Environmental Literacy — Holding the Pieces Together

Keynote by
Dr. Trudi Volk
EEAI Annual Conference, 2011

Overview

- Early ideas about environmental education
- The environmentally literate citizen
- Where do we stand with environmental literacy in the U.S.?
- How do we respond to the challenge of environmental literacy?

The Tbilisi Objectives

UNESCO's Tbilisi Conference (1977)

- ***Awareness***: to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.
- ***Knowledge***: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.
- ***Attitudes***: to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.
- ***Skills***: to help social groups and individuals acquire skills for identifying and solving environmental problems.
- ***Participation***: to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

(UNESCO, 1978).

Simmons' 1995 Review of EE Frameworks

- ***Affect*** - sensitivity, attitudes, values, moral reasoning, motivation, and willingness;
- ***Ecological Knowledge***
- ***Socio-Political Knowledge*** - cultural, political, economic, religious, and other social factors that influence environmental perceptions and activities;
- ***Knowledge of Environmental Issues*** (at all levels);
- ***Skills*** - both issue and action skills (e.g., ID, analyze, investigate, evaluate);
- ***Determinants of Environmental Behavior*** - locus of control, and assumption of personal responsibility; and
- ***Behavior*** - all forms of participation aimed at solving problems and resolving issues.

(Simmons, 1995)

From the Top . . .

- U.S. EPA (1992) and the National EE Advisory Council (1996): "[Environmental Education is] a learning process that increases people's ***knowledge and awareness*** about the environment and associated challenges, … enhances ***critical-thinking, problem-solving***, and ***effective decision-making skills*** … [and] fosters ***attitudes, motivations, and commitments*** to ***make informed decisions*** and ***take responsible action***."

What does an environmentally literate citizen look like?

An Environmentally Literate Citizen . . .

. . . is *knowledgeable about the environment and aware of environmental problems and issues,*

. . . can apply critical-thinking, problem-solving, and *effective decision-making skills* to environmental problems and issues,

. . . and possesses the *attitudes, motivations, and commitments* to *make informed decisions* and *take responsible action* toward the environment in their personal lives and as members of society.

(Based on EPA, 1992 and NEEAC, 1996)

Where do we stand with environmental literacy in the U.S.?

To paraphrase Kevin Coyle . . .
"One way to describe the current condition of environmental literacy in America is as a gifted child that has yet to reach his or her full potential."

Environmental Literacy in the U.S. ~ Among Adults

Based on over ten years of public surveys, summarized by Coyle (2005) in *Environmental Literacy in America,* <www.neefusa.org/pdf/ELR2005.pdf>

Attitudes:

- For over more than a decade, NEETF/Roper studies and supporting data have shown high levels of public support for the environment.
- 65-70% of the public say they would chose environmental protection over economic development.
- Many Americans (56%) say they want to help and do more for the environment but they do not know how.

Knowledge:

- Overall awareness of simple environmental topics is reasonably high nationwide. However, comprehension of more complex environmental subjects is very limited.

- The average American mostly fails to grasp essential aspects of environmental science, important cause/effect relationships, or even basic concepts such as runoff pollution, power generation and fuel use, or water flow patterns.

- There is little difference in environmental knowledge levels between the average American and those who sit on governing bodies, town councils, and in corporate board rooms, and whose decisions often have wider ramifications on the environment.

- Even though 45% of Americans don't have the scientific and technical knowledge to understand environmental problems, 52% say they believe there is enough information available.

Targeted Behaviors:

83-89% turn off lights and electrical appliances when not in use.

59-65% lower the thermostat in winter to conserve energy.

60% recycle things such as newspapers, cans, and glass.

51% reduce air conditioning in summer to conserve energy.

47% purchase lamps and appliances that are energy efficient.

41% accelerate slowly to conserve gasoline when driving.

13% use alternative transportation (bike, bus, etc.).

Public Interest in Environmental Issues

- **True Blue Greens -** about 10% of the American public who are most likely to be interested in and active on the environment.

- **Green Back Greens -** about 5% of the public who mostly fight environmental problems with consumerism. They are willing to pay the most for a cleaner environment, but have little time to devote.

- **Sprouts -** about 33% of the adult population who are best defined as "fence walkers." When they get behind an environmental cause, it has real clout.

- **Grousers -** about 18% of adults who are somewhat concerned about the environment and do some inexpensive non-intrusive activities, but are most likely to make excuses for not taking action.

- **Basic Browns - 31% of adults who consider the environment to not be a problem and are fairy resolved in that conclusion.**

Environmental Literacy in the U.S. ~ Among Youth.

Based on *National Environmental Literacy Assessment Project, 2008, 2010*

- Funded by EPA and NOAA

- Designed to establish a baseline measure of environmental literacy among U.S. middle school students

- Used the Middle School Environmental Literacy Survey

- Administered to a random sample of 48 middle schools
  - 30 states;
  - 31public and 17 private schools;
  - 2,004 students - 1,042 6th graders and 962 8th graders

- Data collected April - June, 2007

Variables Measured in the Studies

- Ecological knowledge [KNOWLEDGE]

- -

- Verbal commitment (intention to act)
- Environmental sensitivity [AFFECT]
- General environmental feeling

- -

- Issue identification skill
- Issue analysis skill [SKILL]
- Action planning skill

- -

- Environmental behavior [BEHAVIOR]

The Results - in table form

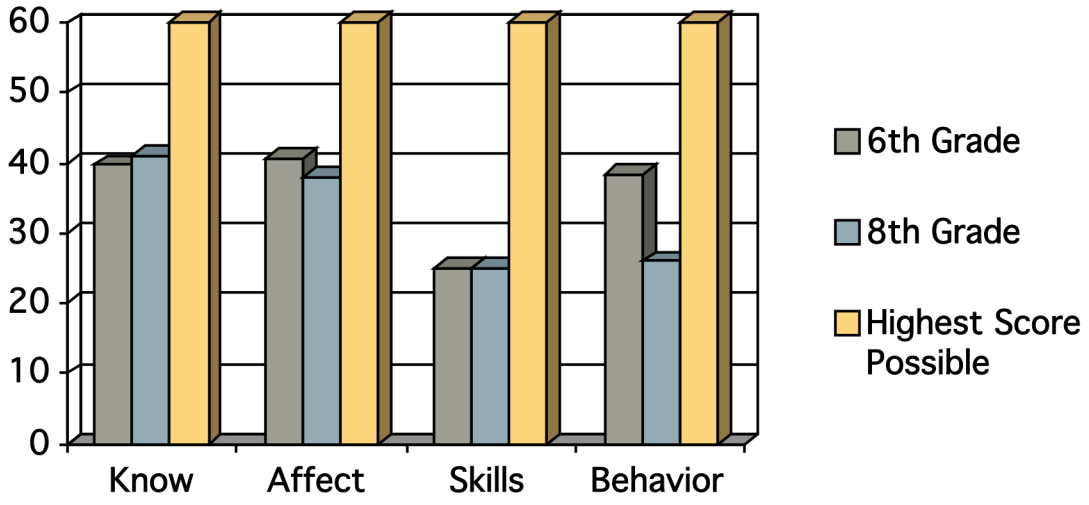
Average School Scores* for Literacy Components
(N = 48 schools)

Literacy Components	**6th Grade Mean** (N = 48 schools)	**8th Grade mean** (N = 48 schools)
Ecological Knowledge	39.67	41.01
Environmental Affect Verbal Commitment-Intention to Act Environmental Sensitivity General Environmental Feeling	40.73	38.06
Cognitive Skills Issue Identification Issue Analysis Action Planning	25.15	25.98
Behavior	38.44	35.14

* Highest Score Possible = (60)

Another way to look at the results - as depicted on a graph

Average School Scores for Literacy Components



To summarize the results . . .

- As a group, sixth- and eighth-grade students in the U.S. are moderate to high in their ecological understandings (as measured on the MSELI).
- Their attitudes also appear to be moderately positive, especially in terms of positive feelings toward the environment and willingness to take positive actions toward the environment.
- Although the older students appeared to be more knowledgeable and more skilled than the younger students, the younger students appeared to have more positive feelings about the environment, a greater willingness to take positive actions toward the environment, and a higher level of participation in pro-environmental behaviors.
- In general, the students' report of undertaking actual behaviors to remediate environmental conditions fell short of their verbal commitment and feelings.
- Lower still, was their grasp of critical thinking and decision-making skills that might be useful in helping to resolve environmental issues in their own communities and in society, at large.

(McBeth et al, 2008; McBeth et al, 2010)

Responding to the challenge of environmental literacy . . .

To Recap . . .

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(Based on EPA, 1992 and NEEAC, 1996)

More on Literacy -

It appears that Environmental Literacy develops over time, and that there are differing degrees or levels of Environmental Literacy.

These levels have been described in various ways. . .

Literate, competent, dedicated citizens (Harvey, 1977)

Nominal, functional, operational citizens (Roth 1992)

Environmental awareness, personal conduct knowledge, environmental literacy (Coyle, 2005)

Coyle (2005) described three levels of learning . . .

- Environmental awareness - a simple familiarity with an environmental subject with little real understanding of its deeper causes and implications.
- Personal conduct knowledge - a limited combination of awareness and action that encourages people to engage in immediate personal conduct that contributes to environmental improvements.
- Environmental literacy - starts out with environmental information, but also involves an understanding of underlying principles, skills needed to investigate the subject, and an understanding of how to apply that information.

Hungerford and Volk (1990) and Marcinkowski (2004) described three stages of educational involvement . . .

Stage	**Major Variables**	**Minor Variables**
Entry Level	Environmental sensitivity	Knowledge of ecology Attitudes toward pollution, technology, and economics
Ownership	In-depth knowledge of issues Personal investment in issues and the environment	Knowledge of the consequences of behavior (+ and -) Personal commitment to issues resolution
Empowerment	In-depth knowledge of and skill in using citizen action strategies	Locus of control Intention to act

What does that say about environmental education and environmental literacy?

In terms of practice, no single EE program "does it all" . . . exposure to numerous environmental learning opportunities and programs over time (age/grade levels) is needed to foster the development of Environmental Literacy. Hungerford and Volk (1990) suggest that we . . .

- Provide carefully designed and in-depth opportunities for learners to develop a level of environmental sensitivity that will promote a commitment toward acting in environmentally responsible ways;
- Teach environmentally significant ecological concepts and the environmental interrelationships that exist within and between these concepts;
- Provide a curriculum that will result in an in-depth knowledge of issues;
- Provide a curriculum that will teach learners the skills of issue analysis and investigation and will provide the time needed for the application of these skills;
- Provide a curriculum that will teach learners the citizenship skills needed for issue remediation as well as the time needed for the application of these skills; and
- Provide an instructional setting that increases learners' internal locus of control and feelings of self-efficacy.

How can *you* work toward environmental literacy?

There are a lot of "types" under the umbrella of environmental education. None of us can do it alone. But each "type" has its strengths, and each type has its part to play.

Continue to learn - stretch yourself.

Team up with others who are not "like" you. Teach them from your strengths . . . and learn from theirs.

Keep in mind the "whole" of environmental education. Make sure that the learners in your care experience a comprehensive environmental education. Do that by making sure that their other educational providers have the same understanding of and movement toward environmental literacy.

And make sure that their education is carefully sequenced and educationally sound so that it "adds up". Educational experiences that are scattered, episodic, and out of sequence will not build to a durable base of knowledge and a critical mass of environmental literacy. Work on the whole picture alongside with other educators and environmental educators.

DO help learners develop environmental sensitivity . . .

Provide outdoor activities to learners — young and not-so-young — exploring or playing in the out-of-doors, camping, hunting and fishing, canoeing and hiking.

Promote family events in the outdoors . . . thereby promoting familial sensitivity.

Be a role model for environmental sensitivity and help older family members to be role models - parents and grandparents, aunts and uncles, older brothers and sisters.

(Peterson, 2005)

DO help all learners of all ages gain in-depth knowledge . . .

Here's what the EPA Office of Education has to say about knowledge and awareness

In its 2011 grants announcement, the Office of Education in the U.S. EPA described a continuum of environmental education:

Awareness > Knowledge >------> Critical Thinking > Problem Solving >Decision Making > Action >Stewardship

"Environmental information and outreach may be important elements of EE activities, but these activities by themselves are not environmental education. . . . By itself, environmental information only addresses awareness and knowledge, usually about a particular environmental issue. Outreach involves information dissemination and requests or suggestions for action on a particular issue (often without the critical thinking, problem solving and decision making steps in between). EE covers the range of steps and activities from awareness to action with an ultimate goal of environmental stewardship.

(U.S. EPA, 2011)

So, DON'T limit your self to being an information provider.

Instead . . .

Teach learners how to locate and access important environmental information about their local area. Help them develop knowledge — in-depth knowledge. Teach them how to apply knowledge to problems and issues. Help them make connections and see relationships.

And DON'T tell students what to do.

Instead . . .

Help them learn issue analysis, issue investigation, problem-solving, decision making, and citizen participation skills. Show them how to be fair-minded and consider all sides of issues. And then, let them choose an issue in which they are interested, and support them as they investigate it.

Make sure that they stay true to the process. Guide them where they need guidance. But let them carry out the investigation.

As educators in a democratic society, it is our role and our duty to help individuals learn to access information, to think through problems and issues, and to respond as capable and responsible members of society. And that means that we must enable them and trust them and permit them to make decisions about how to resolve issues and to support them as they try to do so.

To paraphrase Hungerford and Volk . . .

"The research is very clear on the matter. Environmental literacy can be developed through environmental education. The strategies are known. The tools are available. The challenge lies in the willingness to do things differently than we have in the past."

(Hungerford and Volk, 1990)

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