fitness for Lifetime Demonstrate knowledge of a physically active lifestyle.** **PE.05.FL.01** Identify changes in his/her body before, during and after moderate to vigorous exercise (e.g., perspiration, increased heart and breathing rates).	**Fitness for Lifetime Demonstrate knowledge of a physically active lifestyle.** **PE.08.FL.01** Develop personal activity goals and describe benefits that result from regular participation in physical education. **Self-Management and Social Behavior Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability**	**Expressive and Efficient Moving Understand and apply movement concepts.** **PE.HS.EE.02** Utilize the following components to critique an activity: skills and strategies, use of feedback, positive and negative aspects of personal performance, appropriate practice and conditioning procedures. **Fitness for Lifetime Demonstrate knowledge of a physically active lifestyle.** **PE.HS.FL.01** Participate in physical activities and evaluate

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
			during physical activity. **PE.08.SM.02** Identify the elements of socially acceptable conflict resolution and sportsmanship.	personal factors that impact participation. **PE.HS.FL.02** Through physical activity, understand ways in which personal characteristics, performance styles, and activity preferences will change over the life span. **Self-Management and Social Behavior Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity**. **PE.HS.SM.02** Apply conflict resolution strategies in appropriate ways and analyze potential consequences when confronted with unsportsmanlike behavior.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.				
None of the Physical Education Standards relates directly to this strand.				

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.				
None of the Physical Education Standards relates directly to this strand.				
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.				
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts, **b. Sense of personal responsibility.** Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.03.SM.01** Identify rules, procedures, and etiquette in a specified physical activity. **PE.03.SM.02** Identify positive ways to resolve conflict.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.05.SM.01** Explain and demonstrate safety, rules, procedures, and etiquette to be followed during participation in physical activities.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.08.SM.01** Apply rules, procedures, and etiquette that are safe and effective for specific activities/situations. **PE.08.SM.02** Identify the elements of socially acceptable conflict resolution and sportsmanship	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.HS.SM.01** Analyze and apply rules, procedures, and etiquette that are safe and effective for specific activities/situations. **PE.HS.SM.0**2 Apply conflict resolution strategies in appropriate ways and analyze potential consequences when confronted with unsportsman-like behavior.

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.				
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown. **b. Evaluate accuracy and reliability of information sources.** Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias. **c. Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions. **d. Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.03.SM.01** Identify rules, procedures, and etiquette in a specified physical activity. **PE.03.SM.02** Identify positive ways to resolve conflict.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.05.SM.01** Explain and demonstrate safety, rules, procedures, and etiquette to be followed during participation in physical activities.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.08.SM.01** Apply rules, procedures, and etiquette that are safe and effective for specific activities/situations. **PE.08.SM.02** Identify the elements of socially acceptable conflict resolution and sportsmanship.	**Self- Management and Social Behavior** Understand appropriate and positive behavior management (social skills) and respect for all individual differences, including gender, ethnicity, and physical ability during physical activity. **PE.HS.SM.01** Analyze and apply rules, procedures, and etiquette that are safe and effective for specific activities/situations. **PE.HS.SM.0**2 Apply conflict resolution strategies in appropriate ways and analyze potential consequences when confronted with unsportsman-like behavior.

Alignment of the Oregon Environmental Literacy Strands and the Essential Skills

Oregon students are required to demonstrate proficiency in certain Essential Skills[3] as part of the requirement to earn a high school diploma. Essential Skills are process skills – deemed critical for future success – that can be applied in a variety of courses, subjects, experiences and settings. Essential Skills include the following:

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

Education for environmental literacy provides a powerful and authentic way to teach the Essential Skills. As students explore their schools, neighborhoods, communities and beyond, each of the Essential Skills will be applied. As the crosswalk indicates, there is a strong relationship between specific elements of the Environmental Literacy Strands and the Essential Skills.

Additionally, environmental literacy depends on an ability to understand and communicate ideas. Although these cross-cutting skills may not be aligned to specific Environmental Literacy Strands, they are critical. Students will read a variety of informational texts related directly to their field investigations. They will listen to others and communicate what they have learned. It is expected that any instruction for environmental literacy will provide opportunities for students to hone their reading, writing, listening, and speaking skills:

1. Read and comprehend a variety of text
This skill includes all of the following:
• Demonstrate the ability to read and understand text.
• Summarize and critically analyze key points of text, events, issues, phenomena or problems, distinguishing factual from non-factual and literal from inferential elements.

[3] Specific Essential Skills graduation requirements are based on the year the student first enrolled in Grade 9, as shown below:

- Enrolled in Grade 9 in 2008-09 – Read and comprehend a variety of text
- Enrolled in Grade 9 in 2009-10 – Read and comprehend a variety of text and Write clearly and accurately
- Enrolled in Grade 9 in 2010-11 and beyond – Read and comprehend a variety of text; Write clearly and accurately; and Apply mathematics in a variety of settings

The remaining Essential Skills will be phased-in on a timeline to be determined by the State Board of Education.

• Interpret significant ideas and themes, including those conveyed through figurative language and use of symbols.
• Follow instructions from informational or technical text to perform a task, answer questions, and solve problems.

2. Write clearly and accurately
This skill includes all of the following:
• Adapt writing to different audiences, purposes, and contexts in a variety of formats and media, using appropriate technology.
• Develop organized, well-reasoned, supported, and focused communications.
• Write to explain, summarize, inform, and persuade, including business, professional, technical, and personal communications.
• Use appropriate conventions to write clearly and coherently, including correct use of grammar, punctuation, capitalization, spelling, sentence construction, and formatting.

4. Listen actively and speak clearly and coherently
This skill includes all of the following:
• Listen actively to understand verbal and non-verbal communication.
• Give and follow spoken instructions to perform a task, ask and answer questions, and solve problems.
• Present or discuss ideas clearly, effectively, and coherently, using both verbal and nonverbal techniques.
• Use language appropriate to particular audiences and contexts.

In addition, education for environmental literacy supports the learning and application of each of the other Essential Skills across the Environmental Literacy Strands:

Environmental Literacy Strand	Essential Skills
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.	
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Interpret a situation and apply workable mathematical concepts and strategies, using appropriate technologies where applicable. • Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. • Communicate and defend the verified process and solution, using pictures, symbols, models, narrative or other methods. **5. Think critically and analytically** *This skill includes all of the following:* • Identify and explain the key elements of a complex event, text*, issue, problem or phenomenon. • Develop a method to explore the relationships between the key elements of a complex event, text*, issue, problem or phenomenon. • Gather, question and evaluate the quality of information from multiple primary and secondary sources. • Propose defensible conclusions that address multiple and diverse

Environmental Literacy Strand	Essential Skills
	perspectives. • Evaluate the strength of conclusions, differentiating reasoning based on facts from reasoning based on opinions. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. • Use technology as a tool to access, research, manage, integrate, and communicate ideas and information.
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.	
a. Structure, function, interaction and change in physical systems over time. Explain the dynamic and interconnected nature of Earth's physical systems**.**	
b. Structure, function, interaction and change in living systems over time. Explain the dynamic and interconnected nature of Earth's living environment.	
c. Structure, function and interconnected nature of human systems over time. Explain the dynamic and interconnected nature of political, economic, social and cultural systems.	**7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Apply knowledge of local, state, and U.S. history and government to explain current social and political issues. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions.
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.	
a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community	**7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Apply knowledge of local, state, and U.S. history and government to explain current social and political issues. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues.

Environmental Literacy Strand	Essential Skills
b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems, how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing,	**7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Apply knowledge of local, state, and U.S. history and government to explain current social and political issues. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues.
c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict and shape political, economic, physical and social environments, including issues related to national security and conflict over territory	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. • Use technology as a tool to access, research, manage, integrate, and communicate ideas and information. **7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Apply knowledge of local, state, and U.S. history and government to explain current social and political issues. **8. Demonstrate global literacy** *This skill includes all of the following:* • Apply a global perspective to analyze contemporary and historical issues.
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.	
a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts.	**7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Perform the civic and community responsibilities essential to living in a representative democracy. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues.

Environmental Literacy Strand	Essential Skills
b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.	**6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. **7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Perform the civic and community responsibilities essential to living in a representative democracy. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues. **9. Demonstrate personal management and teamwork skills** *This skill includes all of the following:* • Participate cooperatively and productively in work teams to identify and solve problems. • Display initiative and demonstrate respect for other team members to complete tasks. • Plan, organize, and complete assigned tasks accurately and on time. • Exhibit work ethic and performance, including the ability to be responsible and dependable.
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.	
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Interpret a situation and apply workable mathematical concepts and strategies, using appropriate technologies where applicable. • Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. • Communicate and defend the verified process and solution, using pictures, symbols, models, narrative or other methods. **5. Think critically and analytically** *This skill includes all of the following:* • Propose defensible conclusions that address multiple and diverse perspectives. • Evaluate the strength of conclusions, differentiating reasoning based on facts from reasoning based on opinions. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or

Environmental Literacy Strand	Essential Skills
	processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues. **9. Demonstrate personal management and teamwork skills** *This skill includes all of the following:* • Participate cooperatively and productively in work teams to identify and solve problems. • Display initiative and demonstrate respect for other team members to complete tasks. • Plan, organize, and complete assigned tasks accurately and on time. • Exhibit work ethic and performance, including the ability to be responsible and dependable.
b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias.	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Interpret a situation and apply workable mathematical concepts and strategies, using appropriate technologies where applicable. • Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. • Communicate and defend the verified process and solution, using pictures, symbols, models, narrative or other methods. **5. Think critically and analytically** *This skill includes all of the following:* • Gather, question and evaluate the quality of information from multiple primary and secondary sources. • Evaluate the strength of conclusions, differentiating reasoning based on facts from reasoning based on opinions. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use technology as a tool to access, research, manage, integrate, and communicate ideas and information.
c. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Interpret a situation and apply workable mathematical concepts and strategies, using appropriate technologies where applicable. • Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. • Communicate and defend the verified process and solution, using pictures, symbols, models, narrative or other methods.

Environmental Literacy Strand	Essential Skills
actions.	**5. Think critically and analytically** *This skill includes all of the following:* • Identify and explain the key elements of a complex event, text*, issue, problem or phenomenon. • Develop a method to explore the relationships between the key elements of a complex event, text*, issue, problem or phenomenon. • Gather, question and evaluate the quality of information from multiple primary and secondary sources. • Propose defensible conclusions that address multiple and diverse perspectives. • Evaluate the strength of conclusions, differentiating reasoning based on facts from reasoning based on opinions. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. • Use technology as a tool to access, research, manage, integrate, and communicate ideas and information. **7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Perform the civic and community responsibilities essential to living in a representative democracy. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues. **9. Demonstrate personal management and teamwork skills** *This skill includes all of the following:* • Participate cooperatively and productively in work teams to identify and solve problems. • Display initiative and demonstrate respect for other team members to complete tasks. • Plan, organize, and complete assigned tasks accurately and on time. • Exhibit work ethic and performance, including the ability to be responsible and dependable.
d. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted,	**3. Apply mathematics in a variety of settings** *This skill includes all of the following:* • Interpret a situation and apply workable mathematical concepts and strategies, using appropriate technologies where applicable.

Environmental Literacy Strand	Essential Skills
evaluate the results of actions, and reach evidence-based conclusions.	• Produce evidence, such as graphs, data, or mathematical models, to obtain and verify a solution. • Communicate and defend the verified process and solution, using pictures, symbols, models, narrative or other methods. **5. Think critically and analytically** *This skill includes all of the following:* • Propose defensible conclusions that address multiple and diverse perspectives. • Evaluate the strength of conclusions, differentiating reasoning based on facts from reasoning based on opinions. **6. Use technology to learn, live, and work** *This skill includes all of the following:* • Use creativity and innovation to generate ideas, products, or processes using current technology. • Use technology to participate in a broader community through networking, collaboration and learning. • Use technology as a tool to access, research, manage, integrate, and communicate ideas and information. **7. Demonstrate civic and community engagement** *This skill includes all of the following:* • Apply knowledge of local, state, and U.S. history and government to explain current social and political issues. • Perform the civic and community responsibilities essential to living in a representative democracy. **8. Demonstrate global literacy** *This skill includes all of the following:* • Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions. • Apply a global perspective to analyze contemporary and historical issues.

Alignment of the Oregon Environmental Literacy Strands & Work Sample Assessment Scoring Guides

To graduate from high school in Oregon, students must meet the Essential Skills requirements. To ensure that students are prepared, individual student work is assessed annually through a series of work samples (e.g., research papers, statistical experiments, speaking presentations) that are scored using an official state scoring guide. Work Sample Scoring Guides provide one tool for scoring required local performance assessments for grades 3-8 and high school. These official guides are required when work samples are used to meet the Assessment of Essential Skills.

Work Sample Assessment Scoring Guides are available for:

- Reading and Literature
- Speaking
- Writing
- Mathematics Problem Solving
- Scientific Inquiry and Engineering Design
- Social Science Analysis

Education for environmental literacy provides a natural opportunity for development of work samples. Environmental literacy projects often require students to communicate orally and in writing, apply mathematical problem solving skills, conduct scientific inquiries, and employ social science analysis skills. The opportunity to participate in authentic investigations of their communities also provides a powerful and meaningful method of collecting work samples. As the crosswalk indicates, there is a strong relationship between specific elements of the Environmental Literacy Strands and the Work Sample Assessment Scoring Guide dimensions.

Additionally, environmental literacy depends on an ability to understand and communicate ideas, and apply mathematical problem solving skills. Although these cross-cutting skills may not be aligned to specific Environmental Literacy Strands, they are critical. Students will read a variety of informational texts related directly to their field investigations. They will listen to others and communicate what they have learned. They will use mathematics and mathematical reasoning as they collecting information, create charts and graphs, and draw conclusions. It is expected that any instruction for environmental literacy will provide opportunities for students to produce work samples that demonstrate their ability to read, write, speak and use mathematical problem solving skills:

Reading Scoring Guide – Informational Text: Reading informational text occurs naturally throughout environmental literacy activities. As an example, students investigating a nearby forest might read descriptions of the life cycle of animals found in the forest, use guide books to identify the native plants, and read instructions for collecting soil samples. Other students, learning about food sources, might read text related to the history of agriculture in the area, read the labels of packaged food products while visiting a local grocery story, and follow the directions of a recipe. Each of these provides opportunities for students to demonstrate reading

understanding ("Getting the gist"), develop an interpretation ("Reading between the lines"), and analyze text ("Looking at the author's craft").

Writing Scoring Guide Students will be able to apply and develop their writing skills throughout their environmental literacy activities. Young children might be asked to keep a journal of their school yard observations. After visiting the local waste water treatment plant, older students might research and write a report tracing the source of their community water supply. The Writing Scoring Guide (Ideas and Content, Organization, Voice, Word Choice, Sentence Fluency, Conventions, Citing Sources) could be used with any of these writing assignments.

Speaking Official Scoring Guide Oral communication is an integral component of education for environmental literacy. It is not unusual for students to demonstrate their speaking skills as part of a role playing simulation, by making presentations to their class, school administration or a community group, or through drama. The Speaking Scoring Guide (Ideas and Content, Organization, Language, Delivery) could be used with any of these speaking assignments.

Mathematics Problem Solving Scoring Guide: Many community and environmental field investigations involve complex mathematical processes. At the lower grades, students might measure the space needed for a garden, track water use over time, or record weather observations. As the students become more sophisticated in their environmental literacy skills and understandings, they will apply mathematic problem solving through a variety of activities. For example, students might measure stream flow, timber production, traffic patterns, or changes in land use over time. In each of these examples, students might be asked to interpret the concepts of the task and translate them into mathematics; use models, pictures, diagrams, and and/or symbols to represent and solve the task situation and select an effective strategy to solve the task; coherently communicate mathematical reasoning and clearly use mathematical language; support the solution/outcome; and defend the process, evaluate and interpret the reasonableness of the solution/outcome.

Works Sample Assessment Scoring Guides
Scientific Inquiry & Engineering Design and Social Science Analysis

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.				
a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure. **b. Habits of the Systems Thinker**. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools. **c. Strategic responsibilities of systems thinking.** Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.		**Engineering Design: Identifying and Defining a Problem to be Solved** Based on observations and scientific principles, formulate the statement of a problem or a need that can be addressed through the process of engineering design. **Engineering Design: Generating Possible Solutions** Select an engineering solution, and evaluate that solution using criteria and constraints. **Engineering Design: Testing Solution(s) and Collecting Data** Test solution(s) by collecting, organizing, and displaying data to	**Engineering Design: Identifying and Defining a Problem to be Solved** Based on observations and scientific principles, formulate the statement of a practical problem that can be addressed through the process of engineering design. **Engineering Design: Generating Possible Solutions** Evaluate and select an engineering solution from a range of possible options, and defend that solution for testing using trade-offs, criteria, and constraints. **Engineering Design: Testing Solution(s) and Collecting Data** Test solution(s) by	**Engineering Design: Identifying and Defining a Problem to be Solved** Based on observations and scientific principles, formulate the statement of a practical problem that can be addressed through the process of engineering design. **Engineering Design: Generating Possible Solutions** Evaluate and select an engineering solution from a range of possible options, and defend that solution for testing using trade-offs, criteria and constraints. **Engineering Design: Testing Solution(s) and Collecting Data** Create and test or

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
		facilitate the analysis of test results. **<u>Engineering Design</u>: Analyzing and Interpreting Results -** Summarize and analyze test results to evaluate the success of the proposed solution in terms of criteria, constraints, and other factors.	collecting, organizing, and displaying data to facilitate the analysis and interpretation of test results. **<u>Engineering Design</u>: Analyzing and Interpreting Results** Summarize and analyze data, evaluate the proposed solution in terms of design criteria and constraints and trade-offs and suggest design improvements. **<u>Social Science Analysis:</u> Frame the Event, Issue, or Problem** Defining and clarifying an issue so that its features are well-understood. Question **<u>Social Science Analysis:</u> Research** Using and evaluating researched information to support analysis and conclusion(s. Collect and Compare	otherwise analyze solution(s) by collecting, organizing, and displaying data to facilitate the analysis and interpretation of results. **<u>Engineering Design</u>: Analyzing and Interpreting Results** Summarize and analyze data, evaluate the proposed solution, identify uncertainties, and suggest design improvements. **<u>Social Science Analysis</u>: Frame the Event, Issue, or Problem** Defining and clarifying an issue so that its features are well-understood **<u>Social Science Analysis</u>: Research** Using and evaluating researched information to support analysis and conclusion(s) Collect and Compare

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
			<u>Social Science Analysis:</u> Examine Identifying and analyzing characteristics, causes, and consequences of an event, issue, or problem. Analyze **<u>Social Science Analysis:</u> Conclude** Presenting reasoned conclusions or resolutions, acknowledging and evaluating alternative interpretations, using supporting data and defensible criteria. Justify	**<u>Social Science Analysis</u>: Examine** Identifying and analyzing characteristics, causes, and consequences of an event, issue, or problem. Analyze **<u>Social Science Analysis</u>: Conclude** Presenting reasoned conclusions or resolutions, acknowledging and evaluating alternative interpretations, using supporting data and defensible criteria. Justify
2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.				
None of the work sample assessment scoring guides relate specifically to this strand.				
3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.				
None of the work sample assessment scoring guides relate specifically to this strand.				
4) **Personal and Civic Responsibility:** Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.				
None of the work sample assessment scoring guides relate specifically to this strand.				
5) **Investigate, Plan and Create a Sustainable Future:** Students apply the civic action skills that are essential to healthy, sustainable environments and communities.				
a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use	**<u>Science Inquiry:</u> Forming a Question or Hypothesis (Teacher-directed)** Forms a question or hypothesis, which can be	**<u>Scientific Inquiry</u>: Forming a Question or Hypothesis -** Based on observations and science principles, select	**<u>Scientific Inquiry:</u> Forming a Question or Hypothesis** Based on observations and scientific principles, propose questions	**<u>Scientific Inquiry</u>: Forming a Question or Hypothesis -** Based on observations and science principles, formulate a

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
creativity to imagine, invent, or make connections previously unrecognized or unknown. **b. Evaluate accuracy and reliability of information sources.** Evaluate the quality, completeness and reliability of information from primary and secondary sources. Identify sources of bias. **c. Identify, investigate and analyze strategies that address challenges and create desired futures.** Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions. **d. Demonstrate decision-making and citizen action.** Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.	explored through a simple scientific investigation. **Science Inquiry: Designing an Investigation (Student-directed with teacher support)** Plan an investigation based on a question or hypothesis. **Science Inquiry: Collecting and Presenting Data (Student-directed with teacher support)** Collect data from an investigation, using measuring tools appropriate to the investigation **Science Inquiry: Analyzing and Interpreting Results (Student-directed)** Use the data collected from an investigation to explain the results and draw conclusions.	a question or form a hypothesis that can be tested through scientific investigation. **Scientific Inquiry: Designing an Investigation**. Design a scientific investigation to answer a question or test hypotheses using appropriate tools and procedures. **Scientific Inquiry: Collecting and Presenting Data** Collect, record, and organize data from investigations. (Student-directed with Teacher Support) **Scientific Inquiry: Analyzing and Interpreting Results** Summarize, analyze and interpret data from an investigation that address the identified question or hypothesis.	or hypotheses that can be examined through scientific investigation. **Scientific Inquiry: Designing an Investigation** Design a safe and ethical scientific investigation to gather data to respond to a question or hypothesis. **Scientific Inquiry: Collecting and Presenting Data** Collect, organize, and display sufficient data to facilitate scientific analysis and interpretation. **Scientific Inquiry: Analyzing and Interpreting Results -** Summarize and analyze data, evaluating sources of error or bias. Propose explanations that are supported by data and knowledge of scientific terminology. **Engineering Design: Identifying and**	question or hypothesis that can be investigated through the collection and analysis of relevant information. **Scientific Inquiry: Designing an Investigation** Design a controlled experiment, field study, or other systematic investigation that provides sufficient data to answer a question or test a hypothesis about the natural world. **Scientific Inquiry: Collecting and Presenting Data** Collect, organize, and display sufficient and appropriate data to facilitate scientific analysis and interpretation. **Scientific Inquiry: Analyzing and Interpreting Results -** Summarize and analyze data, and identify uncertainties. Draw a valid

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
		<u>Engineering Design</u>: Identifying and Defining a Problem to be Solved Based on observations and scientific principles, formulate the statement of a problem or a need that can be addressed through the process of engineering design. **<u>Engineering Design</u>: Generating Possible Solutions** Select an engineering solution, and evaluate that solution using criteria and constraints. **<u>Engineering Design</u>: Testing Solution(s) and Collecting Data -** Test solution(s) by collecting, organizing, and displaying data to facilitate the analysis of test results. **<u>Engineering Design</u>: Analyzing and**	**Defining a Problem to be Solved** Based on observations and scientific principles, formulate the statement of a practical problem that can be addressed through the process of engineering design. **<u>Engineering Design</u>: Generating Possible Solutions** Evaluate and select an engineering solution from a range of possible options, and defend that solution for testing using trade-offs, criteria, and constraints. **<u>Engineering Design</u>: Testing Solution(s) and Collecting Data** Test solution(s) by collecting, organizing, and displaying data to facilitate the analysis and interpretation of test results.	conclusion, explain how it is supported by the evidence and communicate the findings of the scientific investigation. **<u>Engineering Design</u>: Generating Possible Solutions** Evaluate and select an engineering solution from a range of possible options, and defend that solution for testing using trade-offs, criteria and constraints. **<u>Engineering Design</u>: Identifying and Defining a Problem to be Solved -** Based on observations and scientific principles, formulate the statement of a practical problem that can be addressed through the process of engineering design. **<u>Engineering Design</u>: Analyzing and Interpreting**

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
		Interpreting Results - Summarize and analyze test results to evaluate the success of the proposed solution in terms of criteria, constraints, and other factors.	**Engineering Design: Analyzing and Interpreting Results** Summarize and analyze data, evaluate the proposed solution in terms of design criteria and constraints and trade-offs and suggest design improvements. **Social Science Analysis**: **Frame the Event, Issue, or Problem -** Defining and clarifying an issue so that its features are well-understood. Question. **Social Science Analysis: Research** Using and evaluating researched information to support analysis and conclusion(s) - Collect and Compare **Social Science Analysis: Examine** Identifying and analyzing characteristics, causes, and consequences of an event, issue, or	**Results** Summarize and analyze data, evaluate the proposed solution, identify uncertainties, and suggest design improvements. **Social Science Analysis**: **Frame the Event, Issue, or Problem -** Defining and clarifying an issue so that its features are well-understood. Question **Social Science Analysis**: **Research** Using and evaluating researched information to support analysis and conclusion(s) - Collect and Compare **Social Science Analysis**: **Examine** Identifying and analyzing characteristics, causes, and consequences of an event, issue, or problem – Analyze

Environmental Literacy Strand	Third Grade	Fifth Grade	Eighth Grade	High School
			problem – Analyze **<u>Social Science Analysis</u>: Conclude** Presenting reasoned conclusions or resolutions, acknowledging and evaluating alternative interpretations, using supporting data and defensible criteria - Justify	**<u>Social Science Analysis</u>**: **Conclude** Presenting reasoned conclusions or resolutions, acknowledging and evaluating alternative interpretations, using supporting data and defensible criteria - Justify

Appendix A: Alignment Working Groups

Working Group to Develop Model Science Crosswalks

Bora Simmons (Chair of Alignment Project)
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Appendix B: Environmental Literacy Strands

1) Systems Thinking: Students apply systems thinking skills to study various types of systems and issues from a holistic perspective, striving to understand the relationships and interactions among the systems' parts. Students use the knowledge gained to consider the implications, and consequences of choices on the economic, ecological and social systems within which they live, in order to optimize outcomes for all three systems.

NOTE: Systems Thinking is purposefully placed as the first strand. Systems Thinking, with its overarching set of habits, concepts, tools, and skills, is applied throughout education for environmental literacy because this skill provides the foundation for understanding the whole and the interrelationships amongst the parts. Systems Thinking is not limited to any one subject and can be practiced through all curricular areas. The Partnership for 21st Century Skills considers systems thinking – the ability to "analyze how parts of a whole interact with each other to produce overall outcomes in complex systems" – a critical skill for all students. http://p21.org/documents/P21_Framework_Definitions.pdf page 4 [see Appendix C for more information on systems thinking]

a. Systems Structure. Understand the complex structure of systems and how system structure determines outcome. Describe the facets of a system's structure, and model changes to that structure.

- Dynamic systems are made up of a group of interdependent parts that change over time, producing an outcome.
- The relationship between the parts of a system (its structure) will determine its outcomes/behaviors.
- To change the outcomes of a system the structure needs to be changed.
- Complex systems are made up of smaller sub-systems.
- Dynamic systems have circular feedback loops; one part affects another and so on until the effect feeds back to the original part (i.e., A effects B, B effects C, which comes "back" to effect A and the cycle begins all over again).

b. Habits of the Systems Thinker. Understand, identify examples and opportunities, and apply the Habits of a Systems Thinker, assisted by knowledge of systems thinking concepts and tools (see Appendix C – Systems Thinking).

- Surface and test assumptions.
- Use understanding of system structure to identify possible leverage actions.
- Recognize the impact of time delays when exploring cause and effect relationships.
- Identify the circular nature of complex cause and effect relationships.
- Recognize that a system's structure generates its behavior.
- Consider how mental models affect current reality and the future.
- Consider both short and long-term consequences of actions.
- Consider an issue fully and resist the urge to come to a quick conclusion.
- Change perspectives to increase understanding.
- Check results and change actions if needed: "successive approximation."
- Observe how elements within systems change over time, generating patterns and trends.
- Find where unintended consequences emerge.
- Seek to understand the "big picture."

c. Strategic responsibilities of systems thinking. Apply the Habits of a Systems Thinker and systems thinking techniques to real world decision-making.

- Practice the Habits of a Systems Thinker and systems thinking skills while envisioning, designing, planning, acting and assessing the whole system.
- Explain how our own actions or lack of actions affect the systems we are in.
- Recognize that mental models are developed over time from an individual's experiences and surroundings and, as such, a person's perspective can be limited by them.
- Use your understanding of mental models when developing action plans.
- Explore a system's structure to develop a deep understanding to effectively plan actions to achieve positive systemic impacts.
- Consider intended and unintended, short and long term consequences to determine if the "risk is worth the reward" and develop a plan to mitigate the risk as much as possible.
- Make choices by considering implications and consequences of those choices on the economic, ecological and social systems within which they live.
- Monitor the system's outcomes over time, adjusting as needed to maintain and or improve the desirable outcomes of the system.
- Ask probing questions when things don't work out as planned; re-examine the understanding of the system's structure and propose changes.

2) Physical, Living and Human Systems: Students understand Earth systems' characteristics, including physical, living and human systems.

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

- Describe the structure and composition of Earth's atmosphere, geosphere, and hydrosphere.
- Explain changes in matter, including physical and chemical properties of elements and compounds, and the global carbon cycle.
- Identify the properties of energy, including the transfer of energy, energy transformation and conservation, and the laws of thermodynamics.
- Describe the cycling of matter and energy between system components over time.
- Provide evidence for geologic, climatic, and environmental changes over time.
- Explain climate – Sun/Earth relationships, including processes that drive and regulate climate variability, and interrelationships of climate and other Earth physical and living systems.
- Describe the ocean's influence on weather and climate and the interrelationships of the ocean and other Earth physical and living systems.
- Analyze Earth system indicators of sustainability.

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

- Explain the structure and function of organisms, populations, communities, ecosystems, and biomes.
- Explain the principles of ecology, including biodiversity, carrying capacity, habitat sources and sinks, population dynamics, and ecosystem change.
- Discuss heredity and evolution, including species change and the process of natural selection.
- Describe how matter and energy flow in organisms, including biogeochemical cycling and processes by which plants and animals obtain energy and materials for growth and metabolism.
- Explain the interdependence of plants, animals, and environment, and how adaptation influences survival.
- Analyze ecological indicators of sustainability.

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

- Compare and contrast the structure and function of political systems, including:
  - Organization and responsibilities of governments, and how they interact at the local, state, tribal, national and global levels.
  - Roles and activities of political parties, interest groups and mass media, and how they affect the beliefs and behaviors of local, state, and national constituencies.
  - Concepts of political power, authority, conflict and conflict management.
  - Relationship between government and citizens and ways that civic participation occurs in local, state, tribal, national, and global communities.
  - Functions and processes of governments and their impact on societies and citizens, including how different levels of government provide services and protect citizens.
  - Concepts of public, private, and the common good, and how different governments define, support, and limit each.
  - Situations for common interests among nations and global collaboration.
- Compare and contrast the structure and function of economic systems, including:
  - Allocation of scarce resources through individual choice, market interaction, and public policy, and how allocation decisions result in both costs and benefits to individuals and societies.
  - Definition of economic terms (e.g., elasticity, substitution, externalities, regulation, legislation) and identification of examples of them in the current economy with particular attention to the uses of natural resources.
  - Histories, philosophies and patterns of different economic systems and activity and their effects on environment, equity, prosperity and diversity of cultures.
  - Economic input-output analysis and life cycle analysis of resource use, manufacturing and end-of-life options (i.e., recycling, disposal, remanufacturing) of products.
  - Human decisions about consumption, production, distribution and disposal of goods and services and their effect on the sustainability of Earth's natural, economic and social systems.
  - Relationship between public and private ownership and the commons, including, but not limited to characteristics of the commons and property.
  - Relationship between property ownership, entrepreneurial creativity, and economic growth, and how these can be balanced with the common good.
  - Consumption and consumer choices, including impact of consumption choices on the health of a place, impact of consumption choices on the health of the individual, media's role in shaping and influencing consumption patterns, and consumption patterns over time.
  - Economic indicators of sustainability.
- Compare and contrast the structure and function of social and cultural systems, including:
  - Characteristics of diverse cultures, how cultures change over time.
  - How experiences and places may be interpreted differently by people with different cultural backgrounds, at different times, or with other frames of reference.
  - How different people understand the concept of the commons and the types of measures needed to maintain its health.
  - How individuals relate to others, including relationships between individual identity, family, society and culture.
  - Issues of responsibility, fairness and equity, especially as they relate to intergenerational relationships, environmental conditions, consumer choices, resource use, and sustainability.
  - How individual and societal actions can value or depreciate the worth or potential of other human beings.
  - How an individual's perception of the environment is influenced in part by individual traits and group membership or affiliation.

- Influence of individual and group actions on the environment, and how groups can work to promote and balance interests.
- Societal values and principles, including shared and conflicting societal values.
- Social indicators of sustainability.
- Analyze the social, cultural and economic indicators of sustainability.

3.) Interconnectedness of People and the Environment: Students understand the interdependence between the environment and humans, including the interconnectedness of human well-being and the environment.

a. Sense of place, region, nation, and global community. Explain 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. Analyze the characteristics of their community and region and the interconnectedness of regions and the global community, such as:

- Analyze the characteristics of their community and region, including:
  - Spatial concepts of location, distance, direction, scale, movement and region.
  - Natural features of the community and region, including, but not limited to flora, fauna, climate and geologic features such as soils and watersheds.
  - Patterns of distribution and arrangement of settlement.
  - Cultural and economic heritage and current character of the community and region, including, but not limited to livelihoods associated with the regional economy and local food and transportation systems.
  - Continuity and changes of a place over time.
  - Physical and human characteristics of places and regions, and their connections and interdependence.
  - Why places and regions are important to human identity.
  - Interconnectedness of physical and human regional systems.
- Analyze the interconnectedness of physical and human regional systems and the global community, including:
  - Major physical and human features of the Earth and their relationships.
  - Human and physical aspects of places and regions as they relate to development over time, how they are important to human identity, and how they serve as symbols to unify or fragment society.
  - How knowledge of this region can be applied to the study of other~~s~~ regions in other parts of the world.
  - Interdependence among renewable and nonrenewable resource use at the local, regional, national, and global scales.
  - Causes of human migration and the impact of human migration on physical and living systems.
  - Economic, cultural, and environmental factors that influence changes in population, including, but not limited to food production capacity, medical advances, and disease control, and the 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.
  - Conflicts involving use of land, economy, and competition for scarce resources, different political view, boundary disputes, and cultural differences within and between different geographical areas.

b. Interrelationship between the environment and human activities. Analyze how changes in the environment affect human systems (e.g., political, social, cultural, economic), how human activities and systems change the environment, and the interrelationship between environmental quality and human health and wellbeing.

- Analyze how changes in the environment affect human systems, including culture and language, economic systems, political systems, social interactions, human health and well-being.
- Analyze how human activities and systems (social, cultural, political, and economic) change the environment, including its physical systems (e.g., atmosphere, ocean, climate, soil, landforms) and living systems (e.g., ecosystems, biodiversity, carrying capacity).
- Explain the interrelationship between environmental quality, including air quality, water quality and quantity, biodiversity, climate change, disease vectors, and natural disasters, and human health and wellbeing, including the ability to produce and access nutritious food, access shelter, and achieve mental and physical health.
- Describe the 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 and other decisions and practices.

c. Resource distribution and use. Analyze how resource distribution and use can influence cooperation, competition and conflict, and shape political, economic, physical and social environments, including issues related to national security and conflict over territory.

- Evaluate the relationship of the environment to national security, including energy sources, food security, and climate change.
- Describe how human cooperation and competition for resources shape the earth's political, economic, physical, and social environments.
- Explain the dependence of humans on renewable and nonrenewable natural resources for life, sustenance and a suitable quality of life.
- Describe how differing points of view, self-interest, political and economic systems, and global distribution of natural resources play a role in conflict over territory.
- Explain how competition for scarce resources can lead to conflicts between and within geographic areas, including conflicts involving use of land, food, water, energy sources, boundary disputes and human migration.

4) Personal and Civic Responsibility: Students understand the rights, roles, responsibilities and actions associated with leadership and participation that lead toward healthy, sustainable environments and communities.

a. Rights and responsibilities of citizenship. Analyze the rights and responsibilities of citizenship and their importance in making choices within both the local and global contexts.

- Explain the personal, political, and economic rights of U.S. citizens.
- Describe the personal responsibilities of citizens in their community, state, and nation.
- Analyze civic ideals (e.g., freedom, rule of law, equality, responsibility, civic participation, equity, respectful deliberation).
- Compare and contrast different views on individual responsibility to the commons.
- Explain the importance of civic dispositions such as trust, honesty, patience, self-discipline, respect and open-mindedness.
- Examine whether individuals' civic obligations ever require them to subordinate their personal interests or desires for the public good.

- Evaluate how conflicts can arise between individual rights and other societal interest such as a healthy environment and a sustainable community.

b. Sense of personal responsibility. Identify and describe the notion of personal and group responsibility, how the effects of actions reach into the future, and the importance of fulfilling personal responsibilities. Demonstrate a willingness to participate thoughtfully and effectively in decision-making.

- Explain the notion of responsibility and identify some of their personal responsibilities, comparing their view of their responsibilities with commonly accepted societal views.
- Evaluate actions in terms of effects that reach into the future.
- Analyze some of the effects that their actions and the groups they belong to (e.g., family or school class) have on the sustainability of the environment and their community.
- Evaluate the importance of fulfilling personal responsibilities for themselves, society, people in other places, the commons, and other living beings.
- Demonstrate a developing self confidence in their effectiveness as citizens (self efficacy), including:
  - How individual and group action can create beneficial and purposeful change, meet individual needs, and promote the common good.
  - Ways in which citizen action and public opinion influence policy decisions concerning the environment.
  - Examples of how citizen action has had an effect on environmental quality and sustainability.
  - How students of their own age have affected environmental quality and sustainability.
  - Ways in which their own actions have made a difference.
- Demonstrate a willingness to work individually and collectively toward resolution of issues and to participate thoughtfully, respectfully, and effectively in decision-making.
- Explain ways in which the decisions of one generation create opportunities and impose constraints for future generations.
- Apply the strategic responsibilities of systems thinking to address real world decision-making (see Strand 1.c.)

5) Investigate, Plan and Create a Sustainable Future: Students apply the civic action skills that are essential to healthy, sustainable environments and communities.

a. Work with flexibility, creativity, openness and perseverance. Form and evaluate personal views, engage in informed and respectful deliberation, and use creativity to imagine, invent, or make connections previously unrecognized or unknown.

- Form and evaluate personal views, including:
  - Identify personal 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 and propose defensible conclusions that address multiple and diverse perspectives.
  - Communicate, evaluate and justify personal 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.
  - Apply a global perspective to analyze contemporary and historical issues.

- Evaluate the strength of conclusions, differentiating reasoning based on a full set of facts from reasoning based on incomplete information, opinions, fear, bias, or exaggeration.

- Engage in informed and respectful deliberation of local, state, tribal, national, and global issues, including:
  - Demonstrate knowledge of diverse cultural, linguistic, and artistic expressions.
  - Communicate and collaborate cross-culturally.
  - Work with people who have different perspectives.
  - Seek to determine the interests that underlie people's positions and behaviors.
  - Participate cooperatively and productively in work teams to identify and solve problems.
  - Display initiative and demonstrate respect for other team members to complete tasks.
  - Exhibit work ethic and performance, including the ability to be responsible and dependable.
  - Practice "upstream problem identification" and systems thinking.
- Apply creativity to imagine, invent, or make connections previously unrecognized or unknown, including:
  - Demonstrate a willingness to be flexible.
  - Explore connections, consider analogies, and synthesize ideas to uncover new ways of thinking about the topic.
  - Generate new ideas, using novel combinations or connections between previous notions.
  - Seek opportunities to express ideas and emotions.
  - Explore concepts that connect economic opportunities and job creation, sustain the community, and enhance the environment, including, but not limited to innovations in food production, energy generation and use, transportation, and water management.

b. Evaluate accuracy and reliability of information sources. Evaluate the quality, completeness and reliability of information from primary and secondary sources, including:

- Acquire, organize, analyze and evaluate the quality of information from primary and secondary sources.
- 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 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. Identify, investigate and analyze strategies that address challenges and create desired futures. Investigate a current issue or problem, determine various perspectives on the issue or problem, identify and evaluate alternative solutions and courses of action, and propose solutions or actions.

- Investigate a current issue or problem, determining various perspectives on the issue and problem, including:
  - Define and clarify the issue so that its dimensions are well understood, using a variety of unbiased sources.
  - Develop a method to explore the relationships between key dimensions of the issue.
  - Identify key individuals and groups involved, including individuals and groups impacted by the issue.
  - Explain various perspectives on the issue and the reasoning behind them.
  - Examine contextual elements that shape the topic under investigation and identify historical antecedents or contemporary parallels.
  - Analyze characteristics, causes, and consequences of the issue.

- Develop and utilize indicators to measure movement toward or away from goals.
- 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, and propose solutions or support actions including:
  - Synthesize 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. Demonstrate decision-making and citizen action. Analyze the need for action, plan and implement an action strategy if warranted, evaluate the results of actions, and reach evidence-based conclusions.

- 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.
  - 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.
- Identify, compare, and evaluate the results of actions (outcomes and response); then reach an informed and supported conclusion, including.
  - Analyze the long and short term consequences of actions (or inaction).
  - Consider the intended and unintended consequences of action on self and others, and the environment.
  - Analyze actions, evaluating apparent effects in terms of action goals, ethics, and broader societal goals.
  - Articulate “lessons learned” from taking action.
  - Account for some of the difficulties they encountered in evaluating the results of actions.

Appendix C: Systems Thinking

The Waters Foundation (http://www.watersfoundation.org) has provided a great deal of background on systems thinking and how it can be integrated into schooling. The Waters Foundation articulates three critical elements:

Tools of Systems Thinking
(http://www.watersfoundation.org/index.cfm?fuseaction=content.display&id=136)

- behavior-over-time graphs
- connection circles
- causal loop diagrams
- stock/flow maps
- iceberg
- computer models
- computer simulations
- ladder of inference

Key Concepts of Systems Thinking
(http://www.watersfoundation.org/index.cfm?fuseaction=content.display&id=137)

- **Mental Models**
  Our beliefs, assumptions, and ideas about how things work. Mental models are often hidden, even from ourselves.
- **Dynamic System**
  Systems, which change over time, are dynamic. Growth, decay, and oscillations are the fundamental patterns of systems.
- **Change Over Time**
  There are patterns in the world that we can understand, with a little effort. These patterns are usually generated by interconnectedness.
- **Feedback**
  The real world often operates in circular causality, not just cause and effect.
- **Leverage**
  How can I generate viable options and solve real problems in a complex and interconnected world?

Habits of a Systems Thinker
(http://www.watersfoundation.org/index.cfm?fuseaction=search.habits)

- Surface and test assumptions.
- Use understanding of system structure to identify possible leverage actions.
- Recognize the impact of time delays when exploring cause and effect relationships.
- Identify the circular nature of complex cause and effect relationships.
- Recognize that a system's structure generates its behavior.
- Consider how mental models affect current reality and the future.
- Consider both short and long-term consequences of actions.
- Consider an issue fully and resists the urge to come to a quick conclusion.
- Change perspectives to increase understanding.
- Check results and changes actions if needed: "successive approximation."
- Observe how elements within systems change over time, generating patterns and trends.
- Find where unintended consequences emerge.
- Seek to understand the "big picture."

Appendix D: Connecting the Standards for Reading and Writing Literacy Standards to the Environmental Literacy Strands[4]

Oregon adopted the Common Core Standards for English Language Arts in October 2010. In doing so, Oregon joined other states in the pursuit of a common, standards-based education for our students, kindergarten through high school. Common standards can increase the likelihood that all students, no matter where they live, are prepared for success in college and the work place. Because skillful reading and writing are similar across the states, common standards make sense.

By applying the *Common Core State Standards (CCSS) for English Language Arts (ELA)* within the context of education for environmental literacy, teachers and other educators can prepare Oregon students to be proficient readers and writers. Because students need grade-level literacy skills to access full content in school, the emphasis in the Standards is to *learn to read and write* in English Language Arts and *to apply and develop those skills,* specific to the content, in all other classes, including those related to education for environmental literacy.

Instruction in the reading and writing standards customized for environmental literacy, in addition to instruction in the English language arts standards, will make a critical difference for students. That is because the Standards for grade 6 and above are predicated on *all teachers* using their content area expertise to help students meet the particular challenges of reading and writing in their respective fields. It is important to note that the 6-12 literacy standards are not meant to replace content standards, but rather to supplement them.

College and Career Readiness Anchor Standards for Reading

The College and Career Readiness (CCR) Anchor Standards for Reading and Writing, the "backbone" of the Standards, describe the literacy skills which *all students need when they graduate*. The grade-specific standards describe the literacy skills (6-8, 9-10, 11-12) which *all students need when they finish each grade.*

Keeping the college and career focus at the forefront of implementation is critical and supports the preparation of all students to be successful in school, from the beginning of school, and proficient in the Essential Skills of Reading, Writing, and Speaking and Listening required for an Oregon Diploma.

Each grade-specific standard corresponds to the same College and Career Readiness (CCR) Anchor Standard below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

[4] This document is a revised version of *STANDARDS FOR Literacy in History/Social Studies* and *STANDARDS FOR Literacy in Science and Technical Subjects*.

Anchor Standards for Reading Informational Text

Literacy standards for grades 6-12 are content area-specific. While the same anchor standards are used for all Common Core State Standards for Reading, the grade-specific standards are tuned to the reading requirements of environmental literacy. (Standards for K–5 reading in environmental literacy are integrated into the K–5 Reading standards.) The CCR anchor standards and high school standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Note on range and content of student reading

Reading is critical to building knowledge needed for environmental literacy. College and career ready reading in requires an appreciation of the norms and conventions of environmental literacy, such as the kinds of evidence used; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. Science and history/social studies are key to environmental literacy. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with *independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of environmental literacy, not replace them.*

Reading Standards in Environmental Literacy

Grades 6-8

Reading Informational Text	REL

Key Ideas and Details

6-8.REL.1 Cite specific textual evidence to support analysis of primary and secondary sources.
6-8.REL.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
6-8.REL.3 Identify key steps in a text's description of a process or procedure when carrying out experiments, taking measurements, or performing technical tasks related to environmental literacy.

Craft and Structure

6-8.REL.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to environmental literacy.
6-8.REL.5 Describe how a text presents information (e.g., sequentially, comparatively, causally).
6-8.REL.6 Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

Integration of Knowledge and Ideas

6-8.REL.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
6-8.REL.8 Distinguish among fact, opinion, and reasoned judgment in a text.
6-8.REL.9 Analyze the relationship between a primary and secondary source on the same topic, and Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Range of Reading and Level of Text Complexity

6-8.REL.10 By the end of grade 8, read and comprehend environmental literacy texts in the grades 6–8 text complexity band independently and proficiently.

Grades 9-10

Reading Informational Text	REL

Key Ideas and Details

9-10.REL.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information, and to the precise details of explanations or descriptions.
9-10.REL.2 Determine the central ideas or information of a primary or secondary source; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of how key events or ideas develop over the course of the text.
9-10.REL.3 Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them; and follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

Craft and Structure

9-10.REL.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary describing ecological, political, social, or economic aspects of environmental literacy.

9-10.REL.5 Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.

9-10.REL.6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts; analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

Integration of Knowledge and Ideas

9-10.REL.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

9-10.REL.8 Assess the extent to which the reasoning and evidence in a text support the author's claims or a recommendation for solving a environmental problem.

9-10.REL.9 Compare and contrast treatments of the same topic in several primary and secondary sources; compare and contrast findings presented in a text to those from other sources (including their own investigations), noting when the findings support or contradict previous explanations or accounts.

Range of Reading and Level of Text Complexity

9-10.REL.10 By the end of grade 10, read and comprehend environmental literacy texts in the grades 9–10 text complexity band independently and proficiently.

Grades 11-12

Reading Informational Text REL

Key Ideas and Details

11-12.REL.1 Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole and attending to any gaps or inconsistencies in the account.

11-12.REL.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

11-12.REL.3 Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain; follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure

11-12.REL.4 Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text.

11-12.REL.5 Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

11-12.REL.6 Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence; analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Ideas

11-12.REL.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

11-12.REL.8 Evaluate an author's premises, claims, evidence, analysis, and conclusions by verifying the data when possible and corroborating or challenging conclusions with other sources of information.

11-12.REL.9 Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea, event, process, phenomenon, or concept, noting discrepancies among sources and resolving conflicting information when possible.

Range of Reading and Level of Text Complexity

11-12.RH.10 By the end of grade 12, read and comprehend environmental literacy texts in the grades 11-CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grade 6-12 standards define what students should understand and be able to do by the end of each grade. Each grade-specific standard corresponds to the same College and Career Readiness (CCR) Anchor Standard below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards for Literacy in Environmental Literacy

Grades 6-8

Writing	WEL

Text Types and Purposes

6-8.WEL.1 Write arguments focused on *specific environmental literacy content*.
- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- d. Establish and maintain a formal style.
- e. Provide a concluding statement or section that follows from and supports the argument presented.

6-8.WEL.2 Write informative/explanatory texts, including the narration of events, procedures/ experiments, or technical processes.
- a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Establish and maintain a formal style and objective tone.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

6-8.WEL.3 (See note below; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import.

Production and Distribution of Writing

6-8.WEL.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6-8.WEL.5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed..

6-8.WEL.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Research to Build and Present Knowledge

6-8.WEL.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

6-8.WEL.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

6-8.WEL.9 Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

6-8.WEL.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Grades 9-10

Writing WEL

Text Types and Purposes

9-10.WEL.1 Write arguments focused on *specific environmental literacy content*.

- f. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
- g. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.
- h. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- i. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- j. Provide a concluding statement or section that follows from or supports the argument presented.

9-10.WEL.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- g. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- h. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- i. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
- j. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.

k. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
l. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

9-10.WEL.3 (See note below; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import.

Production and Distribution of Writing

9-10.WEL.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

9-10.WEL.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

9-10.WEL.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Research to Build and Present Knowledge

9-10.WEL.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

9-10.WEL.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

9-10.WEL.9 Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

9-10.WEL.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Grades 11-12

Writing WEL

Text Types and Purposes

11-12.WEL.1 Write arguments focused on *specific environmental literacy content*.
k. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create

an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.

l. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

m. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

n. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

o. Provide a concluding statement or section that follows from or supports the argument presented.

11-12.WEL.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

m. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

n. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

o. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

p. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.

q. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).

11-12.WEL.3 (See note below; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import.

Production and Distribution of Writing

11-12.WEL.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

11-12.WEL.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

11-12.WEL.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Research to Build and Present Knowledge

11-12.WEL.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
11-12.WEL.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
11-12.WEL.9	Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

11-12.WEL.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.