

Washington State Environmental and Sustainability Literacy Plan



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Education • Environment • Economy

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Washington State Environmental and Sustainability Literacy Plan

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Executive Summary

- **The Washington State Environmental and Sustainability Literacy Plan (Plan) defines a 2021 Vision of:**

Excellent and relevant environmental and sustainability education for each student, in and outside of school, at all grades.

- **The purpose of the Plan is to:**

- Build on, contribute to implementation of, and leverage existing environmental and sustainability education programs and initiatives in Washington State.
- Ensure that students have ample opportunities to increase their environmental literacy and enhance their academic achievement and prepare for life and work through innovative, real-world, project-based learning.
- Ensure that Washington State is well-positioned to obtain private and public funding to support this important work.

- **The Plan was developed and informed by a steering committee representing a broad range of education stakeholders.**

- The steering committee was comprised of elementary, middle, and high school teachers; school administrators and directors; teacher educators; regional professional development providers; informal educators; natural resource agency staff; state education agency content and assessment experts; students; parents; business leaders; and tribal and other community partners.

- **The Plan includes history and background on environmental and sustainability education in Washington State.**

- The plan compels action towards an innovative 21st century education that Washington is uniquely poised to model.

- **The Plan includes six forward-thinking and attainable 10-year goals.**

GOAL 1 – Lifelong Learning and Community Connections

The community surrounding the K-12 system supports students' environmental and sustainability literacy. Environmental and sustainability education resources and opportunities are available to all and accessed by many people in Washington State, from the youngest children to senior citizens.

GOAL 2 – Learning Standards, Content Areas, Courses, and Instructional Materials

School districts, schools, and teachers in Washington State have the necessary resources to support integrated environmental and sustainability education learning opportunities for each student.

GOAL 3 – Graduation Requirements

All students in Washington State have the opportunity to graduate from high school with proficiency in environmental and sustainability literacy and are prepared to continue their education and/or enter related careers.

GOAL 4 – Professional Development

A comprehensive environmental and sustainability education professional development program addressing the needs of informal and formal educators is developed and implemented in Washington State.

GOAL 5 – Assessment System

Multiple assessments, including summative and formative assessment processes, are used to measure students' environmental and sustainability literacy and inform teaching and learning.

GOAL 6 – Implementation and Funding

Obtain ongoing diversified funding to implement, track, measure, and manage the Washington State Environmental and Sustainability Literacy Plan.

- **The Plan includes a “theory of change” for each goal area.**
 - The theory of change statement in each goal area articulates the underlying assumptions that were made as to why the strategies will achieve the desired goals and outcomes. The theory of change shows a causal pathway from action to outcome.

- **The Plan includes outcomes and key strategies in each of the six goal areas.**
 - To ensure that the Plan would be realistic, attainable, and transformational, the steering committee developed a set of criteria to guide the development of the Plan's outcomes and strategies.
 - Upon completion and approval of the Plan, a detailed work plan will identify key leaders, steps, methods of measurement, and a timeline to guide step-by-step adaptive management and achievement of the outcomes and strategies.

- **The Plan includes the use of Systems Thinking perspectives and tools.**
 - The Plan reflects the efforts of the E3 (Education, Environment, Economy)¹ initiative to link educators and systems thinkers in order to bring environmental and sustainability education to scale.
 - A systems thinking perspective can help decision-makers better understand the system and its complexity resulting in resilient, responsive, and effective policies.

¹ E3 Washington: Education-Environment-Economy is the leading initiative of EEAW which is in the process of transitioning its organization name to “E3 Washington.”

I. Introduction

2021 Vision for Environmental and Sustainability Literacy

Excellent and relevant environmental and sustainability education for each student, in and outside of school, at all grades.

Background and Purpose

The Office of Superintendent of Public Instruction (OSPI) and the Environmental Education Association of Washington (EEAW)² led a multi-stakeholder group in the development of the Washington State Environmental and Sustainability Literacy Plan (Plan). The purpose of the Plan is to build on and leverage the environmental and sustainability education³ (ESE) programs and initiatives already underway in Washington State; ensure that students in Washington have ample opportunities to increase their environmental literacy and enhance their academic achievement through innovative, real-world, project based learning; and lastly, to ensure that Washington State is well-positioned to obtain private and public funding to support this important work.

I promise we will be a committed partner in the national effort to build a more environmentally literate and responsible society. The Obama administration is making an unprecedented commitment to promote a well-rounded education for our children. And for the first time, we are proposing that environmental education be part of that well-rounded education.

~ U.S. Secretary of Education, Arne Duncan, Sustainability Education Summit, Washington, DC, Sept. 2010

This is an opportune time to develop and implement the Plan. On the national front, environmental and sustainability education is recognized by the White House and U.S. Department of Education as an essential aspect of student learning in the 21st century. Environmental literacy is included in the President's blueprint for the reauthorization of the federal Elementary and Secondary Education Act (ESEA) as a key component of a "Well-Rounded Education." The first ever national Sustainability Education Summit was held in Washington, DC in 2010.

Furthermore, proposed "No Child Left Inside" (NCLI) federal legislation would ensure that students graduate from high school prepared with the knowledge and skills necessary to be ready for college and 21st century careers in the emerging "green" economy, and advance the

health of youth through outdoor and environmental education opportunities. In the private sector, the Partnership for 21st Century Skills has identified "Environmental Literacy" as a 21st century interdisciplinary theme along with global awareness, financial literacy, civic literacy, and health

² EEAW is Washington's professional association for educators and stakeholders supporting life-long learning in environmental, sustainability and systems education.

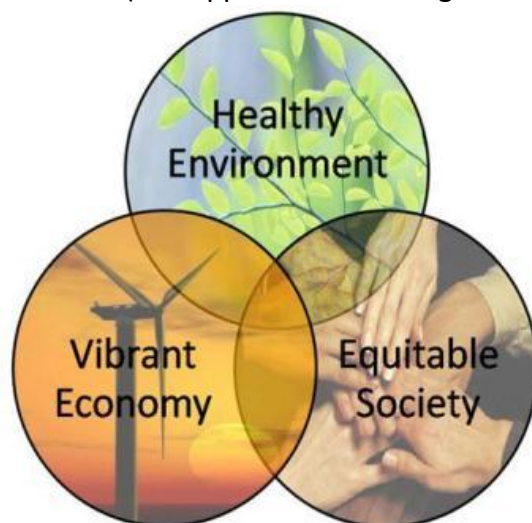
³ In Washington State, environmental education and education for sustainability are combined into one common framework that incorporates the goals and tenants of these closely related fields. Additionally, the key concepts involved in the interdisciplinary field of Systems Thinking are incorporated into Washington's initiatives that support learning in environmental and sustainability education.

literacy.⁴ Clearly, environmental and sustainability education is at the forefront of innovation and excellence in education in both the public and private sectors.

The Plan was developed in order to position Washington State to leverage financial and other resources for a world-class education for all students. Specifically, the NCLI proposed legislation, as well as the President’s blueprint for the reauthorization of ESEA, have within them a requirement for states to prepare a State Environmental Literacy Plan. (See Appendix A for Proposed NCLI requirements for State Environmental Literacy Plans). While the primary focus of the Washington State Environmental and Sustainability Literacy Plan is to provide a roadmap to attain the 2021 goals for statewide environmental and sustainability literacy, the Plan will also well-position Washington State for obtaining federal, state, and local funding in the growing effort to systemically infuse environmental and sustainability education into Washington State’s education system.

The Washington State Environmental and Sustainability Literacy Plan builds upon and is a critical step in implementing the goals and strategies of the E3 Washington⁵ comprehensive plan, completed in 2010, to “create a system of education for sustainable communities”. (See Appendix B for the goals of the E3 Washington Statewide Comprehensive Plan.) The Washington State Environmental and Sustainability Literacy Plan focuses on the PreK–12 arena and provides specific outcomes and strategies to ensure that students in Washington State have ample opportunities throughout their school experience to become environmentally and sustainability literate.

Since significant work has already taken place in Washington State, the intent of the Plan is to leverage existing national and state policies, programs, and resources. The Plan offers Washington educators the opportunity to make further progress in implementing the E3 Washington goals and strategies, especially those targeted toward PreK–12 education. The E3 Washington strategies that have already been achieved provide the necessary infrastructure, along with pre-existing laws and initiatives, for the successful implementation of this Plan.



Environmental and Sustainability Literacy Defined in Washington State

In 2009, OSPI adopted Washington State K–12 Integrated Environmental and Sustainability Learning Standards.⁶ Therefore, the work of determining the knowledge, skills, and competencies of an environmentally and sustainability literate student has already taken place in Washington State. This Plan aligns with and supports the implementation of the learning standards. (See Section III. of the Plan for the content of the Washington K–12 Integrated Environmental and Sustainability Learning Standards.)

⁴ Partnership for 21st Century Skills, http://www.p21.org/index.php?option=com_content&task=view&id=57&Itemid=120

⁵ E3 Washington: Education-Environment-Economy is the leading initiative of EEAW which is in the process of transitioning its organization name to “E3 Washington.”

⁶ <http://www.k12.wa.us/EnvironmentSustainability/Standards/default.aspx>

Status of Environmental and Sustainability Education in Washington State

Washington State has a long and rich history of leadership in education, including many “firsts” in environmental and sustainability education on a national scale. The Plan builds on this rich history and the innovations that have taken place in Washington State over the past 100 years. Some of the

Table 1: Highlights of Environmental and Sustainability Education in Washington State

1930s	Cleveland High School (Seattle Public Schools) begins conservation education program
1940s	Outdoor residential programs at Snohomish Camp Silverton-Waldheim and Camp Waskowitz
1960s	Governor’s Conference on Environmental Education (EE) creates EE Advisory Group
1970s	OSPI develops first Environmental Education Guidelines
1980s	Association of Washington School Principals begins outdoor education program at Cispus Learning Center
1990s	State Legislature creates legal authority for environmental, conservation, and natural resource education
2003	Legislature establishes Washington Natural Science, Wildlife and Environmental Education Partnership Grant Program (House Bill 1466)
2004	Pacific Education Institute established to provide ESE resources in partnership with natural resource agencies and industries
2006	Legislature directs OSPI to prepare a report on EE effectiveness for student learning (House Bill 2910) E3 Washington initiative is funded and launched
2007	Legislature establishes the Washington State No Child Left Inside Grant Program (Senate Bill 1677)
2009	OSPI adopts K–12 Integrated Environmental and Sustainability Learning Standards
2009	Professional Educators Standards Board establishes ESE Specialty Endorsement
2010	E3 Washington establishes statewide network and develops Comprehensive Plan
2011	OSPI adopts Washington State Environmental and Sustainability Literacy Plan

policies, programs, and initiatives started in Washington State are highlighted in Table 1.

Washington State continues to be a national leader in environmental and sustainability education. There is a strong ethic of environmental stewardship in Washington that is rooted in lifelong learning. There are over 50 active environmental learning centers across the state, managed by a variety of institutions including state parks, municipal organizations, and state and local education agencies.⁷

Located within the state are three national parks (Olympic, Mount Rainier, and North Cascades); significant bodies of water including the Pacific Ocean, Puget Sound, and the Columbia River; and nine ecological regions including the Northwest Coast, Puget Trough, North, West, and East Cascades, Okanogan, Canadian Rocky Mountains, Blue Mountains, and the Columbia Plateau.

Figure 1: Washington’s Ecoregions



⁷ A database of environmental learning centers in Washington State can be found on the E3 Washington website at www.e3washington.org

Washington is home to several internationally-recognized businesses, industry, and foundations with a sustainability focus or interest including Boeing, REI, McKinstry, Puget Sound Energy, Weyerhaeuser and Starbucks, in addition to major funders of education innovation such as the Bill and Melinda Gates Foundation.

Some of the nation’s premier education research institutions are located within the state, including the University of Washington’s Learning in Formal and Informal Environments (LIFE) Center, the foremost producer of literature and evaluation around learning science and informal⁸ learning, and the Pacific Education Institute, a non-profit education organization that conducts research on standards-based integrated environmental project-based learning.

As a result of the E3 Washington initiative, 18 distinct regions (see appendix A for E3 Washington regions) with multi-stakeholder education leadership teams were developed. This regional network incorporates existing networks that preceded E3 Washington and together form a “delivery system” capable of efficiently scaling the Plan goals and objectives.

Washington State is well-situated to be a leader in environmental and sustainability literacy. Unique geographic characteristics and outdoor education opportunities intersect with business, industry, and community connections for sustainability and environmental stewardship. Education policies and research are rich and vibrant. Simply put, Washington has an established infrastructure to move ahead with purpose and effectiveness.

Development Process of the Washington State Environmental and Sustainability Literacy Plan

OSPI and E3 Washington shared leadership in the development of the Washington State Environmental and Sustainability Literacy Plan. A steering committee of statewide stakeholders representing classroom teachers, school administrators and directors, teacher educators, regional professional development providers, informal educators, natural resource agencies, state education agency content and assessment experts, students, parents, business leaders, and community partners provided guidance and input on the Plan.

Criteria for the Development of Outcomes and Strategies of the Washington State Environmental and Sustainability Literacy Plan:

- Leverages existing policies, programs, and initiatives.
- Inspirational and transformational for schools, teachers, and students.
- Based on current learning research.
- Realistic, achievable, flexible, and adaptable to changing situations.
- Clear, specific, and measurable.
- Includes multiple stakeholders in development and implementation.
- Addresses the unique needs of local communities and geographic regions of the state.
- Proven to, or has potential to, improve student achievement and support environmental and sustainability literacy of all students with a special emphasis on under-represented students.

⁸ In this Plan, the term “Informal” refers to learning opportunities that are not part of the formal education system; also referred to as “non-formal” in the field of environmental and sustainability education.

The steering committee developed the Plan vision and a set of criteria for the development of outcomes and strategies in the Plan. The committee wrote and reviewed sections of the Plan and vetted the draft Plan with stakeholder groups. Broad statewide input was gathered through focus groups and an online survey, ensuring that the Plan represents the range of expertise and perspectives unique to Washington State. The final Washington State Environmental and Sustainability Literacy Plan was adopted for implementation by the Superintendent of Public Instruction in July 2011.

Structure of the Washington State Environmental and Sustainability Literacy Plan and Use of Systems Thinking Tools and Perspectives

The Plan includes outcomes and key strategies in each of the six goal areas. A “theory of change” is included for each goal area articulating the underlying assumptions that were made as to why the strategies will achieve the desired goals and outcomes. Upon completion and approval of the Plan, a detailed work plan will identify key leaders, steps, methods of measurement, and a timeline to guide step-by-step adaptive management and achievement of the outcomes and strategies.

Systems Thinking perspectives and tools were used to guide the development of the Plan, reflecting the efforts of the E3 (Education, Environment, Economy) initiative to link educators and systems thinkers in order to bring environmental and sustainability (ES) education to scale. A systems thinking perspective can help decision-makers better understand the system and its complexity resulting in resilient, responsive, and effective policies. The behavior-over-time graph in Figure 2 depicts potential desired and undesired results of the Plan’s implementation. The causal loop diagram in Figure 3 is a causal loop diagram illustrating the Plan’s comprehensive theory of change, interrelating each of the goals and indicating what can be done to achieve the desired results depicted in the behavior-over-time graph.

The causal loop diagram omits explicit pressures that may arise to obstruct the Plan, as well as the long delays that occur in teacher education, professional development, and students’ time progressing through school. Implementation of the Plan will entail continued use of systems thinking tools to identify programs and policies to account for these delays and mitigate these pressures.

Figure 2: Behavior-Over-Time Graph of Potential Outcomes of Plan Implementation

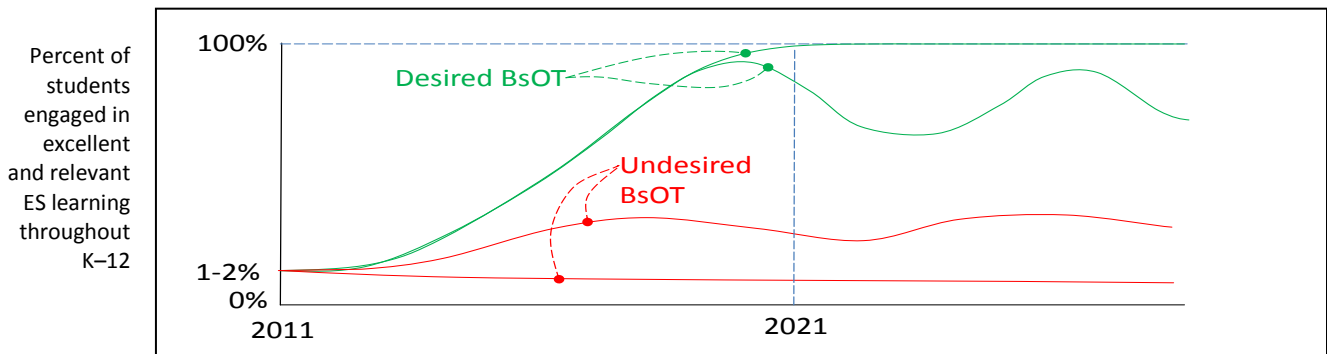


Figure 3: Washington Environmental and Sustainability Literacy Illustrated as a System⁹

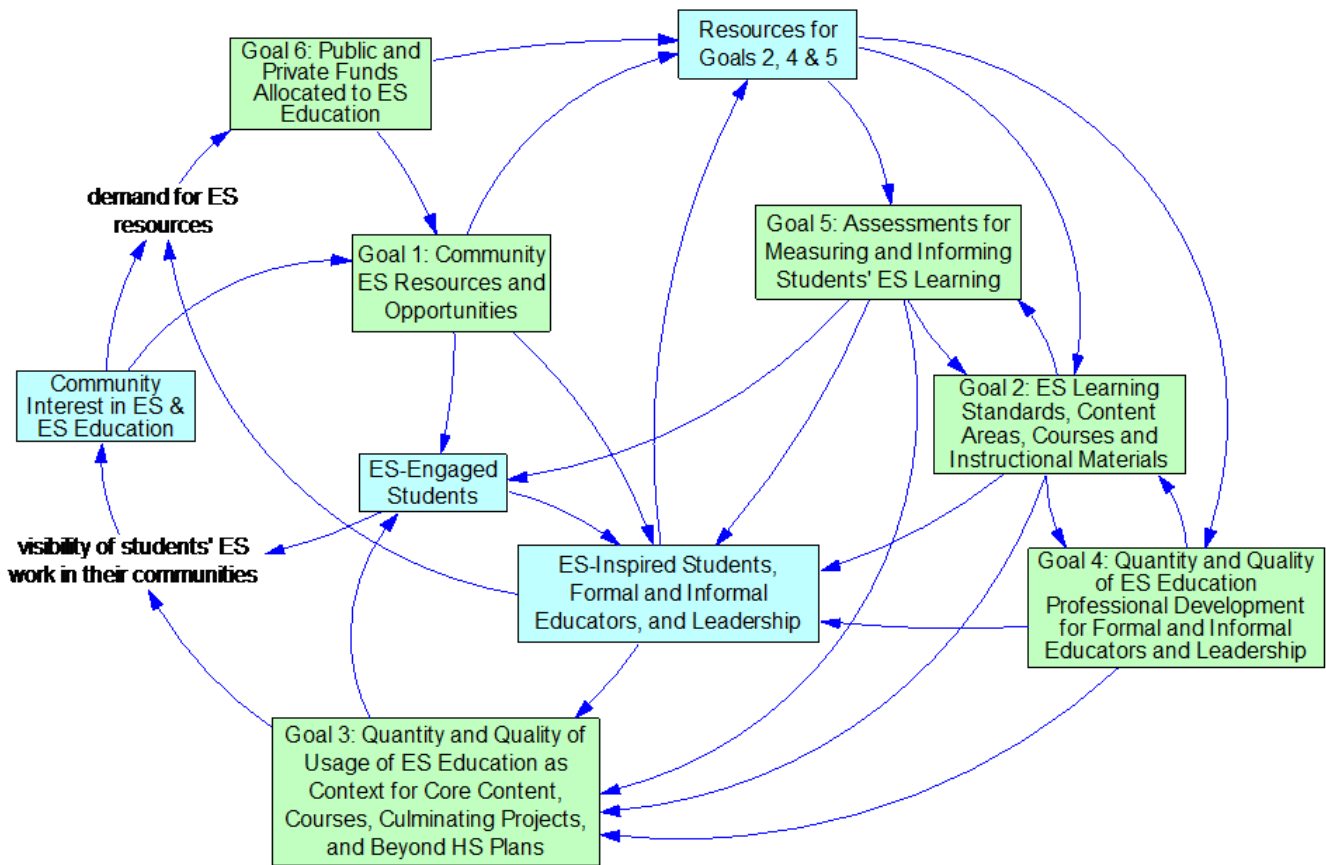


Figure 3 Legend: The causal loop diagram represents the Plan’s comprehensive high-level “theory of change” strategy. The arrows indicate causal relationships, that is, a change in the value of the variable at the tail of an arrow “causes” a change in the value of the variable at the head of that arrow. The boxes signify variables that have a significant degree of persistence over time; they tend to maintain their values and not change significantly over short periods. The green boxes are persistent variables related to the above-stated goals, and the blue boxes are other persistent variables that are important for understanding the plan’s theory of change. See Appendix D for a more detailed explanation (reveal) of the causal loop diagram.

⁹ Causal loop diagrams are from the field of system dynamics, a perspective and a set of conceptual and simulation tools for strategy analysis. Using existing knowledge, causal loop diagrams show why social and physical systems behave the way they do. They help people build progressively richer understandings of dynamic problems, and anticipate weaknesses in strategy initiatives over time. They portray a ‘feedback’ perspective - the realization that tough dynamic problems arise in situations with multiple pressures and perceptions that interact to form loops of circular causality, rather than simple one-way causal chains.

II. Goal 1: Lifelong Learning and Community Connections

Background

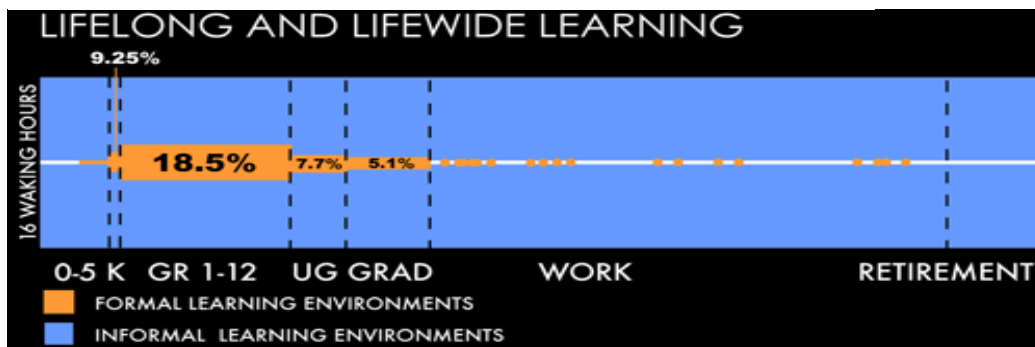
Environmental and sustainability concepts provide an excellent context for learning, from the youngest children to senior citizens, as well as in the informal (out-of-school) environment. Lifelong learning integrates early childhood, K–12 teacher education (in-service and pre-service), and adult education through an articulation of developmental, conceptual, and applied pathways between age groups and across formal and informal learning experiences.

As represented in Figure 4¹⁰, just over 18 percent of a person's learning is actually spent in the formal school environment over his or her lifetime. Some studies find that it is even less, with just five percent of a person's lifetime spent in school.¹¹ In any case, it is clear that attending to this out-of-school time is an essential aspect of learning and an excellent opportunity for enhancing environmental and sustainability literacy.

GOAL 1 Lifelong Learning and Community Connections

- 1.1 The community surrounding the K–12 system supports students' environmental and sustainability literacy.
- 1.2 Environmental and sustainability education resources and opportunities are available to all and accessed by many people in Washington State, from the youngest children to senior citizens.

Figure 4: The LIFE Center Lifelong and Lifewide Learning Diagram

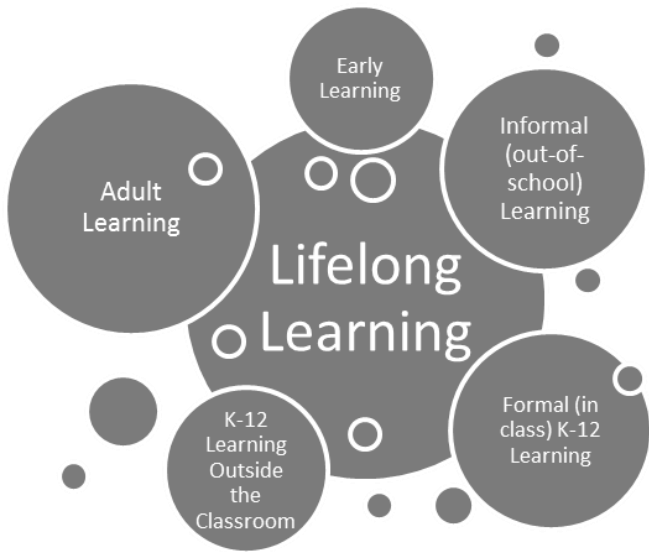


¹⁰ (LIFE Center: Stevens, R. Bransford, J. & Stevens, A., 2005). "The LIFE Center's Lifelong and Lifewide Diagram". (LIFE) Center (<http://life-slc.org>). Graphic design, documentation, and calculations were conducted by Reed Stevens, with key assistance from Anne Stevens (graphic design) and Nathan Parham (calculations). FIGURE legend: Estimated time spent in school and informal learning environments. Note: This diagram shows the relative percentage of their waking hours that people across the lifespan spend in formal educational environments and other activities. The calculations were made on the best available statistics for a whole year basis on how much time people at different points across the lifespan spend in formal instructional environments. (Reproduced with permission of The LIFE Center.)

¹¹ The 95% Solution, Falk and Dierking, American Scientist, 2010

In an effort to avoid duplication of existing plans, such as the 2010 E3 Washington Statewide Comprehensive Plan, that include outcomes and strategies for informal and adult learning, this

section focuses specifically on opportunities that take place outside of the formal K–12 system, but that support student K–12 learning. The remainder of the Washington State Environmental and Sustainability Literacy Plan focuses on the formal K–12 system.



Early Learning – Birth to Grade 3

Washington State has a strong and growing statewide system supporting early learning led by the Washington State Department of Early Learning (DEL), the non-profit organization, Thrive by Five Washington, and OSPI. This formal statewide partnership, along with numerous other key stakeholders, recently developed a Washington State Early Learning

Plan to serve as a roadmap for building an early learning system and that focuses on early learning actions to support children birth to Grade 3.

Developing environmental and sustainability literacy should begin at birth. It serves as a meaningful context for young children’s exploration and understanding of the natural world and as a context for learning in general (e.g., reading, writing, math, and science). Aligning environmental and sustainability education programs with the Washington State Early Learning Plan and providing resources to early learning educators are important steps in ensuring that young children have a foundation for environmental and sustainability literacy.

Community Connections and Informal (Out-of-School) Learning

Washington is fortunate to have numerous community partners who support environmental and sustainability learning in the PreK–12 arena. From businesses and industry with an interest in sustainability to community-based organizations focused on social, ecological, and economic health, these community partners are a critical element in supporting the PreK–12 system. Nurturing these connections and helping partners connect with schools, teachers, and students in mutually beneficial ways is an important strategy of this Plan.

THEORY OF CHANGE Lifelong Learning and Community Connections

If the community surrounding the PreK–12 system has access to environmental and sustainability education opportunities and provides support to the PreK–12 system, then students’ environmental and sustainability literacy will increase.

Informal out-of-school learning takes place in a variety of settings from ocean beaches to local streams, from urban parks to wilderness areas, and from museums to landfills. Washington State has

a multitude of high-quality informal learning opportunities and programs including public and non-profit outdoor learning centers, museums, zoos, and aquariums, and after-school programs. Environmental and sustainability content is sometimes the intentional focus of these programs, or in some cases it serves as a meaningful context for programming. However, not all areas of the state have adequate access to informal programs. Specifically, some of the geographically remote areas of the state lack adequate informal learning centers. Supporting existing programs and growing informal resources in areas of the state that are underserved will ensure that Washington's students have ample opportunity to build their environmental and sustainability literacy in the informal environment.

Adult Learning

Environmental and sustainability literacy does not end at 12th grade. Existing opportunities for environmental and sustainability literacy in our state are available through community colleges, government programs, community-based environmental and sustainability organizations, and universities (e.g., WSU Extension, AmeriCorps, Earth Corp, and SeniorCorp). Furthermore, adults can play an important role in the development and support of environmental and sustainability literacy in the PreK–12 system. For example, adults can serve as tutors, role models, and mentors for PreK–12 students. An especially effective strategy for engaging students from diverse backgrounds is to have adult role models from the same ethnic group as the students they are serving.

While Washington has many opportunities for adults to continue to develop, enhance, and act on their environmental and sustainability literacy, these opportunities are not always made available to everyone in Washington State, especially in a locally-relevant setting. Providing information about existing environmental and sustainability resources for adult learners, encouraging the development of new resources in underserved areas, and providing ways for adults to support PreK–12 student learning are important strategies of this Plan.

Table 2

Goal 1 Outcomes and Strategies

Outcomes	Strategies
Early Learning	
<p>1. Early Learning programs embed environmental and sustainability education into their teaching and learning curriculum.</p>	<p>1.1 Align environmental and sustainability education programs with the Early Learning Plan.</p> <p>1.2 Develop a crosswalk document between existing Early Learning Developmental Benchmarks and the Washington K–12 Integrated Environmental and Sustainability Learning Standards. Provide input on any future revision of Early Learning Developmental Benchmarks to include environmental and sustainability concepts and opportunities.</p> <p>1.3 Identify existing, develop new, and disseminate lessons and activities for early learning programs (e.g., preschools, day care centers, Head Start, ECEAP¹², and kindergarten) that embed environmental and sustainability education into existing activities (e.g., lessons based on story books and songs used in early learning programs).</p>
<p>2. All families have easy and affordable access to age-appropriate indoor and outdoor play areas, parks, natural areas, and learning facilities such as zoos, aquariums, nature centers, and arboretums.</p>	<p>2.1 Identify and map indoor and outdoor play areas, parks, natural areas, and learning facilities in Washington State. Disseminate this information to families using culture and language appropriate materials.</p>
<p>3. Young children are spending time learning and playing outdoors both at early learning centers and at home.</p>	<p>3.1 Provide support and resources to integrate environmental and sustainability education into community and parent-based early learning programs (e.g., library literacy programs, Reach Out and Read, and Thrive by Five’s Culture of Literacy program).</p>

(Continued on next page)

¹² ECEAP (pronounced "E-Cap") is the Early Childhood Education and Assistance Program funded by Washington State. Head Start is funded by the federal government.

Table 2 (Continued)

Goal 1 Outcomes and Strategies

Outcomes

Strategies

Community Connections/Informal Learning

4. All Washington children have access to high quality informal learning environments.

4.1 Populate and promote the E3 searchable database as a resource for finding high quality informal programs.
4.2 Determine where gaps exist in the state and build support for the development of new informal resources in areas of the state that are underserved.

5. Communities and schools collaborate to build environmentally sustainable communities.

5.1 Develop and promote Asset Based Community Development (ABCD) tools so that schools and communities can find each other and work together.

Adult Learning

6. Adults in Washington State continue to development, enhance, and act on their environmental and sustainability literacy.

6.1 Market existing environmental and sustainability education resources for adult learners and encourage the development of new culturally-appropriate resources for underserved populations and areas of the state.

7. Adult learners participate in volunteer environmental and sustainability activities and stewardship that are specifically focused on supporting PreK–12 learning.

7.1 Provide information and resources, specifically connected to PreK–12 learning, to support environmental and sustainability related volunteer opportunities for adults.
7.2 Target adult volunteer opportunities in diverse communities to ensure that volunteers represent the demographics of the student they are serving.

III. Goal 2: Learning Standards, Content Areas, Courses, and Instructional Materials

Background

Standards and Content Areas

In 2009, OSPI adopted Washington State K–12 Integrated Environmental and Sustainability Learning Standards describing what all students should know and be able to do to be environmentally and sustainability literate. Consistent with the intent of the law governing environmental education in Washington State, these standards are intended to be integrated into core content areas and across all grade levels.¹³

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.

GOAL 2 Learning Standards, Content Areas, Courses, and Instructional Materials

School districts, schools, and teachers in Washington State have the necessary resources to support integrated environmental and sustainability education learning opportunities for each student.



The Washington State K–12 Integrated Environmental and Sustainability Learning Standards include a detailed alignment of the three standards with Washington K–12 science and social studies learning standards. Environmental and sustainability education also serves as a meaningful and engaging context for mathematics, reading, writing, communications, the arts, health and fitness, and world

¹³ WAC 392-410-115, Subsection (6): 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.

languages. To identify areas of integration, the standards document includes a broad-scale alignment with these other important content area standards. The complete Washington State K–12 Integrated Environmental and Sustainability Learning Standards, which includes background and context for each standard as well as the alignments with core content standards, can be accessed on the OSPI website.¹⁴

Washington State has established content learning standards in all subject areas. However, because of the recent multi-state development and adoption of the Common Core State Standards (CCSS) in English Language Arts (ELA) and Mathematics, the standards landscape in the state (and across the country) is rapidly changing. In 2010, the National Research Council of the National Academies of Science published a draft Conceptual Framework for Science Education. The Conceptual Framework is being used to inform the development of the “Next Generation Science Standards” (similar to the CCSS for ELA and mathematics). There is the potential for Common Core State Standards in

other subject areas, as well. A strategy of this Plan to promote environmental and sustainability literacy is to ensure that these concepts are integrated into any newly developed standards, as appropriate.

Courses and Instructional Materials

In the elementary grades, integration of environmental and sustainability education across content areas can more naturally occur because a single teacher typically teaches all of the subject areas. Environmental and sustainability concepts can be integrated into robust literacy instruction, through the use of quality children’s literature and writing experiences. Using the lens of sustainability and environment, science and social studies standards can be strengthened when implementing district adopted curricula, guided by the principles of place-based and experiential education. Sustainability is often used as a context for learning around a theme such as food and gardens, ecosystems, and campus sustainability.

Because Washington is a “local control” state, specific courses meeting state standards are determined by districts. Examples of current middle and high school courses that support environmental and sustainability literacy include: Advanced Placement (AP) Environmental Science; AP Human Geography; Integrated Science; and Career and Technology Education (CTE) Green Sustainable Design and Technology.

Exemplary models of interdisciplinary environmental and sustainability courses across all grades do exist, some of which are captured in OSPI’s “Stories from the Field” document that can be accessed

THEORY OF CHANGE **Learning Standards, Content** **Areas, Courses, and** **Instructional Materials**

If school districts, schools, and teachers in Washington State have the necessary resources to support integrated environmental and sustainability education learning opportunities for each student, then the environmental and sustainability literacy of our students will increase significantly.

¹⁴ <http://www.k12.wa.us/EnvironmentSustainability/Standards/default.aspx>

on the OSPI website.¹⁵ However, a more comprehensive database of exemplary courses would benefit districts looking to offer integrated courses in environmental and sustainability education.

A wide range of local, regional, state and national environmental and sustainability instructional resources are available to teachers, many of which can be found on the E3 Washington online searchable directory. A few examples of these include:

- OSPI-developed (e.g., the *Sustainable Design Project* and *Since Time Immemorial: Tribal Sovereignty in Washington State*)
- Other state materials and programs (e.g., Washington Green Schools, Department of Ecology’s *Hazards on the Homefront*, and Puget Sound Clean Air Agency’s *Cool School Challenge*)
- Non-profit materials (e.g., Facing the Future’s *Global Sustainability* curricula, Homewaters’ science kit extensions, Washington Foundation’s *NatureMapping Program*, and Pacific Education Institute’s *Field Investigations* and *Project-Based Learning Model*)

Some, but not all, environmental and sustainability resources have undergone a Science Supplement Instructional Materials Review conducted in 2009 by OSPI.¹⁶ Conducting a comprehensive instructional materials review of available environmental and sustainability instructional materials would assist districts and educators in identifying high quality, aligned materials.

Table 3	
Goal 2 Outcomes and Strategies	
Outcomes	Strategies
<p>1. The Washington State K–12 Integrated Environmental and Sustainability Learning Standards are up-to-date, accessible, and aligned with Common Core State Standards, as they are developed.</p>	<p>1.1 Review and update the Washington State K–12 Integrated Environmental and Sustainability Learning Standards every five years (next update in 2014).</p> <p>1.2 Align the Washington State K–12 Integrated Environmental and Sustainability Learning Standards with common core and other “national” standards as they are adopted in Washington State.</p> <p>1.3 Upload the Washington State K–12 Integrated Environmental and Sustainability Learning Standards to OSPI online grade level resources.</p>
<i>(Continued on next page)</i>	

¹⁵ <http://www.k12.wa.us/EnvironmentSustainability/Curriculum/Examples.aspx>

¹⁶ <http://www.k12.wa.us/CurriculumInstruct/InstructionalMaterialsReviewScience.aspx>

Table 3 (continued)

Goal 2 Outcomes and Strategies

Outcomes	Strategies
2. Teachers are aware of and use the Washington State K–12 Integrated Environmental and Sustainability Learning Standards.	2.1 Conduct targeted outreach to teachers through regional Educational Service Districts (ESDs).
3. School board directors, parents, district administrators, and principals are aware of and support the integration of environmental and sustainability concepts into core content areas.	3.1 Develop and implement an Environmental and Sustainability Education Outreach Plan for school board directors, PTAs, and district and school administrators.
4. Educators have access to high-quality environmental and sustainability instructional materials that can be integrated into currently used science, social studies, career and technical education (CTE) and other content area curricula.	4.1 Develop and disseminate a tool-kit of resources and professional development on embedding environmental and sustainability education into core content areas and district adopted curricula. 4.2 Partner with Washington State LASER on developing and disseminating embedded environmental and sustainability concepts in existing high-use science instructional materials. 4.3 Work with the Geographic Literacy Alliance of Washington to embed environmental and sustainability concepts into geography materials, professional development, and courses. 4.4 Provide support (e.g., instructional materials, professional development, and an online network) to CTE teachers for the Green Sustainable Design and Technology course. 4.5 Conduct an Environmental and Sustainability Education Instructional Materials Review.
5. Districts offer in-depth courses in environmental and sustainability concepts.	5.1 Create a database of exemplary environmental and sustainability project-based courses and programs.

IV. Goal 3: Graduation Requirements

Background

All Washington State public high school students are required to meet statewide graduation requirements in order to earn a diploma. Two entities establish statewide graduation requirements: The State Board of Education (SBE) and the Legislature. SBE establishes minimum credit requirements, the Culminating Project, and the High School and Beyond Plan. The Legislature establishes the assessments required for graduation, which the Superintendent of Public Instruction is responsible for implementing and administering. Any changes to graduation requirements that have fiscal impact can proceed only if the Legislature authorizes and funds them.

GOAL 3 Graduation Requirements

All students in Washington State have the opportunity to graduate from high school with proficiency in environmental and sustainability literacy and are prepared to continue their education and/or enter related careers.

After three years of study, SBE approved new graduation requirements in November 2010. The table below summarizes current and newly-approved graduation requirements in Washington State.

Table 4: Washington State Current and Approved Graduation Requirements

Requirements	Class of 2011-12	Class of 2013 and beyond	To be implemented when funded by the Legislature
Earn High School Credits	19 HS Credits: 3 English 2 Math 2 Science (1 must be a lab) 2.5 Social Studies 1 Arts 2 Health and Fitness 1 Occupational Ed 5.5. Electives	20 HS Credits: 3 English 3 Math 2 Science (1 must be a lab) 2.5 Social Studies 1 Arts 2 Health and Fitness 1 Occupational Ed 5.5 Electives	24 HS Credits: Mandatory 4 English 3 Math 3 Science (2 must be a lab) 3 Social Studies 1 Arts 1 Occupational Ed 0.5 Health 1.5 Fitness Student Choice 1 Arts 2 World Languages 2 Career Concentration 2 Electives
Pass State Assessments or Approved Alternatives	✓ Reading and Writing ✓ Math <u>or</u> earn credit in two additional math courses beyond sophomore year	✓ Reading and Writing ✓ 1 Math end-of-course exam (2 Math end-of-course exams beginning in the class of 2015) ✓ (1 Science end-of-course exam beginning in the class of 2015)	
Complete a Culminating Project	✓	✓	
Complete a High School and Beyond Plan	✓	✓	

Course Credits and Connections to Environmental and Sustainability Literacy

As previously mentioned, in Washington State environmental and sustainability education is mandated (WAC 392-410-115, Subsection 6) to be an interdisciplinary context for learning in core content areas. Therefore, it is not recommended that there be a separate course/credit graduation requirement in environmental and sustainability education. There are many opportunities however, to ensure that environmental and sustainability education is appropriately incorporated into existing core content classes. Additionally, some existing elective classes include opportunities for students to study environmental and sustainability issues in-depth. Developing and supporting additional electives around environmental and sustainability concepts is a strategy of this Plan.

The Culminating Project and Connections to Environmental and Sustainability Literacy

The Culminating Project is an experiential, hands-on project that gives students a formal opportunity to demonstrate in a variety of ways their learning competencies related to Washington's Basic Education learning goals three and four (RCW 28A.150.210):

- Goal 3: Think analytically, logically, and creatively, and integrate experience and knowledge to form reasoned judgments and solve problems.
- Goal 4: Understand the importance of work and how performance, effort, and decisions directly affect future career and educational opportunities.

Environmental and sustainability issues often serve as the content of students' Culminating Projects, and are perfect as a focus. For example, students have developed school rain gardens, protected wetlands, and designed sustainable buildings as their Culminating Projects. Resources from local organizations such as the Pacific Education Institute¹⁷ support environmentally-focused Culminating Projects. A strategy of this Plan is to extend support resources like these and highlight high quality examples to help build and demonstrate students' environmental and sustainability literacy.

High School and Beyond Plan and Connections to Environmental and Sustainability Literacy

The High School and Beyond Plan is a formal process designed to help students think about their future and select course work that will best prepare them for their post high school goals. Students create their High School and Beyond Plans in cooperation with parents/guardians and school staff. Ideally, students write their plans in eighth or ninth grade and then continue to revise them throughout high school to accommodate changing interests or goals.

Environmental and sustainability literacy can be demonstrated through a student's High School and Beyond Plan and conversely, it can serve to inform a student's plan. For example, there are many environmental and sustainability-related

THEORY OF CHANGE Graduation Requirements

If districts, schools, and teachers have access to and use environmental and sustainability resources and models of integrated and stand-alone courses, culminating projects, and post-secondary education and career pathways, then more students will graduate from high school with environmental and sustainability literacy and be better prepared for college and careers of the 21st century.

¹⁷ <http://www.pacificeducationinstitute.org/resources/senior-projects-report/>

careers and higher education opportunities that students might choose to pursue. In order to make these connections explicit, a strategy of this Plan is to develop a resource that provides students easy access to opportunities available to them beyond high school in environmental and sustainability fields.

Table 5	
Goal 3 Outcomes and Strategies	
Outcomes	Strategies
1. Districts implement the Washington State K–12 Integrated Environmental and Sustainability Learning Standards through integration with core content courses and through specific elective courses and/or experiences.	<p>1.1 Analyze district core content course outlines to determine if and how environmental and sustainability content is incorporated. Highlight model courses and help districts upgrade courses.</p> <p>1.2 Analyze district elective course offerings to determine if in-depth study in environmental and sustainability issues is provided. Highlight model elective courses and help districts develop and upgrade existing electives.</p>
2. An increased percentage of students’ Culminating Projects demonstrate environmental and sustainability literacy.	<p>2.1 Develop a comprehensive set of existing and new resources and tools for implementing Culminating Projects that emphasize environmental and sustainability issues. This would include:</p> <ul style="list-style-type: none"> • An implementation chart showing the progression of work from Grade 9–12 • Teacher professional development • Curriculum • Model projects
3. Students have post high school information about environmental and sustainability related careers and higher education, including examples of people from diverse backgrounds in these education pathways and careers.	<p>3.1 Provide information and resources for districts on pathways and careers in environmental and sustainability areas to inform students’ High School and Beyond Plans.</p>

V. Goal 4: Professional Development

Background

To prepare students for success in 21st century life, college, and work, formal (school-based) and informal educators and leaders must participate in well-designed, ongoing environmental and sustainability education professional development. Professional development is necessary to ensure successful links between schools and community-based providers, which is one of the underlying tenets of environmental and sustainability education. These educators and leaders need the institutional support, system of incentives, and professional development to facilitate learning in environmental and sustainability education, integrate environmental and sustainability concepts into the curriculum, and connect it to existing state learning goals. Additionally, professional development, assessment, and certificates for informal community-based educators will greatly enhance the competencies and qualifications of those who provide environmental and sustainability education in the informal education arena.

GOAL 4 Professional Development

A comprehensive environmental and sustainability education professional development program addressing the needs of informal and formal educators is developed and implemented in Washington State.

Teacher Preparation

In 2007, the Washington Professional Educators Standards Board (PESB), the governing body for teacher education programs in Washington, approved new standards, referred to as Standard 5, for accredited teacher education programs. Included in these new standards is Standard 5.3.D., requiring all teacher candidates to demonstrate that they are able to prepare their students to be “responsible citizens for an environmentally sustainable, globally interconnected, and diverse society.” Standard 5 provides descriptions and guidelines for evidence of teacher practice including the expectation that teachers “seek information from multiple communities; consider student learning in the context of social, political, environmental, and economic systems.”

Twenty-one Washington colleges and universities are approved to prepare teachers for the Residency Certification, the basic license that all new teachers must earn. The process for implementing Standard 5 into existing teacher education programs offers an opportunity to embed environmental and sustainability education content and pedagogy into pre-service teacher education programs.

In 2008, PESB developed a new “Specialty Area Endorsement” which offers existing teachers and teacher candidates an additional endorsement in a specialized area. This opened the opportunity for the environmental and sustainability education community to develop and seek approval of an Environmental and Sustainability Education Specialty Endorsement. This endorsement was desired in order to ground a teacher fully in environmental and sustainability content and methods including utilization of systems thinking, project-based learning, and outdoor field studies.

In 2009, PESB approved the Environmental and Sustainability Education Specialty Area Endorsement, the first of its kind in the nation because of its focus on environmental as well as sustainability and

systems thinking education. At the time of this Plan’s publication, six teacher education institutions had been approved to offer the new endorsement and more institutions are seeking approval.¹⁸ (See Appendix C for the Core Competencies of the Environmental and Sustainability Education Specialty Endorsement.)

Teacher In-Service Professional Development

Throughout Washington State, there is a growing number of practicing teachers who have received in-service professional development in environmental and sustainability education knowledge, skills, and resources. However, an assessment of the status of teacher professional development conducted by E3 Washington found that, “Environmental education in Washington is happening in a piece-meal fashion, and in many districts it is not included in the curriculum at all. While many exciting examples can be found in special programs, individual classrooms, and across grades in some schools, environmental and sustainability education is not yet a priority in the PreK–12 curriculum or in the professional development of teachers and administrators.”

Currently, teachers can receive environmental and sustainability professional development through in-service programs provided by a variety of public and private entities. These include local, state, and federal agencies; environmental and sustainability education organizations and associations; outdoor and nature centers; and zoos, museums, aquaria, and arboretums. These offerings range from a few hours in length, to programs that span across the course of a year or two. To date, there is no fully coordinated program of teacher in-service professional development for environmental and sustainability education. The E3 Washington website searchable network directory has been developed, in part, to inventory the programs that are offered. This inventory will help state leaders and educators assess which topics, pedagogical approaches, and resources are available, overlapping, or redundant, and where there are gaps in meeting teachers’ in-service professional development needs.

In 2010, following the adoption of the Washington State K–12 Integrated Environmental and Sustainability Learning Standards, OSPI drafted a professional development plan for the implementation of the standards. Additionally, in 2005, OSPI and EEA developed draft Environmental and Sustainability Education Professional Development Guidelines.¹⁹ Finalizing and implementing the professional development plan and guidelines are important strategies of this Plan.

District and School Leadership Professional Development

School directors, principals, district superintendents, and curriculum supervisors currently receive limited or no pre-service preparation or in-service professional development in environmental and sustainability education. However, there is a small but growing cadre of schools and districts across the state with leaders in these leadership and administrative roles who value and support environmental and sustainability education. State professional development associations for educational leaders, such as the Washington State School Directors’ Association (WSSDA), Washington Association of School Administrators (WASA), and the Association of Washington School

¹⁸ <http://www.k12.wa.us/EnvironmentSustainability/ProfDev/default.aspx>

¹⁹ The draft Environmental and Sustainability Education Professional Development Guidelines can be found on the OSPI website at <http://www.k12.wa.us/EnvironmentSustainability/ProfDev/default.aspx>

Principals (AWSP) provide professional development for education leaders and are key partners in developing opportunities to include environmental and sustainability education in their offerings.

Professional Development for Informal Community Educators

Washington’s informal environmental and sustainability education providers typically facilitate learning experiences for children, youth, and adults that are either outside of the formal education setting and/or that supplement the curriculum in the formal education setting. Typical informal education field visit sites include nature centers, zoos, museums, parks, wastewater treatment facilities, or local businesses. These sites often develop programs for educators and students alike. Likewise, there are many organizations that do not have a field trip oriented site, but develop curriculum and teacher professional development programs and take these to the classroom or school setting. Either way, informal educators partner with formal educators to bring locally relevant learning for students of all ages.

THEORY OF CHANGE Professional Development

If a comprehensive environmental and sustainability education professional development program is developed and implemented in Washington State, then educators will have the skills and knowledge to effectively provide students with learning experiences both in and out of school that lead to environmental and sustainability literacy.

A gap in the area of professional development is a comprehensive program for informal educators. These educators, while they provide indispensable knowledge, learning experiences, and resources, do not currently receive the same level of professional development support or public appreciation for their role in education. Conversely, teachers, school administrators, and parents need to know that the community-based informal educators coming into schools, as well as the out-of-school experiences their children and students may be exposed to, are high quality, credible, and can effectively foster learning that enhances engagement in and learning of subject matter. As a result of the E3 Washington Statewide Comprehensive Plan, both formal and informal education leaders have begun work to develop a coordinated system of professional development for, and a program of certification of, informal educators. An Environmental and Sustainability Certification Program for Informal Educators would establish high standards and the professional qualifications of informal educators in Washington.

Table 6

Goal 4 Outcomes and Strategies

Outcomes	Strategies
Teacher and Administrator Preparation	
1. All new teachers meet Residency Certification Standard 5.3.D demonstrating competency (knowledge, skills, and dispositions) in environmental and sustainability education concepts.	1.1 Collaborate with colleges of education to define needs and provide support around implementation of Standard 5.3.D.
2. A growing number of colleges of education offer the Environmental and Sustainability Education Specialty Endorsement.	2.1 Collaborate with colleges of education to define needs and provide resources and support around implementation of the Environmental and Sustainability Education Specialty Endorsement.
3. Administrator preparation programs prepare superintendents and principals to lead their schools' efforts to incorporate environmental and sustainability education.	3.1 Collaborate with colleges of education to define needs and provide resources and support around incorporating environmental and sustainability education in superintendent and principal administrator preparation programs, including field experience with environmental and sustainability education practitioners.
In-service Professional Development	
4. Teachers and informal educators provide effective delivery of environmental and sustainability education to their respective audiences.	4.1 Finalize and implement the Environmental and Sustainability Education Professional Development Plan. Include in the Professional Development Plan use of existing networks (e.g., ESDs, LASER Alliances, OSPI content area supervisors, and Geographic Alliance) to ensure consistent and embedded delivery of the Washington State K–12 Integrated Environmental and Sustainability Learning Standards. 4.2 Finalize and make available to formal and informal educators the Environmental and Sustainability Education Professional Development Guidelines.
<i>(Continued on next page)</i>	

Table 6 (Continued)

Goal 4 Outcomes and Strategies

Outcomes	Strategies
5. School districts incorporate environmental and sustainability concepts into school curriculum, professional development, and campus operations.	5.1 Provide curriculum leaders with a menu of successful models of environmental and sustainability education embedded into what teachers are already teaching in core content areas, professional development for their teachers, and evaluation tools to measure and assess environmental and sustainability education programs. 5.2 Provide opportunities (such as observing and participating in model school district and community-based programs) for educational governance and leadership associations (e.g., WSSDA, WASA, and AWSP), school board members, superintendents, and principals to gain perspectives and competencies so they can support the integration of environmental and sustainability concepts into professional development and campus operations.
Informal Educators	
6. Informal educators have the credentials and background to deliver best practices that are grounded in both content and learning (pedagogy) research.	6.1 Provide informal educators with support (e.g., professional development, research and models) around best practices in environmental and sustainability education and learning sciences.

VI. Goal 5: Assessment System

Background

Since environmental and sustainability education is intended to be integrated into core content, its assessment should also be integrated. With states moving from state summative assessments alone to common and comprehensive assessment systems (summative and formative) that are consistent across states, it will be important for the environmental and sustainability field to be involved in, and inform where appropriate, the development of these systems. However, this alone may not provide a comprehensive assessment of students' environmental and sustainability literacy. It may be advantageous to work with other states to develop validated and common (national) comprehensive assessment resources that states could use to determine students' environmental and sustainability literacy and inform instructional practices.

On the national front, there are two federally funded, multi-state initiatives to develop common assessment systems focused on the English Language Arts and Mathematics Common Core State Standards. It is likely that a similar process will take place for science as "common" standards are developed and adopted by states.

In addition to state and national assessment systems, environment and sustainability can be a context for classroom and project-based assessments. For example, many of the OSPI-developed classroom-based assessments for social studies are developed in the context of environmental and sustainability issues. Additionally, OSPI-developed assessments in the Arts and Health and Fitness can incorporate environmental and sustainability content. Important strategies of this Plan are to develop a tool-kit of environmental and sustainability assessment models and strategies for teachers to use to inform instruction.

GOAL 5
Assessment System

Multiple assessments, including summative and formative assessment processes, are used to measure students' environmental and sustainability literacy and inform teaching and learning.

THEORY OF CHANGE
Assessment System

If core content assessments integrate environmental and sustainability literacy, then districts will intentionally teach to the Washington State K–12 Integrated Environmental and Sustainability Learning Standards. Educators will be able to measure and track the change in students' environmental and sustainability literacy and adjust their instruction.

Table 7

Goal 5 Outcomes and Strategies

Outcomes	Strategies
1. Where appropriate, the Washington State K–12 Integrated Environmental and Sustainability Learning Standards provide a context for Social Studies, Arts, and Health and Fitness classroom-based and performance-based assessments.	1.1 Develop a toolkit of environmental and sustainability assessment resources including example classroom- and performance-based assessments that use the Washington State K–12 Integrated Environmental and Sustainability Learning Standards as a context for the assessments.
2. State assessment data on the science standards that are aligned with environmental and sustainability concepts is used to inform instruction.	2.2 Map science assessment items to Washington State K–12 Integrated Environmental and Sustainability Learning Standards. 2.3 Track how students perform on science standards that are mapped to the Washington State K–12 Integrated Environmental and Sustainability Learning Standards and use that data to inform professional development.
3. If the Collection of Evidence (COE) alternative to the state science assessment is developed, then environmental and sustainability concepts are used as one context for the COEs.	3.1 Develop Collection of Evidence (COE) resources that focus on environmental and sustainability concepts and are aligned with the science standards.
4. National assessment systems (e.g., Smarter Balanced Assessment Consortium ²⁰) incorporate environmental and sustainability concepts, where appropriate.	4.1 Provide input to the emerging Smarter Balanced Assessment Consortium on integrating environmental and sustainability education into the assessment system for Common Core State Standards in English Language Arts and Mathematics, and other content area “common” assessments if and when they are developed.
5. Teachers use formative-assessment processes to inform their teaching of environmental and sustainability concepts.	5.1 Develop a tool-kit of effective environmental and sustainability formative-assessment strategies that include a written description of each strategy, a video of the strategy being used in a learning environment, and materials to support educators using and reflecting on the strategy in their own teaching.

(Continued on next page)

²⁰ <http://www.k12.wa.us/smarter/default.aspx>

Table 7 (Continued)

Goal 5 Outcomes and Strategies

Outcomes	Strategies
6. An optional multi-state-developed assessment of environmental and sustainability literacy is developed and available for use in Washington State to measure and track students environmental and sustainability literacy and inform instruction.	6.1 In collaboration with other states and education organizations, develop a common assessment that districts could choose to use to measure students' environmental and sustainability literacy and inform instruction.

VII. Goal 6: Implementation and Funding

Background

The Washington State Environmental and Sustainability Literacy Plan will guide the next phase of activity between OSPI, E3 Washington, and other state education regulatory agencies (e.g., SBE and PESB). This activity will involve coordinating and supporting Educational Service Districts, school districts, schools, colleges of education, state and local agencies, community and business partners, and education organizations to implement the goals and strategies of the Plan.

Funding to ensure achievement of the Washington State Environmental and Sustainability Literacy Plan goals and strategies will leverage existing programs and priorities of the state in early childhood; Science, Technology, Engineering, and Math (STEM) education; health; and green career education. Core content area learning will be enriched and assessed as PreK–12 students experience greater engagement, comprehension, and real-world applications through strategically focused and expanded environmental and sustainability education programs.

Funding, through Washington’s successful applications to public and private funding sources will establish a solid foundation for implementation of the Plan and will help to secure matching funds from public and private stakeholders. The funding and implementation strategies in the Plan will utilize applicable and current financial, social, and technological tools available to improve student learning for the 21st century. Thus, project partners will achieve greater return on investment in implementing this plan by:

- a) Working to secure matching funding needed to achieve the goals and strategies in the Washington State Environmental and Sustainability Literacy Plan in advance of passage of the No Child Left Inside Act by Congress;
- b) Creating greater coordination and effectiveness across state agencies providing grant funding to PreK–12 environmental and sustainability education providers; and,
- c) Helping advance the E3 Washington initiative to achieve a “networked systems” approach to the delivery of environmental and sustainability education across community, district, and state levels.

Public understanding of, and support for, environmental and sustainability education is strong and continues to grow. It follows that public and private funding for quality environmental and

GOAL 6 **Implementation and Funding**

Obtain ongoing diversified funding to implement, track, measure, and manage the Washington State Environmental and Sustainability Literacy Plan.

THEORY OF CHANGE **Implementation and Funding**

If Washington State obtains ongoing and diversified funding, then the goals and strategies of the Washington State Environmental and Sustainability Literacy Plan will be implemented and the outcomes realized.

sustainability education programs would also be on the rise. Washington State is fortunate to have the new organization Washington STEM, a consortium of business interests focused on supporting STEM education. The Plan supports project-based STEM education. However, given the state of the economy and the state-level budget crisis, public schools, education programs of local and state agencies, and private, nonprofit organizations have been impacted and continue to be vulnerable. Therefore, a financial plan for implementation of the Washington State Environmental and Sustainability Literacy Plan will evaluate these existing conditions and provide recommendations for innovative approaches to ensuring the continuation of existing resources and programs, as well as support for new high-quality environmental and sustainability education resources and programs.

Table 8	
Goal 6 Outcomes and Strategies	
Outcomes	Strategies
<p>1. Pursuant to proposed NCLI legislation, funding of up to \$1.0 million/year leverages \$1.0-1.5 million in matching public and private resources for a budget of up to \$2.5 million/year to achieve the Washington State Environmental and Sustainability Literacy Plan priorities.</p>	<p>1.1 Create a public/private Advisory Council to advise Plan implementation and to develop a detailed financing plan in order to raise matching funds.</p> <p>1.2 Convene a funders’ collaborative once per year to provide input to the financial plan and to help secure matching funds.</p> <p>1.3 Research all applicable federal and state public funding programs and mechanisms, as well as private foundation and corporate funding opportunities.</p> <p>1.4 Establish a grant program focused on equitable, regional fund distribution that will result in the greatest leveraging of funds to advance Washington’s program of environmental and sustainability literacy. Ensure that the grant program is structured around student achievement, accountability, fiscal responsibility, assessment, and reporting.</p>
<i>(Continued on next page)</i>	

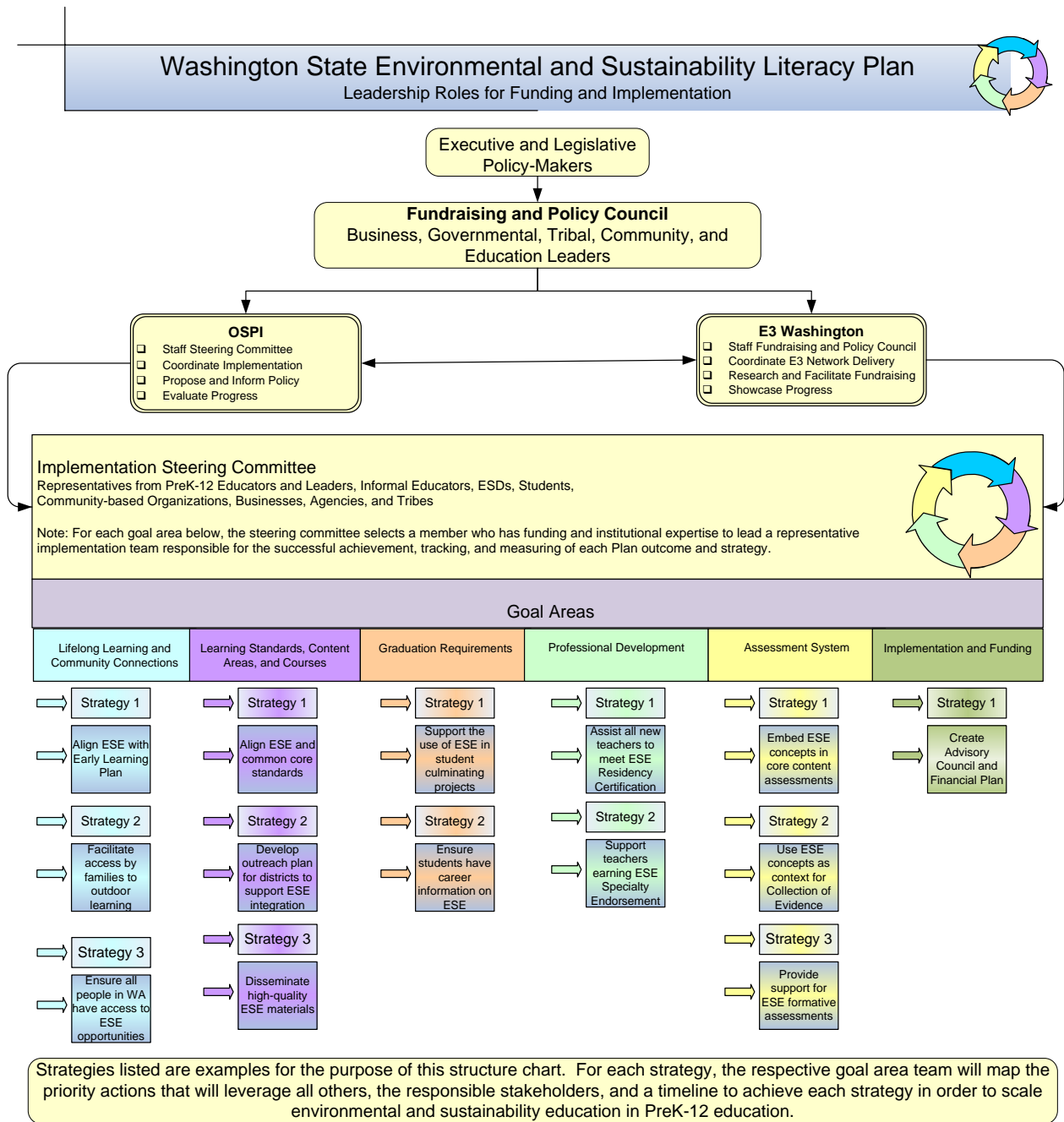
Table 8 (Continued)

Goal 6 Outcomes and Strategies

Outcomes	Strategies
<p>2. Local, regional, and state agency grant programs in Washington State that are geared to PreK–12 environmental and sustainability education are coordinated and incorporate the goals and outcomes identified in the Washington State Environmental and Sustainability Literacy Plan in their guidelines.</p>	<p>2.1 Evaluate the status of the state (OSPI) EE Partnership Grant program, Washington State Parks No Child Left Inside program, Department of Ecology’s Public Participation Grants program and any other state environmental and sustainability education grants programs for coordination, or possible consolidation in the case of some or all.</p> <p>2.2 Explore the option of developing a state interagency agreement to make the best use of state funding for PreK–12 student learning in environmental and sustainability education.</p>
<p>3. In ten years, the Washington Environmental and Sustainability Literacy Plan is fully implemented:</p> <ul style="list-style-type: none">• In-service and pre-service teachers from multiple disciplines are utilizing the Washington State K–12 Integrated Environmental and Sustainability Learning Standards and linking learning with real-world experiences.• Students’ environmental and sustainability literacy has increased.• Environmental and sustainability education organizations have established or increased their partnership with schools in the delivery of quality learning experiences.	<p>3.1 Fund a state-level (OSPI) Environmental Sustainability Program Supervisor to support and coordinate the Washington State Environmental and Sustainability Literacy Plan Implementation.</p> <p>3.2 Fully develop the logic model for each goal, strategy and outcome of the Washington State Environmental and Sustainability Literacy Plan.</p> <p>3.3 Coordinate the Statewide Advisory Council to guide the implementation of the Plan.</p>
<p>4. The goals and strategies of this Plan are monitored, evaluated, and revised for greatest impact during implementation.</p>	<p>4.1 Contract with an evaluator to evaluate the outcomes of this Plan.</p>

The chart in figure 5 below provides an overview of leadership roles for funding and implementation.

Figure 5: Organizational Chart of Leadership Roles



VIII. Acknowledgments

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Appendix A: Proposed No Child Left Inside Requirements for State Environmental Literacy Plans

The goals of No Child Left Inside (NCLI) legislation are to ensure that every student graduates from high school prepared with the knowledge and skills necessary to be ready for college and 21st century careers in the emerging “green” economy; and, to advance the health of youth through outdoor and environmental education opportunities. The NCLI provisions in the Elementary and Secondary Education Act would authorize the Secretary of Education to award competitive matching grants to be used for activities to improve and support environmental education that include: (1) advancing content and achievement standards; (2) developing or disseminating innovations or model programs; and (3) research.

As a prerequisite to receiving implementation grants, State Education Agencies would be required to develop environmental literacy plans for Grades K–12 that include environmental education standards and teacher professional development. NCLI would authorize the U.S. Department of Education to provide grants to states to implement State Environmental Literacy Plans. Seventy percent of the funds would be allocated to school districts and eligible partnerships for classroom and outdoor environmental education programs and 30 percent for educators’ professional development. A state the size of Washington could be eligible for up to \$1 million annually.

Required elements for a state’s Environmental Literacy Plan, as included in the proposed NCLI legislation are below:

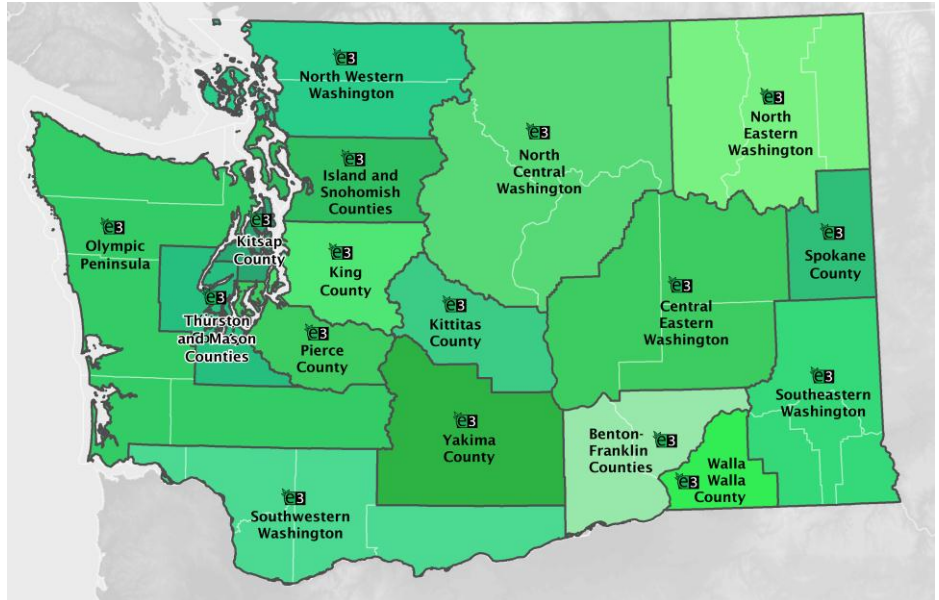
- Specific content standards, content areas, and courses or subjects where instruction will take place.
- A description of how state high school graduation requirements will ensure that graduates are environmentally literate.
- A description of programs for professional development of teachers to improve their environmental content knowledge, skill in teaching about environmental issues, and field-based pedagogical skills.
- A description of how the state education agency will measure the environmental literacy of students.
- A description of how the state education agency will implement the plan, including securing funding and other necessary support.

Appendix B: E3 Washington Comprehensive Plan Goals and Regions (2010)

Get Together

Link schools, campuses, and community resources for student achievement, lifelong learning, and a sustainable future.

- Support each student's background and learning both in and out of school, from classroom to home and world and back again, by including community-based educators and programs in the curriculum.
- Expand opportunities for students from middle school through college to participate in field- and community-based learning through local sustainability initiatives, research, service projects, and internships with public and private organizations.
- With help from public and private sectors, align learning standards and curriculum with real-world issues.
- Coordinate nonformal education providers (outdoor learning centers, aquariums, zoos, museums, and other community programs) to align programs and resources with school curriculum and state learning standards.
- Promote partnerships between schools/school districts and nonformal providers of environmental and sustainability education.



Lead Green

Turn schools, campuses, businesses, and public places into models of sustainability.

- Create sustainability teams (to include students, faculty, administrators, facility managers, board members, etc.) to develop programs for everybody to learn and play a role in “greening up” their site.
- Empower teams to evaluate site design and operation from a seventh-generation perspective and make recommendations for renovations, new construction, and maintenance.
- Partner schools with businesses, agencies, colleges, and others by organizing teams of students and professionals to advance sustainability measures in schools, campuses, and neighborhoods.
- Develop friendly E3 competitions with incentives and awards for localities involved in sustainability programs.
- Promote model sites and programs.

Go Out

Help everybody explore and discover their place within the natural and social communities that sustain us.

- Develop early childhood environmental and sustainability education guidelines, programs, and professional development for providers/caregivers and licensors.
- Fund “No Child Left Inside” grants programs to help all children discover, explore, and learn in the natural world.
- Expand opportunities for students from middle school through college in field- and community-based action and research projects dealing with real-world issues.
- Provide pre-service and on-going professional development, including field experience, to teachers, principals, and superintendents.

- Through media and social marketing, introduce the public to quality outdoor experiences, service projects, and other ways to enjoy and sustain our communities and natural places.
- Create incentives through school, work, community, and media for students and adults to make healthy lifestyle choices for themselves, the economy, and the environment.

Build Support

Garner funds to provide equitable adequate coverage and meaningful impact of Education for Sustainable Communities.

- Quantify the amount of organizational capacity, training, and other program resources needed to provide lifelong environmental and sustainability learning to Washington residents.
- Develop consortium across the state to invest in regional leadership and develop local funding strategies in order to ensure implementation of E3 plans.
- Create a public/private program to fund priority recommendations in E3 state, sector, and regional plans, and expand environmental and sustainability education.
- Evaluate the impact of funded programs on student and adult learning as shown by changes in behavior that foster healthier, more sustainable economies, communities, and use of natural resources.
- Create a funding consortium for foundation, corporate, and individual donors to advance E3 goals and address needs unique to systemic-change programs.

Connect Up

Use networking and technology to create inclusive leadership and diverse partnerships to achieve Education for Sustainable Communities.

- Continue to demonstrate respect for diversity and commitment to our individual and collective well-being.
- Hold frequent statewide, regional, and sector meetings to further relationships and achievements of “learning communities” for E3 plan implementation, evaluation, and revision.
- Maintain a dynamic, state-of-the-art E3 website with interactive and searchable content; tools for project management and social networking; and links to increase outreach and promote partner resources.
- Make the E3 Resource Center *the* online destination for information on environmental and sustainability education and opportunities to participate.
- In all sectors and regions, support E3 coordinators who demonstrate cultural competency and management skills.
- Embark on a marketing campaign to promote E3 participation and support.

Appendix C: Environmental and Sustainability Specialty Endorsement Core Competencies (2009)

1.0 - Environmental and Sustainability Education Content: Teachers know and critically analyze the historical development, purposes, interdisciplinary nature, defining characteristics, and guiding principles of environmental and sustainability education. As a result, candidates will provide evidence to demonstrate an understanding of:

- 1.1 The ecological, economic, and social dimensions of sustainability.
- 1.2 The interconnectedness of and significant changes occurring within and among local to global ecological, economic, and social systems.
- 1.3 How culture influences people's interactions with the natural and built (human constructed) environment.
 - 1.3.1 Environmental justice, including the causes of inequitable distribution of resources and impacts over time.
 - 1.3.2 The various ways humans perceive, learn, and live in the environment, including those of the Indigenous peoples of our region.
 - 1.3.3 The role of media and technology on environmental and sustainability issues and actions.
- 1.4 How to evaluate a variety of natural and human systems for sustainability.
 - 1.4.1 The basic principles and tools of various systems thinking methodologies including ecological and organizational models as they apply to environmental and sustainability education.
 - 1.4.2 Interdisciplinary inquiry methods appropriate for investigating environmental and sustainability issues.
 - 1.4.3 How they are connected to the communities in which they live (place-based learning). They employ geographic understanding to describe and analyze ecological, economic, social, and historical relationships.
- 1.5 The need for action on specific environmental and sustainability issues. They identify and facilitate action projects, and evaluate potential outcomes of those action projects.
- 1.6 How environmental and sustainability related policies are developed, implemented, and interrelated.
 - 1.6.1 How local, national, and international cooperation is necessary to address environmental and sustainability issues.
- 1.7 Current and emerging career paths in environmental and sustainability fields.

2.0 - Environmental and Sustainability Education Instructional Methodology: Teachers use the unique features of environmental and sustainability education in the design and enrichment of curricula and school programs. They teach and assess environmental and sustainability curricula and create stimulating and motivating learning environments. As a result, candidates will provide evidence to demonstrate an ability to:

- 2.1 Align environmental and sustainability curriculum and instruction with district, state, and national standards.
- 2.2 Integrate environmental and sustainability education with standards-based curricula and school programs.
- 2.3 Develop and implement curricula, including projects, which are relevant to students' lives and others within local and global communities.
- 2.4 Employ effective strategies for environmental and sustainability education inside and outside the classroom.
 - 2.4.1 Teach a variety of inquiry methodologies including place-based learning, field investigation, and action research.

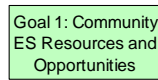
- 2.4.2 Teach the use of graphs and models to represent data and communicate results of environmental and sustainability investigations.
- 2.4.3 Teach the basic principles and tools of systems thinking for learning about environmental and sustainability issues.
- 2.4.4 Use community resources to promote student learning about environmental and sustainability issues.
- 2.4.5 Facilitate students' acquisition of media literacy to access, analyze, and create messages in a variety of forms.
- 2.4.6 Create a supportive environment where students are comfortable discussing and debating issues.
- 2.4.7 Use effective strategies for conducting investigations that are safe and environmentally sound.
- 2.4.8 Use a variety of formative and summative assessment tools appropriate for environmental and sustainability education.
- 2.5 Facilitate students' effective civic engagement for sustainable communities.

3.0 - Environmental and Sustainability Education Professional Competencies: Teachers belong and contribute to the environmental and sustainability education professional community and understand that professional development is a life-long endeavor. As a result, candidates provide evidence that they:

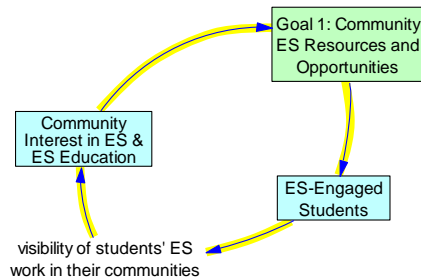
- 3.1 Identify the benefits and recognize the importance of belonging to a professional community engaged in environmental and sustainability education.
- 3.2 Engage in professional development and/or leadership opportunities related to environmental and sustainability education.
- 3.3 Provide accurate, balanced, and effective environmental and sustainability education instruction.
 - 3.3.1 Critically analyze the theories and current research in environmental and sustainability education.
- 3.4 Are able to articulate a rationale for environmental and sustainability education and reflect upon their role in the ongoing development of the field.

Appendix D: A Comprehensive Theory of Change

Using a series of figures, the causal loop diagram (CLD) in Section I is described here bit-by-bit. The full diagram represents the highest level view of the plan’s comprehensive “theory of change.”

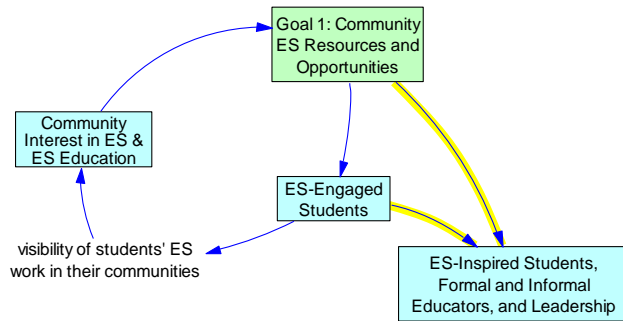


Currently, there are many resources that are underutilized and which this plan seeks to leverage in order to improve core subject learning and student achievement. “Community ES resources and opportunities” can be found in businesses, tribes, higher education institutions, community and environmental learning centers and other settings in the local vicinity of the school and occasionally beyond in regions and even at the state, national and international levels. A persistent variable associated with Goal 1 is the number of environmental and sustainability education opportunities available for students in a given community. Note that this is not in itself Goal 1, but rather is a persistent variable associated with Goal 1.

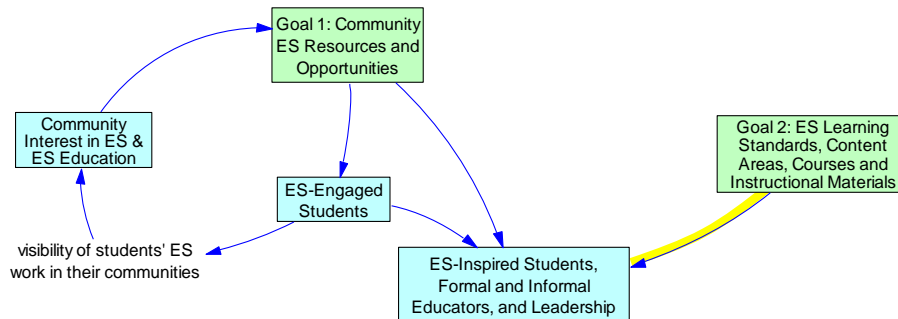


The more opportunities there are in students’ communities for environmental and sustainability education, the more engaged those students will be in their learning. Students being so engaged will increase the visibility of students’ environmental and sustainability learning and projects in their communities. Community members will observe how much students are learning, both about environmental and sustainability issues and in their core subjects, inspiring more community interest in, and resources for, environmental and sustainability education. The community then helps students find even more learning opportunities in the community. This feedback loop can also work in the opposite direction, creating a downward spiral of less engagement, less visibility, less interest, fewer opportunities, etc.

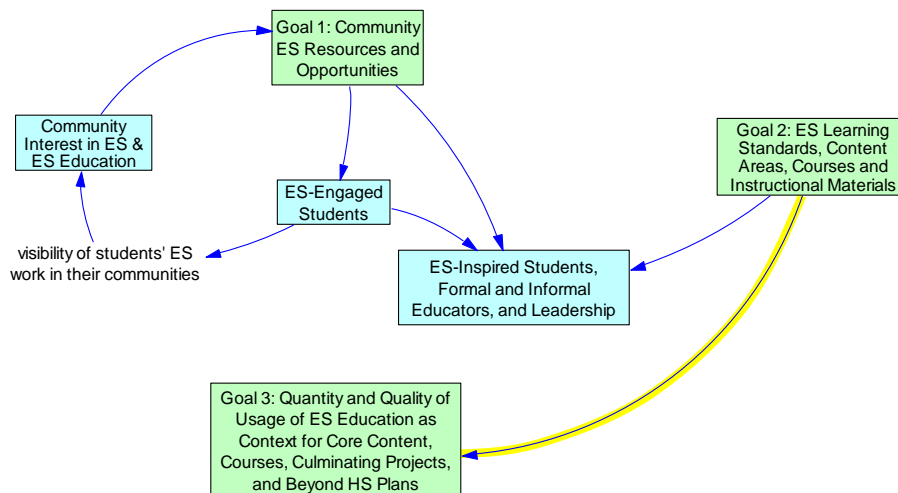
This and the following figures unfurl a causal loop diagram (CLD) that represents the Plan’s comprehensive high-level “theory of change” strategy. The arrows in the CLD indicate causal relationships, that is, a change in the value of the variable at the tail of an arrow “causes” a change in the value of the variable at the head of that arrow. The boxes signify variables that have a significant degree of persistence over time; they tend to maintain their values and not change significantly over short periods. The green boxes are persistent variables related to the Plan goals, and the blue boxes are other persistent variables that are important for understanding the Plan’s theory of change.



The more community environmental and sustainability opportunities, and the more environmental and sustainability-engaged students, the more students, in addition to formal and informal educators, and their leadership - including principals, district superintendents and curriculum supervisors - will be inspired to employ environmental and sustainability as a learning framework.



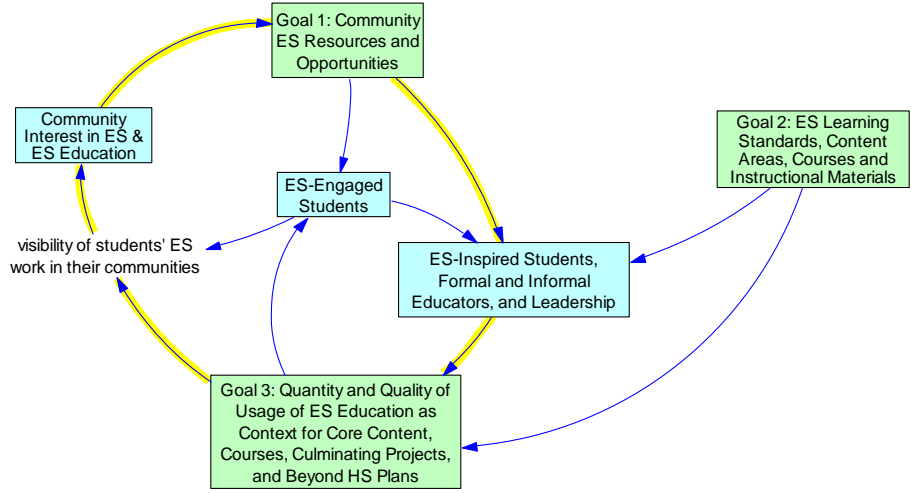
A persistent variable associated with Goal 2 is the number and quality of environmental and sustainability learning standards, content areas, courses, and instructional materials available. The larger the supply and the higher the quality of this information and materials available to educators, the more inspired and equipped educators will be to use environmental and sustainability as a framework for student learning. The corollary is also true; the smaller the supply and the lower the quality, the less inspired and equipped educators will be.



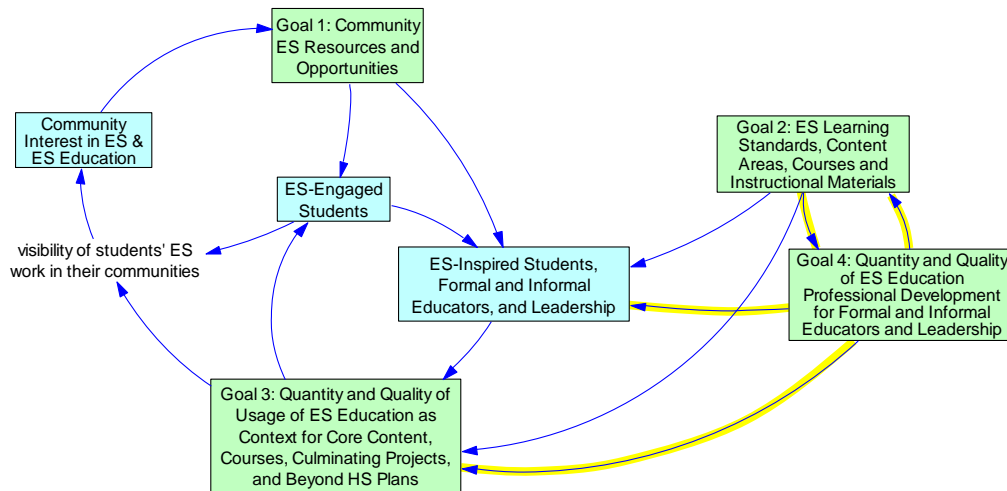
This information and material also improve the quantity and quality of educators' usage of environmental and sustainability education as context for core content and courses. Such usage is a persistent variable associated with Goal 3.



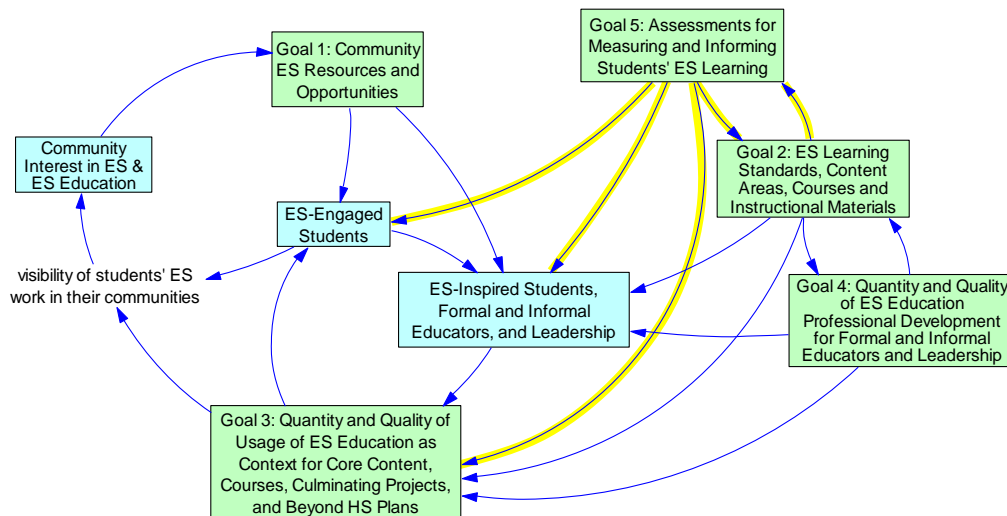
Such usage can further engage students in learning via environmental and sustainability context, thus further inspiring students, formal and informal educators, and their leadership, creating synergies among educators, leadership, and students to further increase the quantity and quality of usage of environmental and sustainability education. The real beauty appears when students themselves, on their own, begin to use environmental and sustainability as a platform for learning. This will be especially visible when more and more students’ culminating projects address environmental and sustainability issues in their communities, and when their “Beyond High School Plans” include environmental and sustainability content and skill development. This is the second feedback loop we’ve described so far in our theory of change, and like the first, we need to keep in mind that it can act not only as a virtuous circle as described, but also as a vicious cycle.



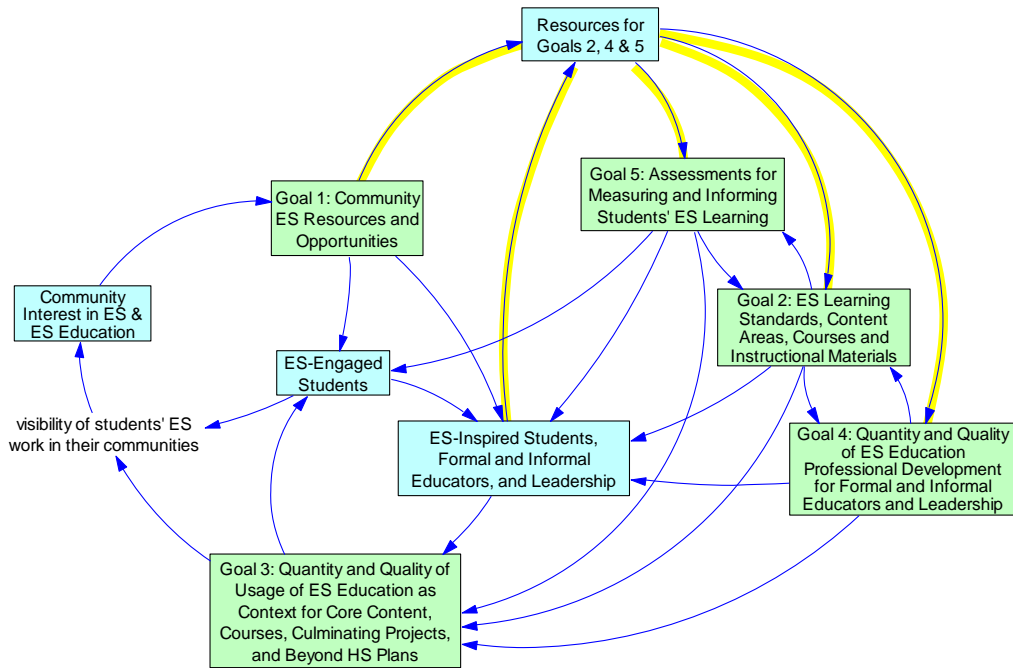
More and better usage of environmental and sustainability education as a learning context by students and educators increases the visibility of students’ environmental and sustainability work in their communities, inspiring the community to provide more environmental and sustainability opportunities to students, thus providing more resources for educators, and further increasing usage. Again, this is a virtuous cycle that can become vicious, working to defeat the promise of environmental and sustainability education.



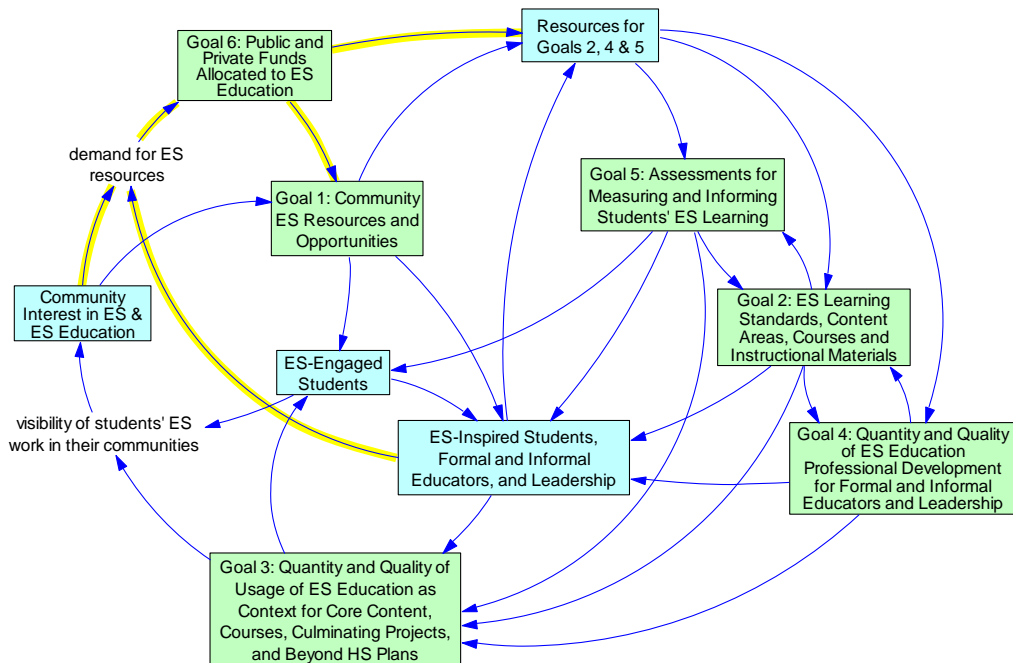
The standards, content areas, courses, and instructional materials associated with Goal 2 will drive professional development for educators and leadership, associated with Goal 4. And such professional development will engage more people, leading to updated and improved standards, content areas, courses and instructional materials. Also, sufficient high quality professional development will inspire more educators and leaders, and will increase the quantity and quality of usage of environmental and sustainability education as context for learning.



Associated with Goal 5 is the availability of learning assessments. Again, available and high quality assessment tools will make it much easier for educators and education leaders to employ environmental and sustainability education that engages and inspires. And high quality formative assessments, properly used, will improve student engagement. And finally, quality assessments will improve learning standards, content, courses and instructional materials; and vice versa.

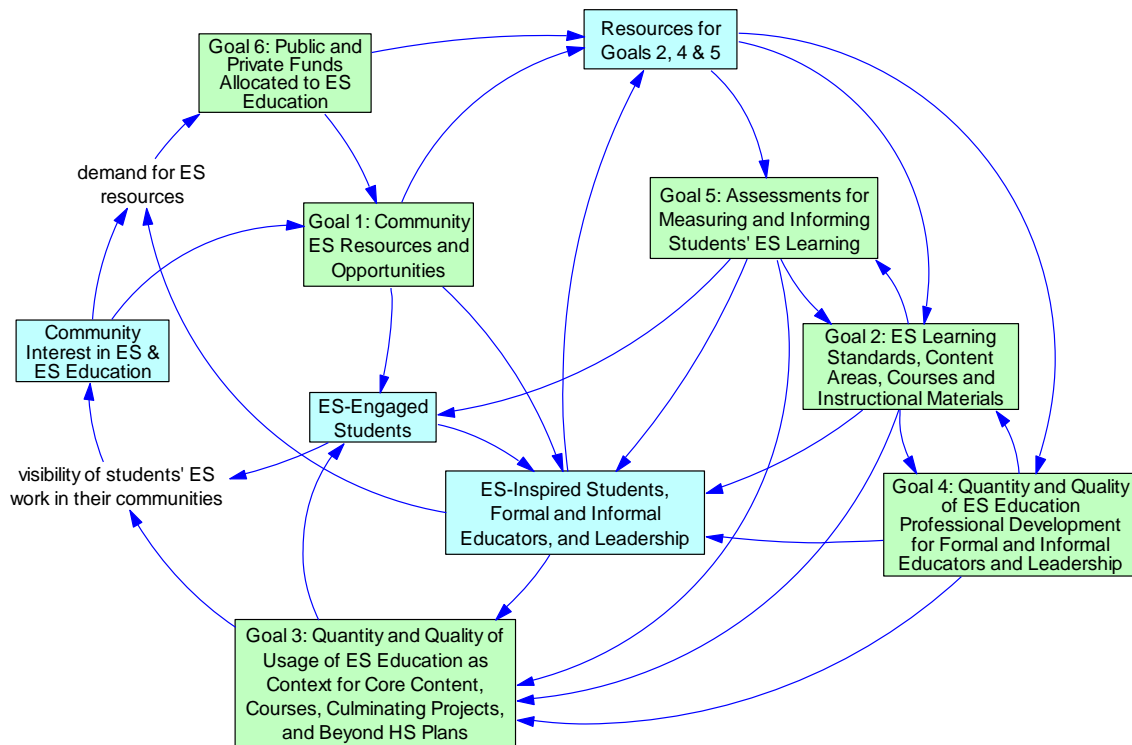


Resources (e.g., people, information technology, classrooms, etc.) are required to develop the learning standards, content areas, courses, instructional materials, professional development, and assessments. One source of such resources is the inspiration of students, their educators, their leadership and their communities. These individuals also become more knowledgeable and skilled and themselves become resources to improve environmental and sustainability education standards, courses, assessments, professional development and the like.



As community interest in, and knowledge of environmental and sustainability concepts and solutions develops, and as students, educators and leadership become inspired by environmental and sustainability education, not only will they provide resources, they will increasingly act through many channels – political, commercial, and communications to name some– in order to increase society’s recognition of, and commitment to, environmental and sustainability education.

When this “tipping point” is reached, the funding, authorities and partnerships required for environmental and sustainability education to become the norm across grade levels and subject areas will be within reach.



This causal loop diagram (CLD) illustrates the Plan’s comprehensive theory of change, interrelating each of the goals. It helps us begin to understand what can be done to achieve the desired results depicted in the Problem Statement. The CLD omits explicit pressures that may arise to obstruct the Plan, as well as the long delays that occur in teacher education, professional development, and students’ time progressing through school, and the shorter delays and pressures related to leadership transitions in schools and districts. Implementation of the Plan will entail continued use of systems thinking to account for these pressures and delays, and to identify programs, policies and strategies, including leadership and organizational development and change strategies, that will accelerate progress.

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