

Environmental Education

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Environmental Literacy

Pre-Survey

1. Steps in survey creation
2. Example surveys

Post-Survey

1. What are other states doing?
2. Organizations and Programs in Massachusetts

Survey Creation

Steps in Survey Making

1. Write objectives and goals for survey and then formulate questions
2. Review of experts in the field
3. Test the questions on educators.

Note:

- A. Ambiguities
- B. Time for completion
- C. Resources that were consulted

<http://www.tandfonline.com/doi/pdf/10.1080/00958960009598666?needAccess=true>

Example Surveys

Environmental Education and Sustainability in US Public Schools

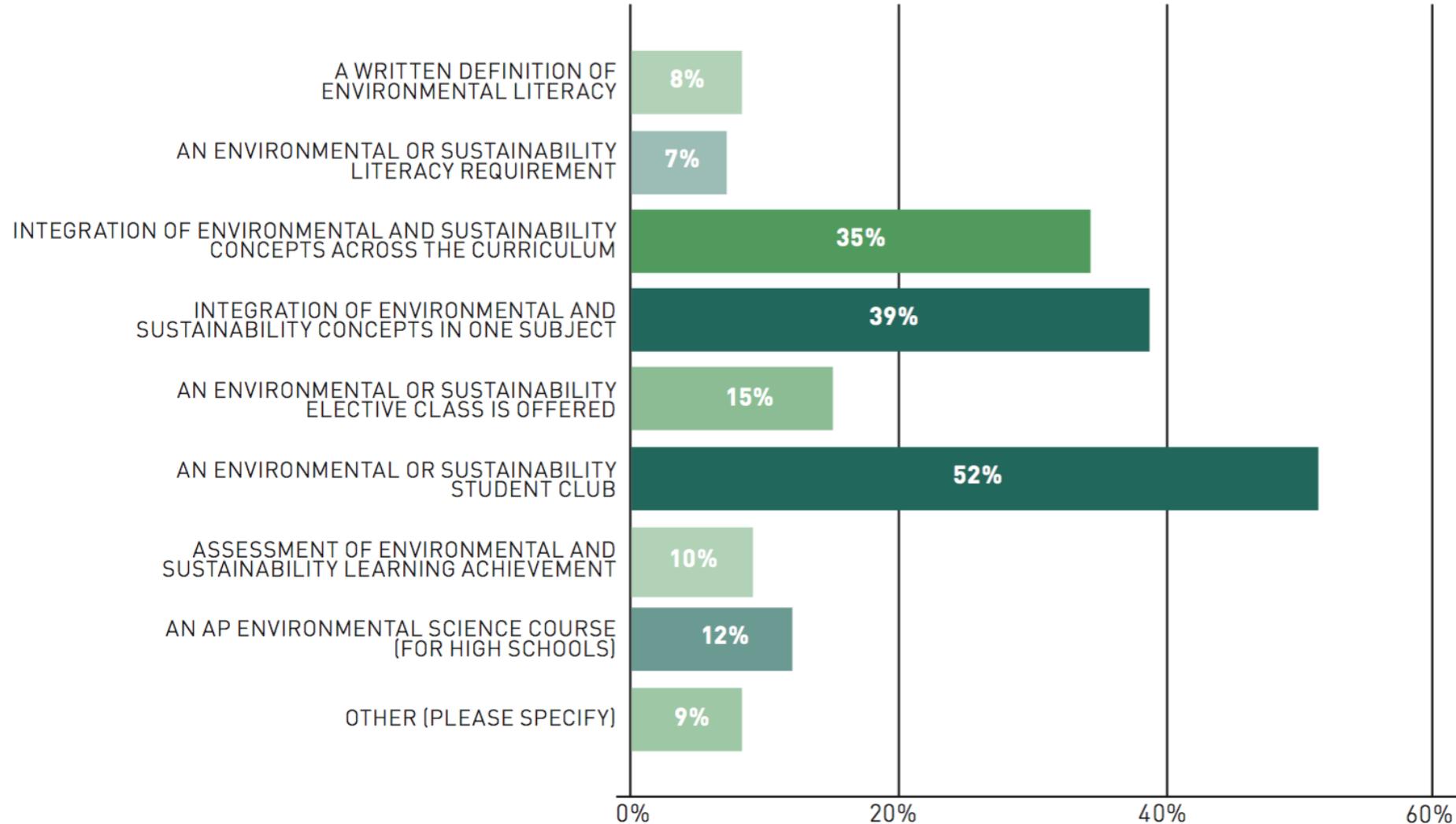
Sent to 17500 principals, 1057 principals participated

Objectives: Sought to gain an understanding of how schools' environmental education programs develop environmental literacy among students

projectgreenschools.org/wp/wp-content/uploads/2014/08/USGreenSchools12114.pdf

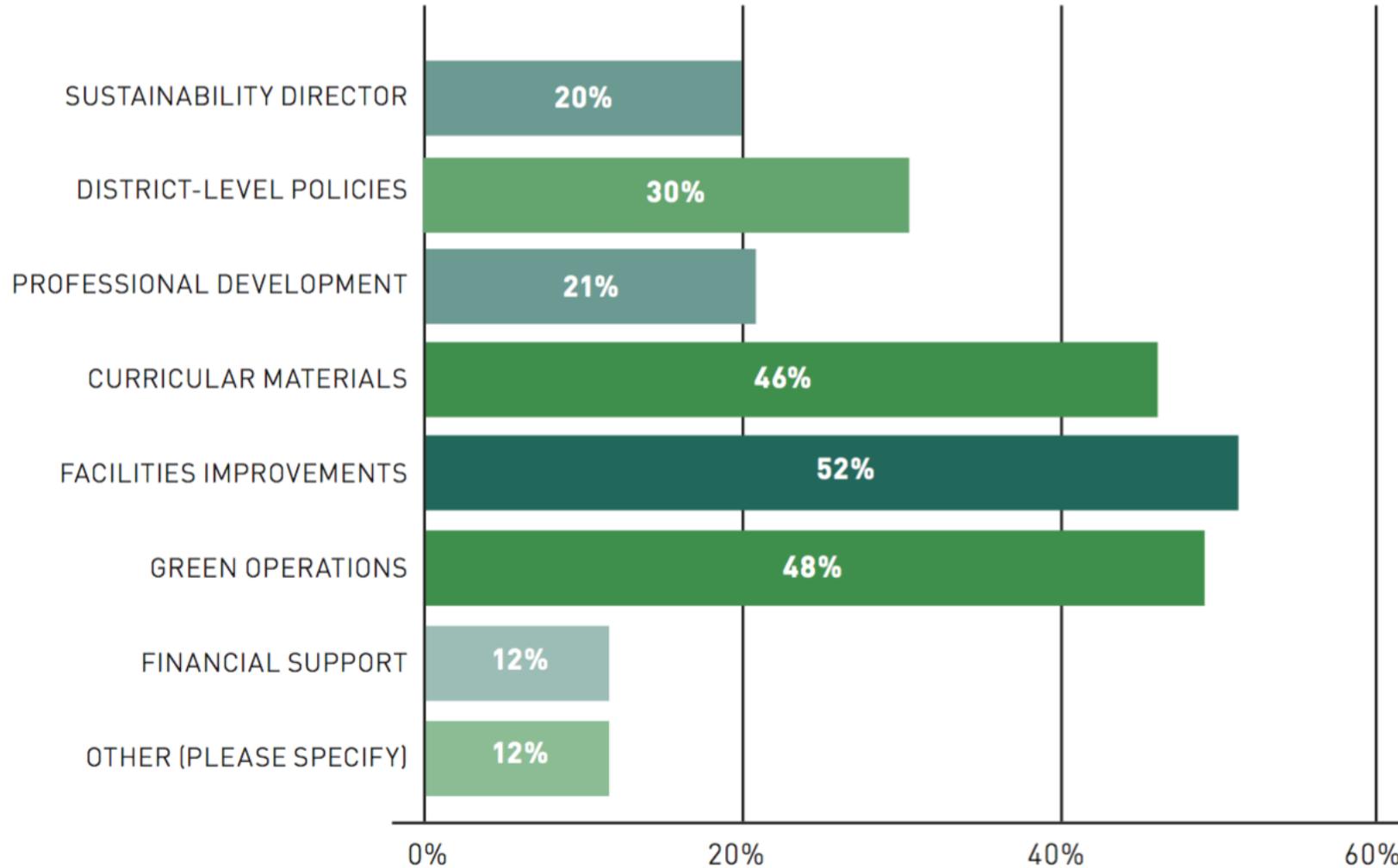
ENVIRONMENTAL EDUCATION CURRICULAR PROGRAM ELEMENTS

Which practices does your school employ to incorporate environmental and sustainability education in the curriculum?



DISTRICT SUPPORT FOR EE AND SUSTAINABILITY

Which factors have contributed the most to supporting and promoting environmental education and sustainability efforts at your school?



The survey address other challenges that principals stated schools faced.

Principals would like:

- More money, time and staff
- Better organization and designated leadership
- Greater commitment from the school board and district
- Overall sustainability plan for their schools, and outside support
- More buy-in, enhanced staff training, and more integration of EE into curriculum at their schools

Rhode Island's ELP Survey

In order for Rhode Island to create their Environmental Literacy Plan. They did an analysis of current education standards and requirements. Additionally, to this analysis, they also sent a short survey to educators which is included at the end of the ELP. They also offered incentives for completing the survey in order to entice response.

APPENDIX C

Survey to Teachers

Instructions

Thank you for taking 10-15 minutes out of your busy schedule to answer these important questions about environmental education. Your input is key to developing Rhode Island's environmental literacy plan.

Your responses will be 100% anonymous. To show our appreciation, please follow the link at the end of the survey to sign-up for your free 1-year RIEEA membership.

Please take a moment to read the definitions of environmental education and environmental literacy below before you answer the questions. Many thanks for your valuable time and input!

Definitions

Environmental literacy: An understanding of the systems of the natural world and the interactions between living and non-living environments. Also, the confidence, motivation and ability to make responsible decisions based on scientific, economic, aesthetic, and ethical considerations as a member of a community.

Environmental education: The learning process through which students and citizens attain environmental literacy. Can take place in classrooms, at home, school yards, nature centers, etc. Environmental education features hands-on, place-based activities that weave real world experiences and environmental issues into students' learning.

Section 1

1. Please check the grade level(s) that you are teaching this year:
2. What type of school do you teach in?
3. What is your teaching position?
4. What type of public school do you teach in?
5. What district or charter school do you teach in?

Section 2

1. Please answer the following questions about the environmental education content and skills students learn in your classes. To what extent do your students:

Not at all A little Somewhat A great extent

- Develop questions; design investigations; collect, organize, and evaluation information; and draw conclusions about the environment and environmental topics?
- Demonstrate their understanding of the processes that shape the Earth?
- Demonstrate their understanding of changes in matter and forms of energy?
- Demonstrate their understanding of organisms, populations, and communities?
- Demonstrate their understanding of heredity and evolution?
- Demonstrate their understanding of ecological systems and the flow of matter and energy?
- Demonstrate their understanding that the environment is both influenced by and influences individuals, groups, cultures, politics and economic systems?
- Demonstrate their understanding of the ways the world's environment, social, economic, cultural and political systems are linked?
- Demonstrate their understanding of the ways that humans alter the environment, including the impact of technology?
- Demonstrate their understanding of the concepts of resources and resource distribution?
- Demonstrate their understanding of a range of local, national and global environmental issues?
- Identify, investigate, and evaluate action plans for local or other environmental issues?
- Form and evaluate their personal views on environmental issues?
- Plan, engage in, and evaluate the result of responsible citizen action on an environmental issue?
- Demonstrate their understanding of the role of citizens' rights and responsibilities in promoting the resolution of environmental issues?
- Recognize their responsibility and role as citizens in regards to environmental issues?

Section 3

Think about when you teach any of the environmental literacy skills and concepts described in the last question as you answer the questions below.

1. Which Grade Level Expectations or Grade Span Expectations do you align the environmental literacy skills and concepts to?

(Check all that apply)

- Science
- Reading
- Civics and Government
- Math
- Writing
- I Don't teach any of these skills or concepts (skip to the next page)
- Other (please specify)

2. How do you usually teach the environmental literacy skills and concepts?

- Departmentalized teaching (in one classroom or in one subject area)
- Interdisciplinary teaching (work with teachers on team or grade level)
- Other (please specify)

3. How are the students usually organized when teaching environmental literacy skills or concepts?

- whole class
- groups/teams
- individualized
- Other (please specify)

4. Which teaching methods and strategies do you commonly use when teaching environmental literacy skills and concepts?

- Lecture
- Projects
- Hands-on
- Labs
- Cooperative Learning
- Service Learning
- Discussion
- Inquiry
- Other (please specify)

Section 4

1. How many years have you been teaching?

2. What is the highest degree you have earned?

3. How many college/university courses in or involving environmental education have you completed in each of the following areas?

- Environmental Science
- Environmental Education Methods
- Outdoor/Recreational Education
- Other

4. If over the last 10 years you have participated in workshops or courses in the following areas, please write in the name of the university or organization that offered the workshop or course.

- How to teach using nature and outdoor spaces.
- How to integrate environmental education into the curriculum
- How to teach students to inquire about and investigate environmental issues.
- Specific local environmental topics (e.g. Narragansett Bay)
- Other

5. Please check the response that best reflects your views on environmental education and the environment.

Not at all

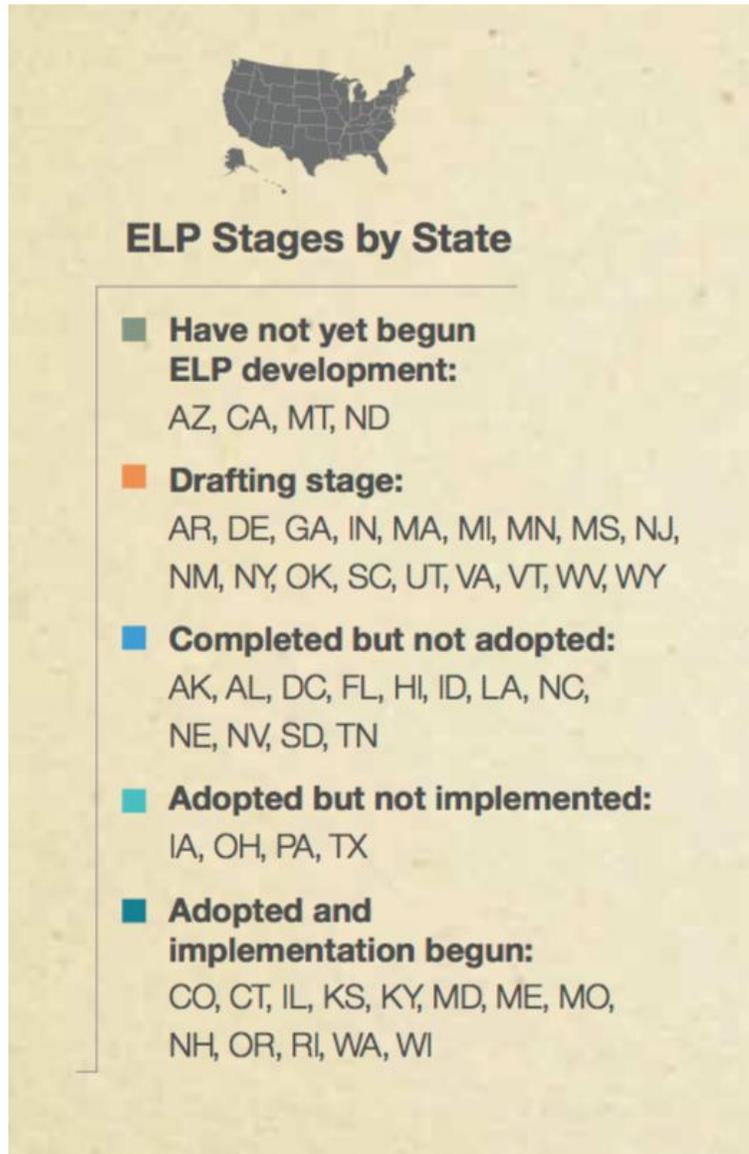
Slightly

Moderately

Considerably Extremely

- How important is it that K-12 students are exposed to environmental education?
- How important is environmental education to you personally?
- How concerned are you about environmental problems/issues?
- How active are you in environmental protection efforts in your community or region?

What are other states doing?



<https://naaee.org/sites/default/files/2014-selp.2.25.15.a>

Oregon

- ▶ 2009 Oregon passes the *No Oregon Child Left Behind Act* which leads to creation of task for to create OEL plan
- ▶ 2011 legislature-approved **Oregon Environmental Literacy Plan: Toward a Sustainable Future**
- ▶ The ELP addressed content standards, courses, how to measure student environmental literacy, professional development programs for teachers and how the ELP relates to state graduation requirements

While other states have addressed graduation requirements in their ELPs, Oregon created the following Environmental Literacy Strands to be incorporated into the state graduation requirements:

- Systems thinking
- Physical, living, and human systems
- Interconnectedness of people and the environment
- Personal and civic responsibility
- Investigate, plan, and create a sustainable future

Executive summary: <http://oelp.oregonstate.edu/oelp-plan/oregon-environmental-literacy-plans>

Full ELP: <http://oelp.oregonstate.edu/sites/oelp/files/oelp-resources/executive-summary.pdf>

Maryland

- ▶ First state to make environmental education part of graduation requirements
- ▶ The ELP was the result of government mandates
 - ▶ Incorporates informal environmental education
- ▶ The plan was developed as a result of gap analyses in each of the key areas stated in the executive order
- ▶ Additionally, they administered two surveys
 - ▶ To establish baseline levels for many of the objectives contained in the Executive Order
 - ▶ Collect data on public support for outdoor learning relative to other pressing environmental issues

<http://news.maryland.gov/msde/resources-environmental-literacy/>

Rhode Island's ELP

Partnerships

Does your school have a program or relationship with an environmental organization to teach environmental education (e.g. annual field trip to nature centers/outdoor centers, place-based learning, service learning)?



■ Yes
■ No

Partnerships

Environmental Sustainability Pathway Pilot Project

The pilot course Clean Energy Careers is the latest addition to the Environmental Sustainability pathway, part of a focus on STEM in the Massachusetts public schools. Students participated in projects that included research and going to MassCEC for training. The EES pathway includes a dual enrollment course, Environmental Studies, with community partner Middlesex CC.

<https://thelhsreview.com/4129/news/lhs-renewable-energy-forum-celebrates-pilot-project/>

Benefits of the Pathway Programs include:

- Courses tailored to a specific area of study, with a strong post-secondary and career focus.
- Teachers with industry experience as well as educational certifications.
- Skill-building around career trajectories and paths of study.
- Opportunities for students, parents, teachers and community members to be partners in the
- educational process.
- Internships within the community and Dual-Enrollment opportunities with UML and Middlesex
- Community College.
- Opportunities for independent learning and research.

Partnerships

DIGITS (2013)

An innovative program that connects sixth grade classes in Massachusetts with STEM professionals to inspire student interest in STEM subjects and careers. Mainly involves STEM but was also comprised of industry associations representing the clean energy sector.

Nationally, 44.7% of high school students taking the SATs indicate they are interested in pursuing a STEM career. But in Massachusetts, that number is only 38%. By contrast, that number for North Carolina is 48.9%, and California, 44.9%.

<https://www.umassmed.edu/globalassets/regional-science-resource-center/digits---central-press-release-final1.pdf>

Funding/Grants

Clean Energy Activity Day Program (2017)

The goal of the activity day is to expose students to clean energy concepts; science, technology, engineering and math (STEM) topics; and higher-education opportunities. MassCEC put out a request for proposals to offer \$8,000 or 10,000 grants to all public and private schools that could design their own Clean Energy Activity Day. Grants were provided to six MA schools-- Brockton, Fitchburg, Milton, Auburn and two in Boston.

<http://nawindpower.com/clean-energy-day-engineering-the-next-generation>

Funding/Grants

Clean Energy Education Program (2017)

\$960,000 in grants for hands-on learning and academic training for six MA high schools in an effort to prepare students to pursue clean energy and STEM higher education majors and careers.

Diman Regional Vocational Technical High School, Malden High School, Northeastern University/John D. O'Bryant School of Mathematics and Science, UMass Amherst/High School of Science and Technology, Norfolk County Agricultural High School, and Greater New Bedford Workforce Investment Board/New Bedford High School.

<http://www.mass.gov/eea/pr-2017/cec-announces-960000-for-clean-energy-education.html>