



Global EE: The Good and the Better

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Introduction

The purpose of this research project was to assess the current status of climate and environmental education in formal education systems across the world to establish benchmarks for environmental literacy. The research aimed to identify best practices for successful and long-term implementation that would lead to the ultimate goal of environmental literacy. Globally, climate and environmental education exist across the spectrum, from decades of formal implementation to continued exclusion of the topic as a whole. The research focused on K-12 grade levels and international equivalents.

Definitions

Environmental Education (EE): In 1977, UNESCO and the UN Environment Program convened in Tbilisi, Georgia for the first ever intergovernmental conference on EE and provided its definition. The following definition of EE evolved from the meeting in Tbilisi;

- A learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible actions.

Environmental Literacy (EL): Charles Roth first used the term in a 1968 article within the Massachusetts Audubon publication (McBride et al., 2013). The article stemmed from a response that people who polluted the environment were functionally environmentally illiterate. Later in 1992, Roth defined EL as:

- To be successful citizens and stewards of this planet, and to sustain a functional society and economy, natural resources need to be used wisely and efficiently and we need to protect all ecological systems to ensure clean air, clean water, and food security, our basic survival needs.

International EE Review

- Education systems worldwide are vastly different in structure and implementation. Through a comprehensive literature review and research analysis of 35 countries across the world, there were some clear trends of how education systems incorporate environmental education for the goal of increasing environmental literacy in students.
- The countries with government mandated EE programs include: India, Brazil, Kenya, Philippines, China, Japan, Tanzania, Colombia, and Finland.

Assessment and Science Literacy

- Currently there are no international EL assessments in place, so to assess international levels of scientific literacy, which includes concepts about the environment, we utilized the Program for International Student Assessment or PISA.
- There appears to be no clear correlation between countries with national policies on environmental education and an increase in science literacy over the nine-year period.
 - Finland, which is ranked fifth in science literacy, and has a strong national environmental education curriculum has still experienced an average decrease of over thirty points from the 2006 PISA to the 2015 PISA (2018 data not yet available).
 - Colombia was one of the six countries that saw an increase in science literacy over the course of the nine-year study. The Columbian Ministry of Education and the Ministry of the Environment created the Interinstitutional Technical Committees of Environmental Education, which implemented national environmental policies. Though Colombia being ranked 62nd in science literacy had much more room for improvement.

Barriers to Successful EE Implementation*

- **Economics** - transportation and uniform fees, teacher strikes or no salaries, economic disparities between public vs. private schools, access to technology or reliable internet, resources for teachers and students.
- **Government** - not supporting the education system by underpaying teachers, not providing resources for mandated programs, and not equally distributing resources across the nation.
- **Gender, Culture and Society** - unequal gender access to education, sanitary facilities, pastoral traditions that are not accommodated; exception- Qatar with more females in STEM programs.



Case Studies: Brazil, India, and United States

In addition to the 35 country analysis, the research included an in-depth look at 3 geographically and culturally diverse countries working to adopt and implement formal EE across their schools systems.

Brazil

- Primary and secondary education is free and compulsory and is managed at the state and district level.
- There are 37.3 million students in Brazil in the compulsory school attendance age range of 4-17 years old (UNESCO 2017).
- PISA scores significantly increased from 2006-2009 but have gradually decreased since.
- In 1988 the Brazilian Constitution establishes that EE in all levels of education is a citizenship right and a duty of the state. There have been new iterations introduced every few years since. However, implementation is not consistent or enforced.
- The most recent Common National Base Curriculum had no specific reference to EE, but cited sustainability as an integrating theme. Awareness of this distinction and educational contexts could improve the implementation of, and integration between, Education for Sustainable Development (ESD) and EE.

India

- As mandated by the Indian Constitution, primary education is mandatory and free to all children.
- 434 million students in primary and secondary education (UNESCO 2017).
- India's students do not participate in the PISA assessment.
- EE is compulsory at all levels of education as a result of the efforts of the National Council for Education Research and Training (NCERT) in 1991.
- Consistent implementation across a diverse country and limited hands-on learning opportunities led to minimal EL gains. However, in 2017 EDN India facilitated 28 roundtable discussions across the nation. Several of the findings are included in recommendations below.

United States

- The management of the US education system is left primarily to each individual state, where decisions on funding, standards, compulsory education laws, etc. are made.
- There are 56 million K-12 students in the United States (UNESCO 2017).
- PISA scores had similar trend to Brazil but decreased more drastically.
- EE was formalized in 1990 with the passage of the National Environmental Education Act, which established the Office of Environmental Education within the EPA.
- Individual states are working to develop and implement Environmental Literacy Plans with support (though no funding) through the state Education Departments and the NAAEE state affiliates.

Recommendations

The 50th Anniversary of Earth Day in April 2020 is a monumental opportunity to refocus all schools on the goals of environmental literacy and Earth Day Network is working on developing resources as well as grassroots and national level support to do so. In response to the findings above, we suggest several initiatives that will help countries enhance environmental and climate change education programs for the ultimate goal of environmental and climate literacy.

- EE needs to be included in **all subjects**, not just science.
- EE needs to be scaffolded **across grade and age levels**.
- There needs to be **practical applications** including environmental literacy graduation requirements.
- **Project-based and inquiry-based learning** needs to be utilized and assessed.
- **Teacher training and professional development** needs to include environmental topics for all subjects and grade levels.
- There needs to be **governmental support** including funding for field-based experiences, professional development for educators, up to date environment and climate resources, and high functioning schools that are able to successfully incorporate environmental and climate education for all students.

* It needs to be emphasized however, that the lack of environmental literacy is not a result of flawed environmental education. There are countless variables that are impeding the success and promotion of environmental literacy. Problems that plague the entire education systems are the root cause for the lack of environmental literacy in students.

References:

- McBride, B. B., C. A. Brewer, A. R. Berkowitz, and W. T. Borrie. 2013. Environmental literacy, ecological literacy, ecoliteracy: What do we mean and how did we get here? *Ecosphere* 4(5):67.
- Roth, C. E. (1992). Environmental Literacy: Its roots, evolution, and directions in the 1990s. Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education
- UNESCO: <http://uis.unesco.org/en/country/us>

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