



Supporting Environmental Literacy at All Levels: Maryland's Environmental Literacy Standards and Framework

Office of Teaching and Learning Instructional Programs and Services

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PRESENTED BY

Payton Hesse, Environmental Literacy Specialist



Presentation Outline

- 1. Introduction
- 2. History of Environmental Education in Maryland
- 3. Creation of Maryland's Environmental Literacy Standards Framework
- 4. Features and Applications of the Framework
- 5. Questions



Outcomes

By the end of the session, participants will be able to:

- Communicate the Maryland Environmental Literacy Standards and their history;
- Describe the Environmental Literacy Standards Framework and the richness of the Framework's elements (essential questions, objectives, standards); and
- Discuss applications of the Environmental Literacy Standards Framework.

MCCC ECO Environmental Literacy Standards and Framework Presentation

Welcome and Introductions



Introductions

Office of Teaching and Learning Instructional Programs and Services (OTLIPS), Science Branch

Payton Hesse (she/her) Environmental Literacy Specialist payton.hesse@maryland.gov



MSDE Science Branch

Vision

All students will become **scientifically and environmentally literate** individuals who are skilled, reflective, and empowered to **make informed decisions** that benefit themselves, their families, and their local and global communities within an increasingly complex and continually changing world. MCCC ECO Environmental Literacy Standards and Framework Presentation

History of Environmental Education in Maryland



What is Environmental Literacy?



Defining Environmental Literacy

MSDE's Environmental Education in Maryland Public Schools (2010) states that

Environmentally literate students understand environmental and physical processes and systems, including human systems. They are able **to analyze global, social, cultural, political, physical, economic and environmental relationships**, and **weigh various sides of environmental issues** to **make responsible decisions** as individuals and as members of their community and citizens of the world.



https://news.maryland.gov/msde/wp-content/uploads/sites/12/2015/01/Environmental-Ed_Guide_FINAL.pdf



Timeline



Require all students experience a comprehensive, multidisciplinary program of environmental education preK-12th grade (included 5 goals)



Environmental Literacy Standards were first adopted



Environmental Literacy graduation requirement established



Environmental Literacy Standards review and revision started



Revised Environmental Literacy Standards adopted



Environmental Literacy Standards Framework released



1. Environmental Issue Investigation & Action

Environmentally literate students investigate environmental issues in order to develop and implement local actions that protect, sustain, or restore the natural environment.





2. Human Dependence on Earth Systems and Natural Resources

Environmentally literate students construct and apply understanding of how Earth's systems and natural resources support human existence.





3. Environmental Impact of Human Activity

Environmentally literate students construct and apply understanding of the environmental impact of human activities on Earth's systems and resources.





4. Consequences of Environmental Change on Human Health and Well-Being.

Environmentally literate students construct and apply understanding of the consequences of human induced environmental change on individual and collective health and well-being.





5. Individual and Collective Responses to Environmental Change.

Environmentally literate students construct and apply understanding of individual, collective, and societal responses to human-induced environmental change.





What is Required?

Environmental Literacy Instructional Programs (COMAR 13A.04.17.01)

- A. Each local school system shall provide in public schools a **comprehensive, multidisciplinary** environmental literacy program **infused within** current curricular offerings and aligned with the Maryland Environmental Literacy Standards.
- B. The Maryland Environmental Literacy Program shall:
 - 1. Provide a developmentally appropriate instructional program with opportunities for outdoor learning experiences;
 - 2. Advance students' knowledge, confidence, skills, and motivation to make decisions and take actions that preserve and protect the unique natural resources of Maryland, the Chesapeake Bay, and its watershed; and
 - 3. Provide for the diversity of student needs, abilities, and interests at the early, middle, and high school learning years and shall include all of the Maryland Environmental Literacy Standards as set forth in §C of this regulation.

COMAR13a.04.17.01

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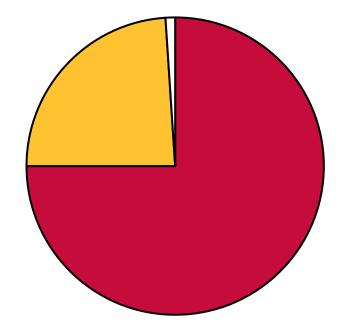
Creation of Maryland's Environmental Literacy Standards Framework



Phase I—Framework Development

- Once the Maryland State Board of Education adopted the revised standards, work started on developing the Environmental Literacy Standards Framework.
- Workgroup created with 5-6 participants from each grade band (PreK-2, 3-5, 6-8, 9-12).
- Workgroup composed of environmental educators, 72% from formal education, 23% from informal education, and 1% from higher education.

Workgroup I Participants



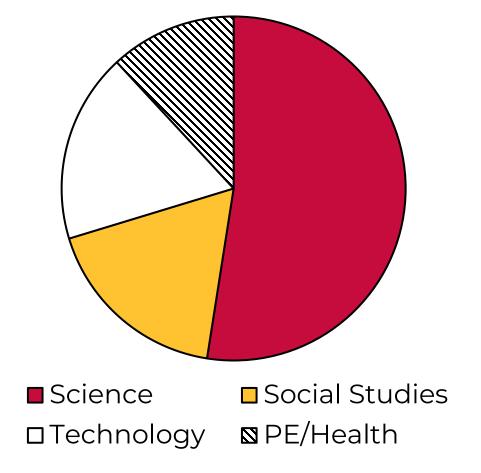
Formal Education
 Informal Education
 Higher Education



Phase II—Refinement, Feedback, & Appendix Development

- National Geographic Grant used to collect resources and to provide professional learning/feedback.
- Workgroup for each grade band (PreK-2, 3-5, 6-8, 9-12), each with 4-5 participants.
- Composed of formal educators and content supervisors from science (53%), social studies (18%), technology (18%), and physical education/health (12%).

Workgroup II Participants





Phase II—Refinement & Feedback

- After completion of the Environmental Literacy Standards Framework, MSDE held three feedback sessions in October and November of 2022.
- Over 70 people across various disciplines attended these sessions and provided feedback on the Framework.
- LEA Environmental Literacy Coordinators were also asked to review and provide feedback.



Introduction

The Code of Maryland Regulations (COMAR) 13A.04.17.01, Requirements for Environmental Literacy Instructional Programs for Grades Prekindergarten -12 states that each local school education agency "shall provide in public schools a comprehensive, multi-disciplinary environmental literacy program infused within current curricular offerings and aligned with the Maryland Environmental Literacy Standards."

State Frameworks are developed by the Maryland State Department of Education (MSDE) to support local education agencies in providing high-quality instructional programs in Environmental Literacy. State Frameworks are defined as supporting documents and provide guidance for implementing the State Standards in Environmental Literacy which are reviewed and adopted by the Maryland State Board of Education every eight years. State Frameworks also provide consistency in learning expectations for students in environmental literacy programs across the twenty-four local education agencies as local curriculum is developed and adopted using these documents as a foundation.

MSDE shall update the State Framework in Environmental Literacy in the manner and time the State Superintendent of Schools determines is necessary to ensure alignment with best-in-class, research-based practices. Tenure and stability of State Frameworks afford local education agencies the necessary time to procure supporting instructional materials, provide professional development, and to measure student growth within the program. Educators, practitioners, and experts who participate in writing workgroups for State Frameworks represent the diversity of stakeholders across Maryland. The State Framework in Environmental Literacy was developed, reviewed, and revised by teams of Maryland educators and practitioners, including local education agency content curriculum specialists, classroom teachers, accessibility staff, and other experts who worked in close collaboration with MSDE.

The Prekindergarten to Grade 12 Environmental Literacy Framework was released in March 2023.

Maryland State Department of Education

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Features and Applications of the Maryland Environmental Literacy Standards Framework



Purpose of the Framework

The Environmental Literacy Standards Framework is intended to connect interrelated core concepts for student learning in environmental literacy by:

- Providing conceptual understandings to guide teacher instruction and student learning; and
- Identifying relevant learning outcomes associated with specific grade bands;

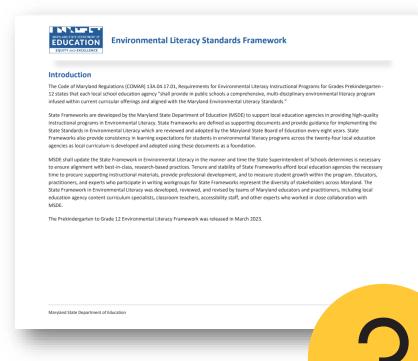
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Purpose of the Framework

The Framework is:

- Not a curriculum;
- A way to **promote multiple methods** by which environmental literacy can be implemented; and
- Intended to support **interdisciplinary approach** to fostering environmental literacy.





Contents of the Framework

- Five Environmental Literacy Standards
- For each of the five standards, at each grade band (PreK-2, 3-5, 6-8 and 9-12):
 - Enduring Understanding;
 - Objective Statements;
 - Essential Questions; and
 - Content Standards;
- Appendices
 - A: Grade Band Progressions;
 - B: Phenomena for Environmental Literacy;
 - C: Instructional Resources for Environmental Literacy; and
 - D: Research Supporting Environmental Literacy.

Introduction			
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to ensure alignment v time to procure suppo practitioners, and exp State Framework in En	e State Framework in Environmental Literacy in the manner with best-in-class, research-based practices. Tenure and stab string instructional materials, provide professional developm erfs who participate in writing workgroups for State Frame writormental Literacy was developed, reviewed, and revized tent curriculum specialists, classroom teachers, accessibility	ility of State Frameworks afford local education age nent, and to measure student growth within the pro rorks represent the diversity of stakeholders across by teams of Maryland educators and practitioners,	ncies the necessary gram. Educators, Maryland. The including local
The Prekindergarten t	to Grade 12 Environmental Literacy Framework was released	in March 2023.	
Maryland State Departme	ent of Education		



Features and Applications of the Environmental Literacy Standards Framework

Features we are going to highlight today:

- Content Standard Connections;
- Grade Band Progressions;
- Student Action; and
- Environmental Justice.



Environmental Literacy Standards Framework

Introduction

The Code of Maryland Regulations (COMAR) 13A.04.17.01, Requirements for Environmental Literacy Instructional Programs for Grades Prekindergarten -12 states that each local school education agency "shall provide in public schools a comprehensive, multi-disciplinary environmental literacy program indused within current curricular definings and aligned with the Maryland Environmental Literacy Standards".

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The Prekindergarten to Grade 12 Environmental Literacy Framework was released in March 2023

Maryland State Department of Education

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Key Feature of the Framework: Content Standards

The Environmental Literacy Standards Framework facilitates comprehensive, multidisciplinary environmental literacy by providing examples of standards connections at each grade band in the following contents:

- Science
- Social Studies
- ELA/Literacy
- Mathematics
- Health Education

What are the applications of multiple content standards connections?

- Establishes broader context for environmental literacy educators
- Facilitates interdisciplinary nature of environmental literacy instruction



Key Feature of the Framework: Content Standards

Standard 2: Environmentally literate students construct and apply understanding of how Earth's systems and natural resources support human existence.

Science	Social Studies	ELA/Literacy	Mathematics	Health
 Earth/Space Science (ESS): HS-ESS2-2; HS- ESS2-4; HS-ESS2-5; HS- ESS2-7; HS-ESS3-1; HS- ESS3-2; HS-ESS3-3; HS- ESS3-4; HS-ESS3-3; HS- ESS3-6 Life Science (LS): HS- LS2-1; HS-LS2-2; HS- LS2-6; HS-LS2-7; HS- LS4-5 Engineering, Technology, and the Application of Science (ETS): HS-ETS1- 1; HS-ETS1-2; HS-ETS1- 3; HS-ETS1-4 	 Branch, Unit: Economics, Standard 6.0 Modern World History (1970 – Present), Unit: Globalization, Standard 6.0 High School United States History, Unit: Economic, Political, and Social Reorganization (1974-1992), Unit: Globalization, Terrorism, and Political 	 Writing (W): W.9-10.1; W.9-10.2 Reading Informational Texts (RI): RI.9-10.1; RI.9- 10.2 Reading in Science & Technical Subjects (RST): RST.9-10.7; RST.9-10.8; RST.9-10.9; RST.11-2.1; RST.11-12.8 	 Mathematical Practices (MP): MP.2 	 Mental and Emotional Health: 1a.HS1.2; 1a.HS2.2; 1a.HS2.3; 1a.HS2.4



Key Feature of the Framework: Grade Band Progressions

Appendix A includes grade band progressions in each standard for:

- Enduring Understanding
- Objective Statements
- Essential Questions

What are the applications of the grade band progressions?

Practitioners can:

- Compare developmentally appropriate examples at various levels; and
- Self-assess the rigor of their own instruction, programs, or curricula.
- In this session, we will use a few grade band progressions to highlight other features of the framework.



Key Feature of the Framework: Student Action

The Framework facilitates student action and draws from the Meaningful Watershed Educational Experience (MWEE) model.

- Standard 1: Environmental Issue Investigation and Action
- Standard 5: Individual and Collective Responses to Environmental Change

What is special about the MWEE model?

- Learner-centered experience: Students use the inquiry process and conduct investigations into local environmental issues that lead to informed action and civic engagement.
- **Classroom Integration:** Infused into the scope and sequence of the curriculum and anchored to standards.
- The Local Context (i.e., schoolyard, neighborhood, town, or community): establishes the liferelevancy of the issue, problem, or phenomenon being studied.
- **Sustained Activity:** A MWEE is different from a stand-alone field trip because it involves a variety of rich learning opportunities spread over a unit or multiple units.



Appendix A: Objective Statements Grade Band Progressions

Standard 1: Environmentally literate students investigate environmental issues in order to develop and implement local actions that protect, sustain or restore the natural environment.

By the end of grade 2		By the end of grade 5		By the end of grade 8		By the end of grade 12	
A.	Explore and experience the environment.	А.	ldentify a local environmental issue through	A.	Identify and investigate a local or global environmental issue that	А.	Examine an environmental issue in the context of the local and global environment and human
В.	Confirm a local		observation and/or research.		impacts a variety of stakeholder		behaviors that contribute to it.
	environmental issue.	В.	Use evidence to construct		groups.	В.	Evaluate evidence-based solutions to mitigate
C.	With guidance, develop an action plan to address	;	explanations and generate possible solutions to the	B.	Research and explore the perspectives of the various		or prevent the environmental impacts associated with the environmental issue.
	the issue.		environmental issue.		stakeholder groups.	C.	Formulate individual and collective actions that
D.	Implement the action plan.	C.	Develop an action plan to protect, sustain, or restore the natural environment.	C.	Analyze evidence to construct explanations and use data to form conclusions.		can be undertaken to address local environmental issues considering cultural, social, economic, and political factors as they
		D.	D. Implement the environmental action plan and reflect on the impact and effectiveness of the plan.	D.	Develop an action plan to protect,		relate to the development of solutions.
					sustain, or restore the natural	D.	Critique the feasibility of the plan including the
					environment and weigh the impact		economic requirements, and the
					on various stakeholder groups.		willingness/ability of stakeholders to
				E.	Implement the environmental		participate in the plan.
					action plan and reflect on the	E.	Implement the plan based on the
					impact of the plan on the various		environmental issue investigation and evaluate
					stakeholder groups.		the success of actions taken.



Append

Standard 1: I develop and

Student action is possible at all levels of education with appropriate levels of support, and scaffolding. Additionally, it is vital to employ mental issues in order to student action at appropriate level of rigor.

Band Progressions

ore the natural environr

Page 43

By the end of grade 2		By the end of grade 5		By the end of grade 8		By the end of grade 12	
А. В. С.	Explore and experience the environment. Confirm a local environmental issue. With guidance, develop an action plan to address the issue.	A. B. C. D.	Identify a local environmental issue through observation and/or research. Use evidence to construct explanations and generate possible solutions to the environmental issue. Develop an action plan to protect, sustain, or restore the natural environment. Implement the environmental action plan and reflect on the impact	А. В. С. D.	Identify and investigate a local or global environmental issue that impacts a variety of stakeholder groups. Research and explore the perspectives of the various stakeholder groups. Analyze evidence to construct explanations and use data to form conclusions. Develop an action plan to protect, sustain, or restore the natural environment and weigh the impact	А. В. С. D.	Examine an environmental issue in the context of the local and global environment and human behaviors that contribute to it. Evaluate evidence-based solutions to mitigate or prevent the environmental impacts associated with the environmental issue. Formulate individual and collective actions that can be undertaken to address local environmental issues considering cultural, social, economic, and political factors as they relate to the development of solutions. Critique the feasibility of the plan including the economic requirements, and the
			and effectiveness of the plan.	E.	on various stakeholder groups. Implement the environmental action plan and reflect on the impact of the plan on the various stakeholder groups.	E.	willingness/ability of stakeholders to participate in the plan. Implement the plan based on the environmental issue investigation and evaluate the success of actions taken.



Think & Share: Environmental Justice

Reflect on the following questions:

How would you define environmental justice?

How does environmental justice connect to environmental literacy and/or your current practice? INDIVIDUAL THINK TIME

TYPE IN THE CHAT



Essentials of Environmental Justice

- The Maryland, Environmental Justice is defined as "equal protection from environmental and public health hazards for all people regardless of race, income, culture, and social status."
- The environment is inclusive of where people live, play, learn, and grow.



<u>Maryland General Assembly §1–701.</u> Image from <u>EPA's Climate Change and Children's Health and Well Being in the U.S.</u>



Key Feature of the Framework: Environmental Justice

The Framework embeds Environmental Justice throughout grade bands 6-8 and 9-12 in several standards, particularly:

- Standard 4: Consequences of Environmental Change on Human Health and Well-Being
- Standard 5: Individual and Collective Responses to Environmental Change

Why Education for Environmental Justice?

- Empowers educators to facilitate deeper discussion, learning, and action
- Reflects authentic learning about current environmental issues that matter to students



Appendix A: Essential Questions Grade Band Progressions

Standard 5: Environmentally literate students construct and apply understanding of individual, collective, and societal responses to human induced environmental change.

PREK-GRADE 2	GRADES 3-5	GRADES 6-8	GRADES 9-12
• What are our roles and responsibilities in caring for our planet?	 What role do policies and laws play in protecting the environment? 	 In what ways do my personal actions impact the environment? Why are some environmental 	• How do societal norms influence our response to environmental change?
• What positive actions can we take to protect people and the environment?	 Why might individuals choose impact-reducing behaviors while others may not? 	issues controversial, and how might this affect approaches to addressing them?	• What strategies could be implemented by individuals and by communities to reduce their ecological footprint and/or
 In what ways can an individual's local actions impact human-induced environmental changes? 	 How effective are policies and laws in changing individual and community 	 In what ways do environmental justice issues exist in the local community? 	address issues of environmental justice and environmental racism?
	behaviors?	• What is the relationship between environmental issues and civil rights?	• How do current policies and laws address environmental justice and environmental racism?

• Why might individuals

choose impact-reducing

• How effective are policies

individual and community

and laws in changing

behaviors?

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learn essential a

knowledge to s

Much like the NGSS, students in elementary

Append school do not address topics like climate change and Progressions



or environmental Standard 5: individual, c

PREK-GRADE 2

responsibilities in caring for

• What positive actions can we

take to protect people and the

What are our roles and

our planet?

environment?

In what ways can an

individual's local actions

impact human-induced

environmental changes?

nmental justice expli- sential approaches a dge to support their	nd background		standing of hental change.	Page 52
GRADES 3-5	GRADES 6-8	3	GRADES 9-	-12
 What role do policies and laws play in protecting the environment? 	 In what ways do my pers actions impact the enviro 		 How do societal norm our response to enviro change? 	

- Why are some environmental issues controversial, and how might this affect approaches to behaviors while others may addressing them?
 - In what ways do environmental justice issues exist in the local community?
 - What is the relationship between environmental issues and civil rights?
- What strategies could be implemented by individuals and by communities to reduce their ecological footprint and/or address issues of environmental justice and environmental

racism?

• How do current policies and laws address environmental justice and environmental racism?

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Questions?



Contact Information

Instructional Programs and Services

- > Office of Teaching and Learning
- Instructional
 Programs and
 Services
- Educational Equity
 Policy
- Multilingual
 Education Branch
- Comprehensive
 Arts Education
 Branch
- Advanced
 Academics and
 Gifted and Talented

Environmental Literacy

The goal of Maryland's Environmental Literacy instructional program is to enable students to make decisions and take actions that create and maintain an optimal relationship between themselves and the environment, and to preserve and protect the unique natural resources of Maryland, particularly those of the Chesapeake Bay and its watershed.

Supporting Documents

Environmental Literacy Standards Environmental Literacy Framework

Programs and Organizations

U.S. Department of Education Green Ribbon Schools (ED-GRS) The U.S. Department of Education Green Ribbon School Program

Payton Hesse

Environmental Literacy Specialist payton.hesse@maryland.gov



Maryland's Environmental Literacy Program Webpage tinyurl.com/MSDE-ELit