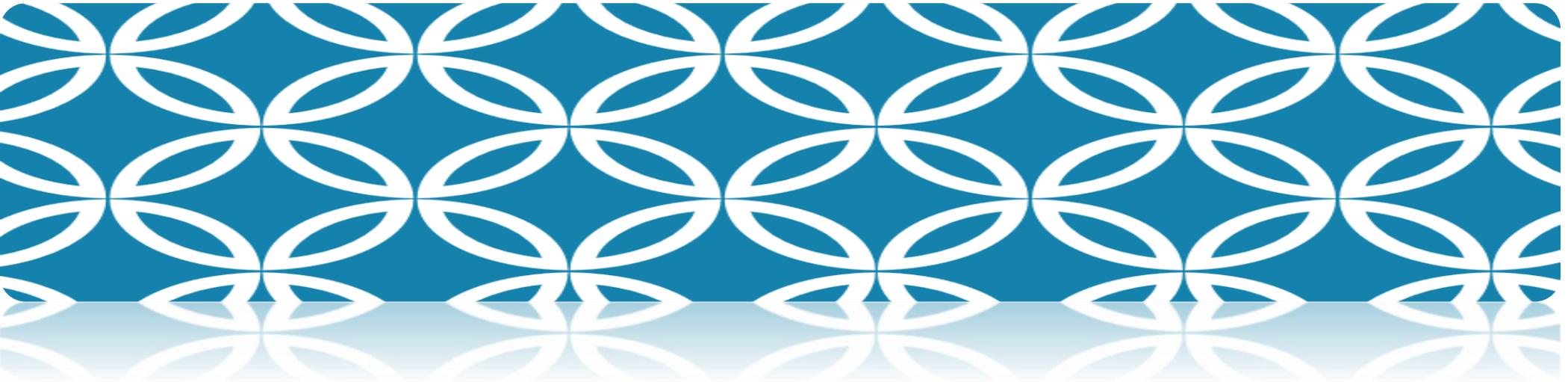


Exploring Synergy: Environmental Literacy and the C3: College, Career, and Civic Life Framework for Social Studies State Standards



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PART 1 - Introduction and Overview

How environmental education is conceptualized and implemented in elementary and secondary schools is critical if we are to meet our ultimate goal of environmental literacy. Integrated across the curriculum, environmental education draws upon the natural and physical sciences, social sciences, and humanities. These disciplines are connected not only through the medium of the environment, but also through the development of environmental issue investigation and action skills needed for civic engagement. In the end, however, the ability of school systems to provide comprehensive environmental education will depend on its systematic and cohesive integration into the standards-based curriculum. Although we know that curriculum can be designed that supports both academic achievement *and* the development of environmental literacy, we also know that this type of curriculum planning takes work. It requires a thorough understanding of the standards and of the components of environmental literacy.

With the publication of *The College, Career, and Civic Life (C3) Framework for Social Studies State Standards: Guidance for Enhancing the Rigor of K-12 Civics, Economics, Geography, and History* (NCSS 2013), a new vision of social studies education has been articulated. As the title suggests, this new vision this framework is built on the principle that:

NOW MORE THAN EVER, students need the intellectual power to recognize societal problems; ask good questions and develop robust investigations into them; consider possible solutions and consequences; separate evidence-based claims from parochial opinions; and communicate and act upon what they learn. And most importantly, they must possess the capability and commitment to repeat that process as long as is necessary. Young people need strong tools for, and methods of, clear and disciplined thinking in order to traverse successfully the worlds of college, career, and civic life (NCSS 2013, page 6)

As teachers and other educators begin the process of mapping their curriculum and developing the instructional strategies necessary to implement the C3 framework fully, we felt it would be useful to provide a resource that highlights some of the linkages between this vision of social studies education and environmental literacy.

K-12 Framework for Environmental Literacy

K-12 Environmental Education: Guidelines for Excellence (2019) offers a detailed curriculum and instructional framework and vision for environmental education that promotes progress toward sustaining a healthy environment and quality of life. By setting specific expectations for what young people should *know and be able to do* by the time they complete fourth, eighth, and twelfth grades, *K-12 EE Guidelines* translates general notions about environmental literacy into an age-appropriate framework for effective and comprehensive environmental education programming. The guidelines emphasize the development of conceptual knowledge as well as thinking, investigation, and action skills necessary for civic engagement. They rest on the idea that environmental literacy must be a goal of society and that environmental education must play an integral role throughout educational systems.

Essential Underpinnings

Environmental education builds from a core of key principles that inform its approach to education. Some of these important underpinnings are:

Systems and Systems Thinking: Systems thinking helps make sense of a large and complex world. A system is made up of parts. Each part can be understood separately. The whole, however, is understood only by understanding the relationships and interactions among the parts. Earth is a complex system of interacting physical, chemical, and biological processes. Organizations, individual cells, communities of animals and plants, and families can all be understood as systems. And systems can be nested within other systems.

Human Well-being: Human well-being is inextricably bound with environmental quality. Humans are a part of the natural order. Humans, and the systems they create—societies, political systems, economies, religions, cultures, technologies—impact the total environment and are impacted by the environment. Since humans are a part of nature rather than outside it, they are challenged to recognize the ramifications of their interdependence with Earth systems.

DEFINING ENVIRONMENTAL EDUCATION AND ENVIRONMENTAL LITERACY

Environmental Education (1) ... is a process that helps individuals, communities, and organizations learn more about the environment, develop skills to investigate their environment and to make intelligent, informed decisions about how they can help take care of it. It has the power to transform lives and society. It informs and inspires. It motivates action. EE is a key tool in creating healthier and more civically engaged communities.

An Environmentally Literate Person (2) ... is someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the well-being of other individuals, societies, and the global environment; and participates in civic life. Those who are environmentally literate possess, to varying degrees, the knowledge and understanding of a wide range of environmental concepts, problems, and issues; a set of cognitive and affective dispositions; a set of cognitive skills and abilities; and the appropriate behavioral strategies to apply such knowledge and understanding in order to make sound and effective decisions in a range of environmental contexts.

(1) NAAEE (nd) About EE and Why it Matters, <https://naaee.org/about-us/about-ee-and-why-it-matters>

(2) Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. Washington, DC: North American Association for Environmental Education. <https://naaee.org/our-work/programs/environmental-literacy-framework>.

Equity and Inclusion: Environmental education instruction is inclusive, respectful, and equitable, and designed to employ the talents of people with different backgrounds, experiences, and perspectives.

The Importance of Where One Lives: Beginning close to home, learners connect with, explore, and understand their immediate surroundings. The sensitivity, knowledge, and skills needed for this local connection provides a base for moving into larger systems, broader issues, and an expanding understanding of causes, connections, and consequences.

Roots in the Real World: Learners develop knowledge and skills through direct experience with the environment, current environmental issues, and society. Investigation, analysis, and problem solving are essential activities and are most effective when relevant to the real world.

Integration and Infusion: Disciplines from the natural sciences, social sciences, and the humanities are connected through the environment and environmental issues. Environmental education offers opportunities for integration and works best when infused across the curriculum, rather than being treated as a separate discipline or subject area.

Lifelong Learning: Critical and creative thinking, decision making, and communication, as well as collaborative learning, are emphasized. These skills are essential for active and meaningful learning, both in school and over a lifetime.

Sustainability: Learning is future oriented, and focused on environmental, social, and economic responsibility as drivers of individual and institutional choices.

How are the K-12 EE Guidelines Organized?

Ultimately, environmentally literate individuals possess a sophisticated set of knowledge, skills, and dispositions that allow them to solve novel environmental problems and determine the best set of actions; they are engaged in civic decision-making and action. Four key elements of environmental literacy have been articulated and further delineated in guidelines:

Strand 1: Questioning, Analysis and Interpretation Skills

Environmental literacy depends on learners' ability to ask questions, speculate, and hypothesize about the world around them, seek information, and develop answers to their questions. Learners must be familiar with inquiry; master fundamental skills for gathering and organizing information; and interpret and synthesize information to develop and communicate explanations.

- A. Questioning
- B. Designing investigations
- C. Collecting information
- D. Evaluating accuracy and reliability
- E. Organizing and analyzing information

- F. Working with models and simulations
- G. Drawing conclusions and developing explanations

Strand 2: Environmental Processes and Systems

Environmental literacy is dependent on an understanding of the processes and systems that comprise the environment, including human social systems and influences. Students develop an understanding of how changes in one system (hydrosphere, atmosphere, geosphere, and biosphere) results in changes in another. They develop an understanding of how human activities affect environmental quality and long-term sustainability at local, tribal, national, and global levels. These understandings are based on knowledge synthesized from across traditional disciplines. The guidelines in this section are grouped in three sub-categories:

2.1—Earth’s physical and living systems

- A. Earth’s physical systems
- B. Earth’s living systems

2.2—Human systems

- A. Individuals, groups, and societies
- B. Culture
- C. Political systems
- D. Economic systems

2.3—Environment and society

- A. Human-environment interactions
- B. Resource distribution and consumption
- C. Places
- D. Change and conflict

Strand 3: Skills for Understanding and Addressing Environmental Issues

Skills and knowledge are refined and applied in the context of environmental issues at varying scales. Environmental literacy includes the abilities to define, learn about, evaluate, and act on environmental issues. Students investigate environmental issues; consider evidence and differing viewpoints; and evaluate proposed action plans, including likely effectiveness in specific environmental, cultural, social, and economic contexts. They analyze the intended and unintended consequences of their own actions and actions taken by other individuals and groups, including long-term environmental, social, and economic implications for sustainability. In this section, the guidelines are grouped in two sub-categories:

3.1—Skills for analyzing and investigating environmental issues

- A. Identifying and investigating issues
- B. Sorting out the consequences of issues
- C. Identifying and critiquing alternative solutions and courses of action
- D. Working with flexibility, creativity, and openness

3.2—Decision-making and action skills

- A. Forming and evaluating personal views
- B. Evaluating the need for action
- C. Planning and taking action
- D. Evaluating the results of actions

Strand 4: Personal and Civic Responsibility

Environmentally literate community members are willing and able to act on their own conclusions about what should be done to ensure environmental quality, social equity, and economic prosperity. As learners develop and apply concept-based learning and skills for inquiry, analysis, and action, they also understand that what they do individually and in groups can make a difference.

- A. Recognizing rights and responsibilities
- B. Recognizing efficacy and developing agency
- C. Accepting personal responsibility

Taken together, this framework creates a vision of environmental literacy. The sequence of the strands—and the individual guidelines themselves— may suggest that some skills or knowledge serve as a foundation for others. But the process of becoming environmentally literate is not linear, and the sequence of the guidelines is more a function of bringing an order and logic to this document than establishing a hierarchy of skills and knowledge.

The College, Career, and Civic Life (C3) Framework for Social Studies State Standards

The *C3 Framework for Social Studies State Standards* was developed by the National Council for the Social Studies (NCSS) “to provide guidance to states on the concepts, skills, and disciplinary tools necessary to prepare students for college, career, and civic life” (NCSS 2013, page 17). The *C3 Framework* is built around an Inquiry Arc that integrates four, mutually reinforcing dimensions of learning: 1) developing questions and planning inquiries; 2) Applying disciplinary concepts and tools; 3) Evaluating sources and using evidence; and 4) Communicating conclusions and taking informed action.

How is the *C3 Framework for Social Studies State Standards* organized?

Dimension 1: Developing Questions & Planning Inquiries

- Constructing Compelling Questions
- Constructing Supporting Questions
- Determining Helpful Sources

Dimension 2: Applying Disciplinary Concepts & Tools

Civics

- Civic and Political Institutions
- Participation and Deliberation
- Processes, Rules, and Laws

Economics

- Economic Decision Making
- Exchange Markets
- The National Economy
- The Global Economy

Geography

- Geographic representations
- Human-Environment Interaction
- Human Population: Spatial Patterns and Movements
- Global Connections

History

- Change, Continuity, and Context
- Perspectives

Historical Sources and Evidence
Causation and Argumentation

Dimension 3: Evaluating Sources & Using Evidence

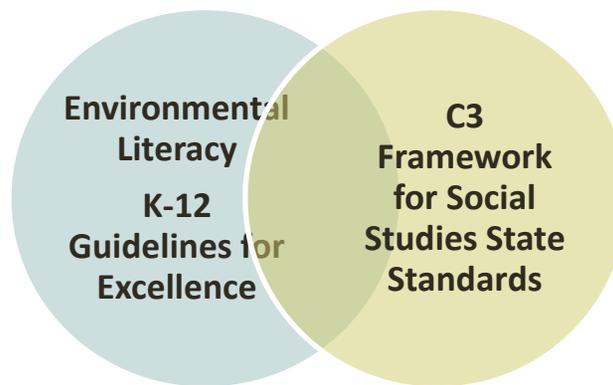
Gathering and Evaluating Sources
Developing Claims and Using Evidence

Dimension 4: Communicating Conclusions & Taking Informed Action

Communicating Conclusions
Critiquing Conclusions
Taking Informed Action

Linking Environmental Education to Academic Standards

Intentionally, the *K-12 EE Guidelines* make clear the argument that environmental education is not separate from mandated education priorities but should be integral to them. The conceptual framework can be used to craft a comprehensive environmental education program that leads towards environmental literacy while also helping educators meet the requirements of the officially sanctioned and assessed standards-based curriculum. A Win-Win solution is envisioned. Building a standards-based curriculum is not a simple task, however. And, in the case of looking at the linkages between environmental literacy and the *C3 Framework* it must be understood that environmental literacy depends on more than social studies skills and understandings. Environmental literacy also requires skills and understandings that are most often found within the science and humanities curriculum. Similarly, social studies education, as envisioned in the *C3 Framework*, is not limited to elements of environmental literacy. There is, however, an important and necessary intersection between environmental literacy and social studies that may be best visualized as a Venn diagram:



As with many Venn diagrams, the amount of overlap – the intersection between the two circles – is not proscribed or precise. This document was designed to provide insights into the connections that can be found between the *C3 Framework* and the *K-12 EE Guidelines*. To illustrate these linkages, a series of detailed matrices, displayed in Parts 2 and 3, have been created that cross reference the intersections between the *C3 Framework* dimensions and the *K-12 EE Guidelines*. These matrices were developed with two distinct purposes in mind:

- 1) to help educators identify natural opportunities to connect the curriculum through a comprehensive, cohesive vision of environmental literacy and
- 2) to help educators identify how environmental education can support social studies education. Ultimately, this document is meant to be used as a tool for curriculum development and instructional design.

Comparing the Environmental Literacy Framework and the C3 Framework

When the cross-references between the *C3 Framework* and the environmental literacy framework are taken together (see Parts 2 and 3), distinct patterns emerge. These patterns help us answer two questions important to curriculum development: 1) how environmental literacy instruction can best support the implementation of social studies and 2) how instruction can be designed to address the *C3 Framework* and support the development of environmental literacy. Table 1 displays an overview of the linkages between the *K-12 EE Guidelines* and the *C3 Framework*. The linkages are drawn from the more detailed matrices found in Parts 2 and 3 of this document. For ease of interpretation, the level or degree of cross referencing is coded, with darker shading indicating a stronger connection and lighter or no shading indicating little or no connection.

Reading down the columns offers insight into specific places where instruction focusing on environmental literacy could also support social studies. As might be expected, Strand 1 (Questioning, Analysis and Interpretation Skills) provides a link across the *C3 Framework* dimensions. For the most part, the skills described in Strand 1 align well with the *C3 Framework* notion of an Inquiry Arc, touching upon all four of the *C3 Framework* dimensions.

Strand 2: Environmental Processes and Systems reflects the development of understandings included in the sciences, but also includes considerations of Human Systems (2.2) and the relationships and interactions between human societies and the environment (2.3). As might be expected, the strongest links are between Strand 2.2 (Human Systems) and the Disciplinary Concepts and Tools (Dimension 2). Human Systems (2.2), including understandings related to individuals, groups, and societies; culture; political systems; and economic systems; cuts across the social studies disciplines (e.g., Civics, Economics, History, Geography). Strand 2.3: Environment and Society, which focuses on human-environment interactions, resource distribution and consumption, places, and change and conflict, is mostly strongly associated with Dimension 2: Geography.

The final linkages of note relate to Strand 3: Skills for Understanding and Addressing Environmental Issues and Strand 4: Personal and Civic Responsibility. Strand 3.1: Skills for Analyzing and Investigating Environmental Issues focuses on the skills needed to

identify and investigate environmental issues; explore the consequences of issues; evaluate alternative solutions and courses of action; and work with flexibility and openness. These skills align most closely with the *C3 Framework* Dimension 4: Communicating Conclusions and Taking Informed Action. Similarly, Strand 3.2 – Decision-Making and Action Skills – which focuses on the skills needed for forming and evaluating personal views; evaluating the need for action; planning and taking action; and evaluating the results of actions – links well with Dimension 4. Strand 4 (Personal and Civic Responsibility) focuses on community members’ willingness and ability to act on their own conclusions about what should be done to ensure environmental quality, social equity, and economic prosperity. They also understand that what they do individually and in groups can make a difference. These guidelines relate well to Dimension 2, Participation and Deliberation as well as Dimension 4, Taking Informed Action.

By reading across the rows of Table 1, a vision of how the social studies support environmental literacy can also be garnered. As was discussed above, there are strong connections between the *C3 Framework* articulation of an Inquiry Arc and Strand 1: Questioning, Analysis and Interpretation Skills. With a focus on Civics, Economics, Geography, and History, the *C3 Framework* supports the development of understandings related to Strand 2.2 (Human Systems) and Strand 2.3 (Environment and Society). Finally, elements of Dimension 4: Communicating Conclusions and Taking Informed Action support Strand 3 and Strand 4.

What is missing is also of interest. It should not be surprising that the *C3 Framework* does not support all the environmental literacy strands (e.g., Strand 2.1 which focuses on Earth’s Physical and Living Systems is absent). It should be noted that although there are moderate to strong linkages across all four *C3 Framework* Dimensions, a focus on environmental literacy alone would not provide an in-depth treatment of the Inquiry Arc across all four of the social studies dimensions.

Table 1: Overview of Linkages between the Guidelines for Learning (K-12) and NGSS

Key: Level or degree of linkage	None	Limited	Moderate	Strong			

C3 Framework/Environmental Literacy Framework	Strand 1: Questioning, Analysis and Interpretation Skills	Strand 2: Environmental Processes and Systems			Strand 3: Skills for Understanding & Addressing Environmental Issues		Strand 4: Personal & Civic Responsibility
		2.1: Earth's Physical & Living Systems	2.2: Human Systems	2.3: Environment & Society	3.1: Analyzing & Investigating Environmental Issues	3.2: Decision-making and action skills	
Dimension 1: Developing Questions and Planning Inquires							
Construct Compelling Questions							
Constructing Supporting Questions							
Determining Helpful Sources							
Dimension 2: Applying Disciplinary Concepts and Tools							
Civics							
Economics							
Geography							
History				*****		*****	
Dimension 3: Evaluating sources and using evidence							
Gathering and Evaluating Sources							
Developing Claims and Using Evidence							
Dimension 4: Communicating conclusions and taking informed action							
Communicating Conclusions							
Critiquing Conclusions							
Taking Informed Action							

It should be noted, as something of a disclaimer, that any attempt to identify linkages between environmental literacy and the *C3 Framework* is based on perspective, interpretation, and ultimate use. Some may well “see” linkages that are not identified in this document. Others may well feel that weak or non-existing linkages were identified. Our task was to try to find a middle ground – one where we provide reasonable guidance to the natural overlaps and gaps between the *C3 Framework* and environmental literacy. A great deal of the final interpretation will rest in our own practices and how we build curriculum and instruction to address both environmental literacy and social studies standards.

Part 2 - Linking the C3 Framework and the NAAEE K-12 Environmental Education: Guidelines for Excellence

C 3 Framework: College, Career, and Civic Life	K-12 EE Guidelines
Dimension 1: Developing Questions and Planning Inquires	
Construct Compelling Questions	Strand 1: Questioning, Analysis and Interpretation Skills 1.A. Questioning
Constructing Supporting Questions	Strand 1: Questioning, Analysis and Interpretation Skills 1.A. Questioning
Determining Helpful Sources	Strand 1: Questioning, Analysis and Interpretation Skills 1.C. Collecting information 1.D. Evaluating accuracy and reliability
Dimension 2: Applying Disciplinary Concepts and Tools	
Civics	
Civic and Political Institutions	Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.C. Political systems Strand 2.3: Environment and Society 2.3. D. Change and conflict Strand 4: Personal and Civic Responsibility 4.A. Recognizing rights and responsibilities
Participation and Deliberation	Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.A. Individuals, groups, and societies 2.2.C. Political systems

C 3 Framework: College, Career, and Civic Life	K-12 EE Guidelines
	<p>Strand 3: Skills for Understanding and Addressing Environmental Issues Strand 3.1: Skills for Analyzing and Investigating Environmental Issues 3.1.B. Sorting out the consequences of issues 3.1.C. Identifying and critiquing alternative solutions and courses of action 3.1.D. Working with flexibility, creativity, and openness</p> <p>Strand 3: Skills for Understanding and Addressing Environmental Issues Strand 3.2 Decision-making and action skills 3.2.A. Forming and evaluating personal views 3.2.D. Evaluating the results of actions</p> <p>Strand 4: Personal and Civic Responsibility 4.A. Recognizing rights and responsibilities 4.B. Recognizing efficacy and developing agency 4.C. Accepting personal responsibility</p>
Processes, Rules, and Laws	<p>Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.C. Political systems</p> <p>Strand 2.3: Environment and Society 2.3. A. Human-environment interactions 2.3. D. Change and conflict</p>
Economics	
Economic Decision Making	<p>Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2 D. Economic systems</p>
Exchange Markets	
The National Economy	
The Global Economy	<p>Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2 D. Economic systems</p> <p>Strand 2.3 Environment and Society 2.3.B. Resource distribution and consumption</p>

C 3 Framework: College, Career, and Civic Life	K-12 EE Guidelines
Geography	
Geographic representations	Strand 1: Questioning, Analysis and Interpretation Skills 1.C. Collecting information 1.E. Organizing information 1.F. Working with models and simulations
Human-Environment Interaction	Strand Environmental Processes and Systems Strand 2.2: Human Systems 2.2.A. Individuals, groups, and societies 2.2.B. Culture 2.2.C. Political systems 2.2.D. Economic systems Strand 2.3 Environment and Society 2.3.A. Human-environment interactions 2.3.B Resource distribution and consumption 2.3.C. Places 2.3.D. Change and conflict
Human Population: Spatial Patterns and Movements	Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.A. Individuals, groups, and societies 2.2.B. Culture 2.2.C. Political systems 2.2.D. Economic systems Strand 2.3 Environment and Society 2.3.A. Human-environment interactions 2.3.B Resource distribution and consumption 2.3.C. Places 2.3.D. Change and conflict
Global Connections	Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.A. Individuals, groups, and societies 2.2.B. Culture 2.2.C. Political systems 2.2.D. Economic systems

C 3 Framework: College, Career, and Civic Life	K-12 EE Guidelines
	Strand 2.3 Environment and Society 2.3.A. Human-environment interactions 2.3.B Resource distribution and consumption 2.3.C. Places 2.3.D. Change and conflict
History	
Change, Continuity, and Context	Strand 2: Environmental Processes and Systems Strand 2.3 Environment and Society 2.3. D. Change and conflict
Perspectives	Strand 1: Questioning, Analysis and Interpretation Skills 1.A. Questioning 1.D. Evaluating accuracy and reliability Strand 2: Environmental Processes and Systems Strand 2.2: Human Systems 2.2.A. Individuals, groups, and societies 2.2.B. Culture Strand 2.3 Environment and Society 2.3.D. Change and conflict
Historical Sources and Evidence	Strand 1: Questioning, Analysis and Interpretation Skills 1.A. Questioning 1.C. Collecting information 1.D. Evaluating accuracy and reliability
Causation and Argumentation	Strand 1: Questioning, Analysis and Interpretation Skills 1.C. Collecting information 1.D. Evaluating accuracy and reliability 1.G. Drawing conclusions and developing explanations Strand 3: Skills for Understanding and Addressing Environmental Issues Strand 3.1: Skills for Analyzing and Investigating Environmental Issues 3.1.A. Identifying and investigating issues 3.1.B. Sorting out the consequences of issues
Dimension 3: Evaluating sources and using evidence	
Gathering and Evaluating Sources	Strand 1: Questioning, Analysis and Interpretation Skills 1.C. Collecting information 1.D. Evaluating accuracy and reliability

C 3 Framework: College, Career, and Civic Life	K-12 EE Guidelines
Developing Claims and Using Evidence	Strand 1: Questioning, Analysis and Interpretation Skills 1.C. Collecting information 1.D. Evaluating accuracy and reliability 1.G. Drawing conclusions and developing explanations
Dimension 4: Communicating conclusions and taking informed action	
Communicating Conclusions	Strand 1: Questioning, Analysis and Interpretation Skills 1.G. Drawing conclusions and developing explanations
Critiquing Conclusions	Strand 1: Questioning, Analysis and Interpretation Skills 1.D. Evaluating accuracy and reliability 1.G. Drawing conclusions and developing explanations Strand 3: Skills for Understanding and Addressing Environmental Issues Strand 3.1: Skills for Analyzing and Investigating Environmental Issues 3.1.A. Identifying and investigating issues 3.1.B. Sorting out the consequences of issues 3.1.C. Identifying and critiquing alternative solutions and courses of action
Taking Informed Action	Strand 3: Skills for Understanding and Addressing Environmental Issues Strand 3.1: Skills for Analyzing and Investigating Environmental Issues 3.1.A. Identifying and investigating issues 3.1.B. Sorting out the consequences of issues 3.1.C. Identifying and critiquing alternative solutions and courses of action Strand 3.2: Decision-Making and Action Skills 3.2.A. Forming and evaluating personal views 3.2.B. Evaluating the need for action 3.2.C. Planning and taking action Strand 4: Personal and Civic Responsibility 4.A. Recognizing rights and responsibilities 4.B. Recognizing efficacy and developing agency 4.C. Accepting personal responsibility

Part 3 - Linking NAAEE K-12 Environmental Education: Guidelines for Excellence and the C3 Framework

K-12 EE Guidelines	C3: College, Career, and Civic Life
Strand 1: Questioning, Analysis & Interpretation Skills	
<p>1.A. Questioning – Learners develop, modify, clarify, and explain questions that guide environmental investigations of various types. They describe criteria that influence the questions they pose and explain their reasoning.</p>	<p>Dimension 1 Constructing Compelling Questions Constructing Supporting Questions</p> <p>Dimension 2: Applying Disciplinary Concepts & Tools History Perspectives Historical Sources and Evidence</p>
<p>1.B. Designing investigations – Learners design investigations to explore environmental questions, problems, issues, phenomena, and models. They explain their reasoning.</p>	
<p>1.C. Collecting information – Learners use established protocols to locate and collect information for environmental investigations of many types. They use increasingly sophisticated methods and technology to access, gather, store, and display the information they collect.</p>	<p>Dimension 1 Determining Helpful Sources</p> <p>Dimension 2: Applying Disciplinary Concepts & Tools Geography Geographic Representations History Historical Sources and Evidence Causation and Argumentation</p> <p>Dimension 3: Evaluating Sources & Using Evidence Gathering and Evaluating Sources Developing Claims and Using Evidence</p>
<p>1.D. Evaluating accuracy and reliability –Learners apply logic and reasoning skills to evaluate the completeness and reliability of a range of environmental information and information sources.</p>	<p>Dimension 1 Determining Helpful Sources</p> <p>Dimension 2: Applying Disciplinary Concepts & Tools</p>

K-12 EE Guidelines	C3: College, Career, and Civic Life
	<p>History Perspectives Historical Sources and Evidence Causation and Argumentation</p> <p>Dimension 3: Evaluating Sources & Using Evidence Gathering and Evaluating Sources Developing Claims and Using Evidence</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Critiquing Conclusions</p>
<p>1.E. Organizing information –Learners organize, analyze, and display data and information from their environmental investigations for a variety of audiences and purposes.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Geography Geographic representations</p>
<p>1.F. Working with models and simulations – Learners create, use, test, and evaluate models to analyze environmental questions, problems, issues, or phenomena.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Geography Geographic Representations</p>
<p>1.G. Drawing conclusions and developing explanations –Learners propose explanations that address their initial environmental questions using quantitative and qualitative data and evidence that has been collected and analyzed.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools History Causation and Argumentation</p> <p>Dimension 3: Evaluating Sources & Using Evidence Developing Claims and Using Evidence</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Communicating Conclusions Critiquing Conclusions</p>

K-12 EE Guidelines	C3: College, Career, and Civic Life
Strand 2: Environmental processes and systems	
2.1 The Earth’s physical and living systems	
<p>2.1.A. Earth’s physical systems - Learners describe the major processes and systems that form Earth and relate these processes, especially those that are large-scale and long-term to characteristics of Earth. They explain how changes in one system (hydrosphere, atmosphere, geosphere, and biosphere) result in changes to another. They describe how human sustainability depends on Earth systems.</p>	
<p>2.1.B. Earth’s living systems – Learners describe basic population dynamics, genetic mechanisms behind biological evolution, and the importance of diversity in living systems. They explain how changes in the hydrosphere, atmosphere, and geosphere affect the biosphere. They describe how human sustainability is dependent on the biosphere.</p>	
2.2 Human Systems	
<p>2.2.A. Individuals, groups and societies—Learners observe and describe ways that individual and group action affects the environment, and how each can work to promote the common good. They analyze differing beliefs and values within the same community and the larger society and explain how sustainable solutions rely on reconciling diverse perspectives.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections History Perspectives</p>
<p>2.2.B. Culture – Learners recognize and describe examples of different cultural perspectives and dynamics and apply their understanding to current and historical environmental situations.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections History Perspectives</p>
<p>2.2.C. Political systems – Learners analyze how political systems and political decision-making, from the local to international levels, impact environmental quality and long-term sustainability.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Civic and Political Institutions</p>

K-12 EE Guidelines	C3: College, Career, and Civic Life
	Participation and Deliberation Processes, Rules, and Laws Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections
<p>2.2.D. Economic systems—Learners analyze how economic systems and economic decision-making affect environmental quality and long term sustainability at local, tribal, national, and global levels.</p>	Dimension 2: Applying Disciplinary Concepts & Tools Economics Economic Decision Making The Global Economy Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections
2.3 Environment and Society	
<p>2.3.A. Human-environment interactions – Learners analyze ways that humans interact with their environment and how these interactions change with technological developments. Learners determine costs and benefits to different groups in society as well as unintended consequences.</p>	Dimension 2: Applying Disciplinary Concepts & Tools Civics Processes, Rules, and Laws Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections
<p>2.3.B. Resource distribution and consumption – Learners analyze ways that the perceived value and use of natural resources change over time and vary under different economic, political, social, and technological systems.</p>	Dimension 2: Applying Disciplinary Concepts & Tools Economics The Global Economy Geography Human-Environment Interaction Human Population: Spatial Patterns and Movements Global Connections
<p>2.3.C. Places – Learners describe “place” as humans endowing a location with meaning and that this meaning can be created through individual and group interactions with that environment.</p>	Dimension 2: Applying Disciplinary Concepts & Tools Geography Human-Environment Interaction

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	Human Population: Spatial Patterns and Movements Global Connections
<p>2.3. D. Change and conflict – Learners analyze the functioning of public processes for promoting and managing change and conflict, and can evaluate their effects on the environment, society, and the economy.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools</p> <p>Civics Civic and Political Institutions Processes, Rules, and Laws</p> <p>Geography Human-Environment Interaction Human Population: Spatial patterns and Movements Global Connections</p> <p>History Change, Continuity, and Context Perspectives</p>
<p>Strand 3: Skills for Understanding and Addressing Environmental Issues</p>	
<p>3.1 Skills for Analyzing and Investigating Environmental Issues</p>	
<p>3.1.A. Identifying and investigating issues – Learners apply their research and analytical skills to systematically investigate environmental issues ranging from local issues to those that are regional or global in scope.</p>	<p>Dimension 2: Applying Disciplinary Concepts</p> <p>History Causation and Argumentation</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Critiquing Conclusions Taking Informed Action</p>
<p>3.1.B. Sorting out the consequences of issues – Learners evaluate the consequences of a broad range of environmental changes, conditions, and issues on environmental, social, and economic sustainability. They identify environmental justice and social equity implications.</p>	<p>Dimension 2: Applying Disciplinary Concepts</p> <p>Civics Participation and Deliberation</p> <p>History Causation and Argumentation</p>

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	Dimension 4: Communicating Conclusions & Taking Informed Action Critiquing Conclusions Taking Informed Action
3.1.C. Identifying and critiquing alternative solutions and courses of action – Learners identify and propose environmental action plans, including design solutions, and evaluate their likely effectiveness in specific environmental, cultural/social, and economic contexts. They identify ways that these action plans and design solutions might affect different groups of people, including possible environmental justice and social equity implications.	Dimension 2: Applying Disciplinary Concepts Civics Participation and Deliberation Dimension 4: Communicating Conclusions & Taking Informed Action Critiquing Conclusions Taking Informed Action
3.1.D. Working with flexibility, creativity, and openness – Learners engage each other in evidence-based peer review and work collaboratively and cooperatively in the spirit of open deliberation, especially in contexts that bring to the surface deeply held priorities and values.	Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation
3.2 Decision Making and Action Skills	
3.2.A. Forming and evaluating personal views – Learners evaluate, justify, and communicate their own views on environmental issues and possible ways to address them.	Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action
3.2.B. Evaluating the need for action –Learners apply their research and analytical skills to systematically determine whether action is needed in specific environmental, cultural/social, and economic contexts and whether they should be involved.	Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action
3.2.C. Planning and taking action –Learners develop action strategies and design solutions based on their research and analysis of an environmental issue. If appropriate, they implement plans that are within the scope of their rights and consistent with their individual abilities and responsibilities as members of the community.	Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action

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<p>3.2.D. Evaluating the results of actions – Learners evaluate the intended and unintended consequences of design solutions, their own civic actions and actions taken by other individuals and groups, including implications for long-term environmental, social, and economic sustainability.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation</p>
<p>Strand 4: Personal and Civic Responsibility</p>	
<p>4.A. Recognizing rights and responsibilities – Learners describe the relationships between exercising their individual rights and responsibilities and addressing environmental, social, and economic sustainability.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Civic and Political Institutions Participation and Deliberation</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action</p>
<p>4.C. Recognizing efficacy and developing agency – Learners exhibit personal agency by working independently and making choices to bring about change in their community that addresses environmental, social, and economic sustainability.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action</p>
<p>4.D. Accepting personal responsibility – Learners evaluate the broad environmental, social, and economic consequences of their actions. They accept responsibility for recognizing those effects and changing their actions when warranted.</p>	<p>Dimension 2: Applying Disciplinary Concepts & Tools Civics Participation and Deliberation</p> <p>Dimension 4: Communicating Conclusions & Taking Informed Action Taking Informed Action</p>

References

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