

Integrated Environmental and Sustainability



Washington State K-12 Integrated Environmental and Sustainability Education Learning Standards

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SUPERINTENDENT OF PUBLIC INSTRUCTION

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Dear Educators, Community Partners, Parents, and Students:

Our state's economy and the well-being of its people depend upon a healthy environment. Washington contains three beautiful national parks, exceptional natural resources, and many biologically-rich bodies of water. We are home to several internationally recognized businesses, industries, and foundations with a sustainability and "green jobs" focus. We are extremely fortunate to live, work, learn, and play in a state that places a high value on environmental stewardship and sustainability.

Our strong environmental ethic extends to the education system. State rule enacted in 1991 (Washington Administrative Code 392-410-115, "Mandatory areas of study in the common school") requires that "instruction about conservation, natural resources, and the environment ... be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities, and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment."

To support districts in implementing this requirement, in 2009 I adopted the Washington State K-12 Integrated Environmental and Sustainability Learning Standards. These learning standards describe what all students should know and be able to do to be environmentally and sustainability literate. Consistent with the intent of the law governing environmental education in Washington State, these standards are intended to be integrated into core content areas and across all grade levels.

The purpose of the standards is to provide strong support for students, parents, teachers, and the broader community by guiding the alignment and integration of environmental and sustainability content with curriculum, instruction, and assessment. My staff worked closely with educators from across the state to develop these standards, and they are now working to provide support for implementing the K-12 Integrated Environmental and Sustainability Learning Standards.

I encourage districts to access the K-12 Integrated Environmental and Sustainability Learning Standards resources and supports available from OSPI (www.k12.wa.us/EnvironmentSustainability) and its education and business partners to ensure that all our students are well-prepared for the challenges and opportunities of the 21st Century.

Sincerely,

Randy I. Dorn
State Superintendent
of Public Instruction

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Version 1.2 Update

In 2014, the K-12 Environmental and Sustainability Education (ESE) Learning Standards were updated to reflect the adoption of the Washington State 2013 Science Learning Standards (i.e., Next Generation Science Standards) the Washington State 2011 English Language Arts and Mathematics Learning Standards (i.e., Common Core State Standards).

This update to the ESE Standards does not change the content of the standards; rather it includes text changes that make connections to the Washington State Science Learning Standards and the English Language Arts and Mathematics Learning Standards throughout the document.

In addition, the chart in Section VII has been updated to reflect these recent standards adoptions as well as the addition of other connections to the content areas of International Education, Educational Technology and Career and Technical Education.

I. Overview

Environmental and Sustainability Education offers a rich and meaningful context for integrated teaching and learning. The Washington State K-12 Integrated Environmental and Sustainability Education Learning Standards describe what all students should know and be able to do in the area of Environmental and Sustainability Education. Consistent with the intent of the law governing environmental education in Washington State, these standards are intended to be integrated into core content areas and across all grade levels.

Washington State has identified three broad overarching standards that are specific to Environmental and Sustainability Education. Unlike core content standards in Washington State, these standards do not include specific grade level expectations. Instead, included are connections of the Integrated Environmental and Sustainability Education Learning Standards to the Washington State Science Standards, Social Studies Standards, English Language Arts Standards, and Mathematics Standards. The ESE standards also serve as a meaningful and engaging context for the arts, health and fitness, world languages, international (global) education, education technology, and Career and Technical Education.

Additionally, the Integrated Environmental and Sustainability Education Learning Standards align with the state's Indian Education curriculum, "Since Time Immemorial: Tribal Sovereignty in Washington State" Environment and sustainability are key elements currently integrated into this powerful curriculum.

The purpose of this document is to provide strong support for students, parents, teachers, and the broader community by guiding the integration of environmental and sustainability content with curriculum, instruction, and assessment.

II. Background

In 1990, the State Board of Education created a rule defining environmental education as part of Basic Education and mandating its instruction in public school at all grade levels in all subject matters. WAC 392-410-115, Subsection (6) reads, "Pursuant to RCW 28A.230.020, instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities, and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment."

In response to this legislation, the Office of Superintendent of Public Instruction created "Environmental Education Guidelines for Washington Schools" (EE Guidelines), with the most recent update to the EE Guidelines occurring in 2000. Since the last update, there has been significant development in learning standards at both the state and national level. In 1993, Washington State began developing grade level expectations (GLEs) in the core content areas. Washington State Social Studies Standards were adopted in 2008 as were health and fitness standards and educational technology standards. Standards for the Arts were adopted in 2011. In 2011 Washington State adopted Common Core State Standards in English Language Arts and Mathematics (called the Washington State ELA and Math Learning Standards). In 2013 Washington adopted the Next Generation Science Standards (called the Washington State Science Learning Standards).

At the national level, in 2004 the North American Association for Environmental Education (NAAEE) updated the NAAEE Guidelines for Excellence K-12 Student Learning Standards. In 2008, the U.S.

Partnership for Education for Sustainable Development (USPESD) developed Education for Sustainability K-12 Student Learning Standards. Additionally, there is much attention today on the role of K-12 learning in moving our country forward in the area of sustainable design and technology.

These trends and recent developments point to the critical need to create a set of Washington State K-12 Integrated Environmental and Sustainability Education Learning Standards that are research-based, interdisciplinary, and forward-thinking. These new standards reflect current research and emerging practices in the field of Environment and Sustainability Education.

III. Process and Criteria for Development of the K-12 Integrated Environmental and Sustainability Education Learning Standards

The process for developing these standards began in April of 2008 with a review of existing state, national, and international environmental and sustainability education standards. The review and report was provided by an independent consultant, *Facing the Future* (a non-profit global sustainability education organization). The report was completed in June of 2008 and is available on the OSPI website at <http://www.k12.wa.us/curriculumInstruct/EnvironmentSustainability>.

The Office of Superintendent of Public Instruction convened a committee of teachers, administrators, and community educators to develop the Washington State K-12 Integrated Environmental and Sustainability Education Learning Standards. A draft document was produced in February of 2009 by the committee and underwent a two-month public review with comments gathered through an online survey. In addition to public review, the OSPI Curriculum Advisory and Review Committee reviewed the standards at two meetings in April and June of 2009. The Integrated Environmental and Sustainability Education Learning Standards were also reviewed by state and national content experts and cultural bias and sensitivity experts. Based on this comprehensive review, the Environmental and Sustainability Education Learning Standards committee revised and finalized the document in July of 2009.

In 2014, the Environmental and Sustainability Education Learning Standards were updated to reflect the adoption of the Washington State Science Learning Standards and Washington State English Language Arts and Mathematics Standards. This update does not change the content of the ESE standards; rather it includes connections to the aforementioned recently adopted standards.

The following criteria guided the development of the Integrated Environmental and Sustainability Education Learning Standards. The standards were designed to be:

- **Interdisciplinary** – Applicable in the teaching of multiple subject areas in an integrated manner.
- **Inspirational & Transformational** – Encourages exceptional teaching and learning that promotes the transformation of education towards meaning, engagement, and relevancy.
- **Research-Based** – Grounded in current education and content research.
- **Grade Appropriate** – Suitable for all grade levels from kindergarten through 12th grade.

- **Clear and Useable** – Understandable and helpful to educators in guiding the selection of materials and development of curricular units that support student opportunities to apply their learning.
- **Realistic** – Teachable for all teachers and achievable for all students.
- **Measureable and Assessable** – Allows for formative and summative assessments.

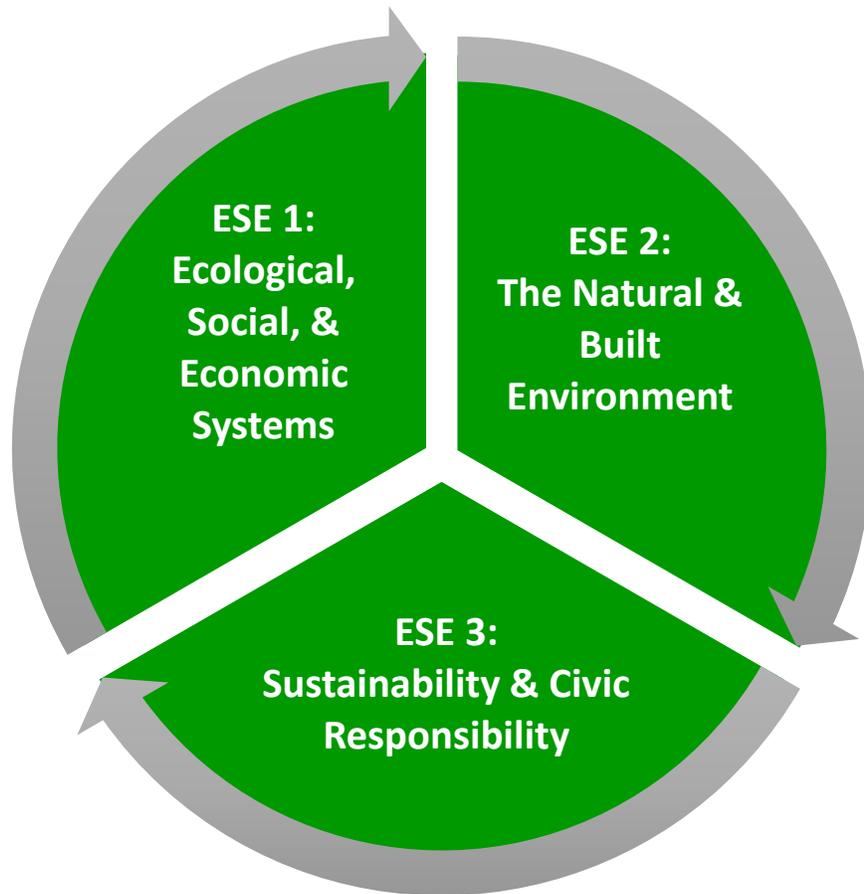
IV. Assessment

Because of its real-world, project-based application, Environmental and Sustainability Education offers excellent opportunities for authentic assessment. It is not intended for there to be a separate assessment of student learning in Environmental and Sustainability Education. Rather, these standards can be a tool to demonstrate student learning within core content areas. Environmental and Sustainability Education is required in Washington State to be taught across all grade levels in an interdisciplinary manner, therefore, the assessment of how well students meet these standards should be integrated into core content assessments, where appropriate. Educators can determine whether their present curricula and assessments are already aligned with these standards. For example, Environmental and Sustainability Education offers excellent content and context for Classroom-Based Assessments in social studies and the arts.

V. Integrated Environmental and Sustainability Education Learning Standards

The standards indicate what students should know and be able to do in three areas of Environmental and Sustainability Education. Although each Integrated Environmental and Sustainability Education Learning Standard is distinct unto itself, they are interrelated and ideally would inform teaching and learning concurrently. The Integrated Environmental and Sustainability Education Learning Standards address the following areas:

- **Standard 1: Ecological, Social, and Economic Systems**
- **Standard 2: The Natural and Built Environment**
- **Standard 3: Sustainability and Civic Responsibility**



Standard 1: Ecological, Social, and Economic Systems

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

Context and Background for Standard 1:

For the purposes of these standards, sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their needs while ensuring long-term ecological, social, and economic health.”

The most well-known definition of sustainability, “meeting the needs of the present without compromising the ability of future generations to meet their own needs,” is from the *Brundtland Report*, a product of a 1989 United Nations commission on development.

Many indigenous cultures are strongly rooted in the values of sustainability. For example, the Iroquois and other Native Americans have a tradition that asks, “What impact will this decision have on the seventh generation?” This value speaks to the intergenerational equity aspect of sustainability (how present decisions and actions affect future generations).

An essential element of sustainability is the interconnected nature of ecological, economic, and social systems. Interconnections and interdependency are distinct from each other in this standard. This distinction exists because while all natural and human systems are *interconnected* and may affect each other, not all are *interdependent*, requiring each other for survival.

Ecological systems encompass the living (biotic) and the non-living (abiotic) components of an environment. Social systems refer to human interactions, culture, and politics, with an emphasis on equity and fairness. Economic systems refer to the production, distribution, and consumption of resources including attention to economic equity and the fair distribution of opportunities and impacts.

Standard 2: The Natural and Built Environment

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

Context and Background for Standard 2:

For the purpose of this standard, “the environment” is broadly defined as the physical world, including living and nonliving components, ranging from pristine natural places to those heavily influenced by humans (e.g., rural landfill, forested areas, and densely populated urban environments).

Standard 2 encompasses thinking critically about how the human-built environment can be designed or modified to promote ecological health and better serve quality of life for all humans.

“Systems thinking” is an approach to problem solving that facilitates the analysis and understanding of complex phenomena. This approach considers the component parts of a system in the context of relationships with each other and with other systems, rather than in isolation. Systems thinking helps illustrate how events may be separated by distance and time, and that small catalytic events can cause large changes in complex systems.

The term “in, about, and for the environment” refers to learning that takes place *in* the environment (e.g., outdoor education), learning that is *about* the environment and environmental issues (e.g., loss of biodiversity, climate change, and water quality), and learning *for* conservation of the natural environment (e.g., service projects such as stream or parkland restoration).

Standard 2 promotes a sense of place through which students feel connected to and appreciate where they live. The standard encourages learning outside the formal classroom walls. These settings include school grounds, parks, streets, wilderness, local streams or beaches, community gardens or farms, community centers, museums, industrial areas, city landfills, and local businesses. Bringing the environment into the classroom helps students meet this standard. This may include using examples and artifacts from the local environment, considering the classroom itself as an environment, and inviting community members into the classroom.

Standard 3: Sustainability and Civic Responsibility

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

Context and Background for Standard 3:

A key aspect of sustainability is the impact of one’s decisions and actions on current and future generations. The intent of this standard is for students to apply the knowledge and experiences referred to in Standards 1 and 2 by taking an active role as responsible citizens and creating positive solutions for present and future generations.

Consideration of multiple perspectives allows for a wider range of possible solutions. Students should be able to envision a world that is sustainable, and articulate the changes that would be needed to achieve their vision. Necessary skills include communication, collaboration, and imagination. Desirable *habits of mind* include flexibility, commitment, appreciation, humor, confidence, and determination.

VI. Connections to Science, Social Studies, English Language Arts, and Mathematics

This section includes connections of the Integrated Environmental and Sustainability Education Learning Standards to the Washington State Science Learning Standards, Social Studies Standards, English Language Arts Standards, and Mathematics Standards.

While these connections are by no means exhaustive, the intent of this section is to highlight the core content standards that most obviously connect to the Integrated Environmental and Sustainability Education Learning Standards. Teachers and other educators are encouraged to review the entire sets of core content standards for other potential connections with the Integrated Environmental and Sustainability Education Learning Standards.

The connections included here offer a starting point for using Environmental and Sustainability Education as an integrating context. As educators begin and build on this work, they will likely recognize and be able to apply an integrated approach with additional core content standards.

While this document does not include detailed connections with other content area standards, Environmental and Sustainability Education can also serve as an engaging and meaningful context for the arts, health and fitness, world languages, international (global) education, educational technology, and Career and Technical Education. Section VII includes examples of how Environmental and Sustainability Education connects to, and can be readily integrated into these other content areas.

Environmental & Sustainability Education (ESE) Connections with Other Washington State K-12 Learning Standards

Grade K Environmental and Sustainability Standards Connections			
<p>ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.</p> <p>ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.</p> <p>ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.</p>			
K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>K-LS1 From Molecules to Organisms: Structures and Processes</p> <p>K-ESS2 Earth Systems</p> <p>K-ESS3 Earth and Human Activity</p> <p>K-2-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.K.1-10 Reading Informational Text</p> <p>W.K.1-3 W.K.5-8 Writing</p> <p>SL.K.1-6 Speaking and Listening</p>	<p>Overview</p> <p>Counting and Cardinality</p> <p>Operations and Algebraic Thinking</p> <p>Number and Operations in Base Ten</p> <p>Measurement and Data</p> <p>Geometry</p> <p>Mathematical Practices</p>

Grade 1 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>1-LS1 From Molecules to Organisms: Structures and Processes</p> <p>1-ESS1 Earth's Place in the Universe</p> <p>K-2-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.1.1-10 Reading Informational Text</p> <p>W.1.1-3 W.1.5-8 Writing</p> <p>SL.1.1-6 Speaking and Listening</p>	<p>Overview</p> <p>Operations and Algebraic Thinking</p> <p>Number and Operations in Base Ten</p> <p>Measurement and Data</p> <p>Geometry</p> <p>Mathematical Practices</p>

Grade 2 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>2-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>2-LS4 Biological Evolution: Unity and Diversity</p> <p>2-ESS1 Earth's Place in the Universe</p> <p>2-ESS2 Earth's Systems</p> <p>K-2-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.2.2-10 Reading Informational Text</p> <p>W.2.1-8 Writing</p> <p>SL.2.1-6 Speaking and Listening</p>	<p>Overview</p> <p>Operations and Algebraic Thinking</p> <p>Number and Operations in Base Ten</p> <p>Measurement and Data</p> <p>Geometry</p> <p>Mathematical Practices</p>

Grade 3 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>3-LS1 From Molecules to Organisms: Structures and Processes</p> <p>3-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>3-LS3 Heredity: Inheritance and Variation of Traits</p> <p>3-ESS2 Earth's Systems</p> <p>3-ESS3 Earth and Human Activity</p> <p>3-5-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.3.1-10 Reading Informational Text</p> <p>W.3.1-2 W.3.4-10 Writing</p> <p>SL.3.1-6 Speaking and Listening</p>	<p>Overview</p> <p>Operations and Algebraic Thinking</p> <p>Number and Operations in Base Ten</p> <p>Number and Operations—Fractions</p> <p>Measurement and Data</p> <p>Geometry</p> <p>Mathematical Practices</p>

Grade 4 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<u>4-PS3</u> Energy <u>4-ESS1</u> Earth's Place in the Universe <u>4-ESS2</u> Earth's Systems <u>4-ESS3</u> Earth and Human Activity <u>3-5-ETS1</u> Engineering Design	<u>EALR 1</u> Civics <u>EALR 2</u> Economics <u>EALR 3</u> Geography <u>EALR 5</u> Social Studies Skills	<u>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</u> <u>RI.4.1-10</u> Reading Informational Text <u>W.4.1-10</u> Writing <u>SL.4.1-5</u> Speaking and Listening	<u>Overview</u> Operations and Algebraic Thinking Number and Operations in Base Ten Number and Operations—Fractions Measurement and Data Geometry Mathematical Practices

Grade 5 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>5-PS3 Energy</p> <p>5-LS1 From Molecules to Organisms: Structures and Processes</p> <p>5-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>5-ESS2 Earth's Systems</p> <p>5-ESS3 Earth and Human Activity</p> <p>3-5-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.5.1-10 Reading Informational Text</p> <p>W.5.1-10 Writing</p> <p>SL.5.1-6 Speaking and Listening</p>	<p>Overview</p> <p>Operations and Algebraic Thinking</p> <p>Number and Operations in Base Ten</p> <p>Number and Operations—Fractions</p> <p>Measurement and Data</p> <p>Geometry</p> <p>Mathematical Practices</p>

Grade 6 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>MS-PS1 Matter and its Interactions</p> <p>MS-PS3 Energy</p> <p>MS-LS1 From Molecules to Organisms: Structures and Processes</p> <p>MS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>MS-ESS2 Earth's Systems</p> <p>MS-ESS3 Earth and Human Activity</p> <p>MS-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.6.1-10 Reading Informational Text</p> <p>W.6.1-10 Writing</p> <p>SL6.1-6 Speaking and Listening</p> <p>RH.6-8.1-10 Literacy in History/Social Studies</p> <p>RST.6-8.1-10 Literacy in Science and Technical Subjects</p>	<p>Overview</p> <p>Ratios and Proportional Relationships</p> <p>The Number System</p> <p>Expressions and Equations</p> <p>Geometry</p> <p>Statistics and Probability</p> <p>Mathematical Practices</p>

Grade 7 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>MS-PS1 Matter and its Interactions</p> <p>MS-PS3 Energy</p> <p>MS-LS1 From Molecules to Organisms: Structures and Processes</p> <p>MS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>MS-ESS2 Earth's Systems</p> <p>MS-ESS3 Earth and Human Activity</p> <p>MS-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.7.1-10 Reading Informational Text</p> <p>W.7.1-10 Writing</p> <p>SL7.1-6 Speaking and Listening</p> <p>RH.6-8.1-10 Literacy in History/Social Studies</p> <p>RST.6-8.1-10 Literacy in Science and Technical Subjects</p>	<p>Overview</p> <p>Ratios and Proportional Relationships</p> <p>The Number System</p> <p>Expressions and Equations</p> <p>Geometry</p> <p>Statistics and Probability</p> <p>Mathematical Practices</p>

Grade 8 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>MS-PS1 Matter and its Interactions</p> <p>MS-PS3 Energy</p> <p>MS-LS1 From Molecules to Organisms: Structures and Processes</p> <p>MS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>MS-ESS2 Earth's Systems</p> <p>MS-ESS3 Earth and Human Activity</p> <p>MS-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.8.1-10 Reading Informational Text</p> <p>W.8.1-10 Writing</p> <p>SL.8.1-6 Speaking and Listening</p> <p>RH.6-8.1-10 Literacy in History/Social Studies</p> <p>RST.6-8.1-10 Literacy in Science and Technical Subjects</p>	<p>Overview</p> <p>The Number System</p> <p>Expressions and Equations</p> <p>Functions</p> <p>Geometry</p> <p>Statistics and Probability</p> <p>Mathematical Practices</p>

Grade 9-10 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>HS-PS3 Energy</p> <p>HS-LS1 From Molecules to Organisms: Structures and Processes</p> <p>HS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>HS-LS3 Heredity: Inheritance and Variation of Traits</p> <p>HS-LS4 Biological Evolution: Unity and Diversity</p> <p>HS-ESS2 Earth's Systems</p> <p>HS-ESS3 Earth and Human Activity</p> <p>HS-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.9-10.1-10 Reading Informational Text</p> <p>W.9-10.1-10 Writing</p> <p>SL.9-10.1-6 Speaking and Listening</p> <p>RH.9-10.1-10 Literacy in History/Social Studies</p> <p>RST.9-10.1-10 Literacy in Science and Technical Subjects</p>	<p>Number and Quantity Overview</p> <p>Algebra Overview</p> <p>Functions Overview</p> <p>Modeling Overview</p> <p>Geometry Overview</p> <p>Statistics and Probability Overview</p>

Grade 11-12 Environmental and Sustainability Standards Connections

ESE Standard 1: Ecological, Social, and Economic Systems. Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.

ESE Standard 2: The Natural and Built Environment. Students engage in inquiry and systems thinking and use information gained through learning experiences in, about, and for the environment to understand the structure, components, and processes of natural and human-built environments.

ESE Standard 3: Sustainability and Civic Responsibility. Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability.

K-12 Science (2013)	K-12 Social Studies (2012, Version 1.2)	K-12 English Language Arts (2011)	K-12 Mathematics (2011)
<p>HS-PS3 Energy</p> <p>HS-LS1 From Molecules to Organisms: Structures and Processes</p> <p>HS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p> <p>HS-LS3 Heredity: Inheritance and Variation of Traits</p> <p>HS-LS4 Biological Evolution: Unity and Diversity</p> <p>HS-ESS2 Earth's Systems</p> <p>HS-ESS3 Earth and Human Activity</p> <p>HS-ETS1 Engineering Design</p>	<p>EALR 1 Civics</p> <p>EALR 2 Economics</p> <p>EALR 3 Geography</p> <p>EALR 5 Social Studies Skills</p>	<p>Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language</p> <p>RI.11-12.1-10 Reading Informational Text</p> <p>W.11-12.1-10 Writing</p> <p>SL.11-12.1-6 Speaking and Listening</p> <p>RH.11-12.1-10 Literacy in History/Social Studies</p> <p>RST.11-12.1-10 Literacy in Science and Technical Subjects</p>	<p>Number and Quantity Overview</p> <p>Algebra Overview</p> <p>Functions Overview</p> <p>Modeling Overview</p> <p>Geometry Overview</p> <p>Statistics and Probability Overview</p>

VII. Connections to Additional Learning Standards and Courses

In addition to specific connections to K-12 science (NGSS), social studies, English language arts (CCSS), and mathematics (CCSS) learning standards as indicated in Section VI, Environmental and Sustainability Education can also serve as an engaging and meaningful context for the arts, health and fitness, world languages, international (global) education, educational technology, and Career and Technical Education. The following table provides a few examples of how Environmental and Sustainability Education is connected to and can be readily integrated into these content areas. Please note that this table represents a short list of example connections and strategies and should not be considered a comprehensive review of the potential connections of Environmental and Sustainability Education with these content areas.

Content Area and Example of Standards or Courses that Connect to Environmental and Sustainability Education	Examples of Environmental and Sustainability Education Integration with Content Areas
The Arts EALR 4: The student makes connections within and across the arts (dance, music, theatre, and visual arts) to other disciplines, life, cultures, and work.	Students use art to convey the content, indigenous knowledge, story, and vision of sustainability.
Health and Fitness EALR 3: The student analyzes and evaluates the impact of real-life influences on health.	Students analyze and evaluate the effects of air quality on human health.
World Languages Standard 1.3 Presentational Communication: Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers.	Students develop and present information in other languages about community-related sustainability issues (e.g. ecological footprints, recycling, community gardens).
International (Global) Education CCSSO EdSteps Global Competence Matrix	Students explore questions of critical global significance such as "what is the expected impact of climate change on the Gulf of Mexico or the Gulf of Guinea, Africa?
Educational Technology EALR 1: Students use technology within all content areas to collaborate, communicate, generate innovative ideas, investigate and solve problems.	Students develop a social media website to collaborate on the design of an outdoor learning space.
Career and Technical Education CTE Course: Sustainable Design and Technology	Students explore green jobs through project -based learning opportunities. For example, students design sustainable energy projects and enter their projects in the WSU Imagine Tomorrow competition.

VIII. Acknowledgments

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IX. Glossary

authentic assessment – The demonstration of student knowledge in a variety of different ways and in “real-world” contexts.

built environment – The buildings, roads, utilities, homes, fixtures, parks, and all other man-made entities that form the physical characteristics of a community.

ecological systems – The collection of interconnected living organisms and the systems in which they co-exist.

economic systems – The systems of production, distribution, and consumption of goods and services between the entities in a particular society.

education for sustainability – A combination of content, learning methods, and outcomes that helps students develop a knowledge base about the environment, the economy, and society, in addition to helping them learn skills, perspectives, and values that guide and motivate them to seek sustainable livelihoods, participate in a democratic society, and live in a sustainable manner.

environmental education – A learning process that increases knowledge and awareness about the environment and associated challenges; develops the necessary skills and expertise to address these challenges; and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action. It can include three dimensions: education about the environment, for the environment, and in the environment.

habits of mind – A set of attributes identified by Drs. Arthur L. Costa and Bena Kallick that describe what “intelligent people do when they are confronted with problems, the resolution to which are not immediately apparent.” The 16 Habits of Mind identified by Costa and Kallick include: persisting; thinking and communicating with clarity and precision; managing impulsivity; gathering data through all senses; listening with understanding and empathy; creating, imagining, innovating; thinking flexibly; responding with wonderment and awe; thinking about thinking (metacognition); taking responsible risks; striving for accuracy; finding humor; questioning and posing problems; thinking interdependently; applying past knowledge to new situations; remaining open to continuous learning.

interconnected – A connection (physical or logical) between multiple things.

interdependent – A relationship in which things depend on one another for survival.

natural environment – Living and non-living things that occur naturally on Earth.

sense of place – Connecting to and valuing the places in which one lives or visits. Sense of place includes the feeling that a geographic location or community is a special place, distinct from anywhere else.

social systems – The systems of a society that encompass human interactions, culture, and politics.

sustainability – Meeting present needs without compromising the ability of future generations to meet their needs. Sustainability is a holistic approach to living and problem solving that addresses ecological health, social equity, and economic prosperity for present and future generations.

sustainability education – See “education for sustainability”

system – A group of interacting, interrelated, and interdependent components that form a complex and unified whole. A system is a collection of “things” in which the whole is greater than the sum of its parts. Some systems are “nested” within larger systems (e.g. the circulatory system is nested within the human body system).

systems thinking – An approach to problem solving that involves the considerations of systems; interconnectedness; the whole versus its parts; respect for limits; unexpected consequences; and, identifying patterns, root causes, and leverage points for change.

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The following references were used in the development of the 2009 and 2014 (Version 1.2) ESE Standards:

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