

NELA Phase One and Two: A Framework for Phase Three

A Presentation at the Research Based
Best Practices for Environmental
Education Workshop, Annapolis,
Maryland, August 28, 20012

The NEAL Research Team wishes to express our appreciation to:

- NOAA
- U.S. EPA
- NAAEE
- NAAEE members and other environmental educators who participate in the studies
- Participating schools, administrators, teachers, and students

NELA Phase One a Baseline Study & NELA Phase Two a Comparative Study: What we have learned about levels of Environmental Literacy in the 6th, 7th, & 8th grade (condensed version/NELA Notes)

NELA Phase Three: A secondary analysis of student, school, program, and teacher characteristics

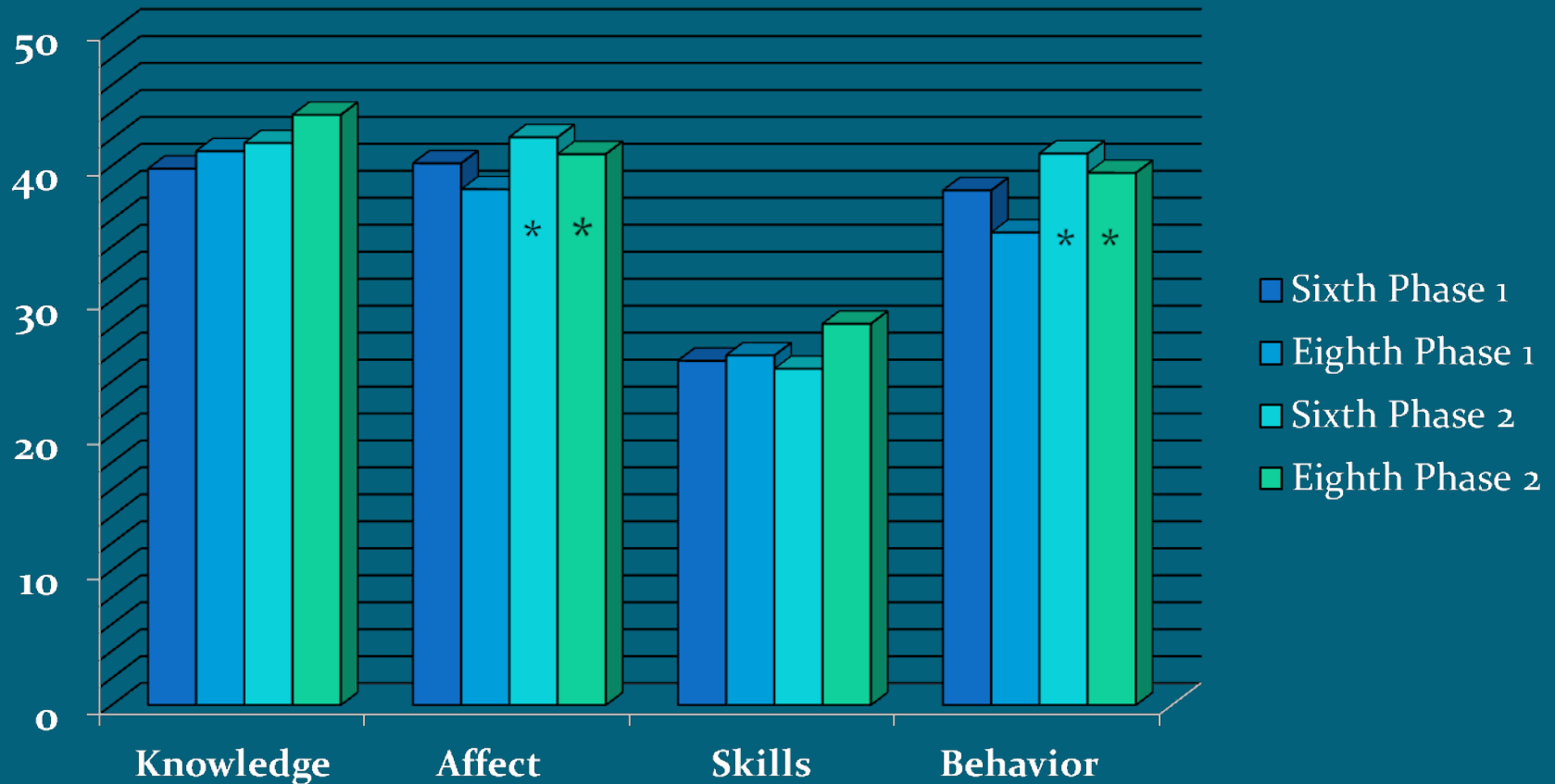
Variables Measured on the MSELs

Eight Literacy Scales Composed Four Literacy Components (Clusters):

- 1) Ecological Knowledge;
- 2) Affect:
 - a. Verbal Commitment [intention to act];
 - b. Environmental Sensitivity;
 - c. General Environmental Feelings [environmental attitudes];
- 3) Cognitive Skills:
 - a. Issue Identification;
 - b. Issue Analysis;
 - c. Action Planning;
- 4) Actual Commitment [environmentally responsible behavior]

Overview of the Samples

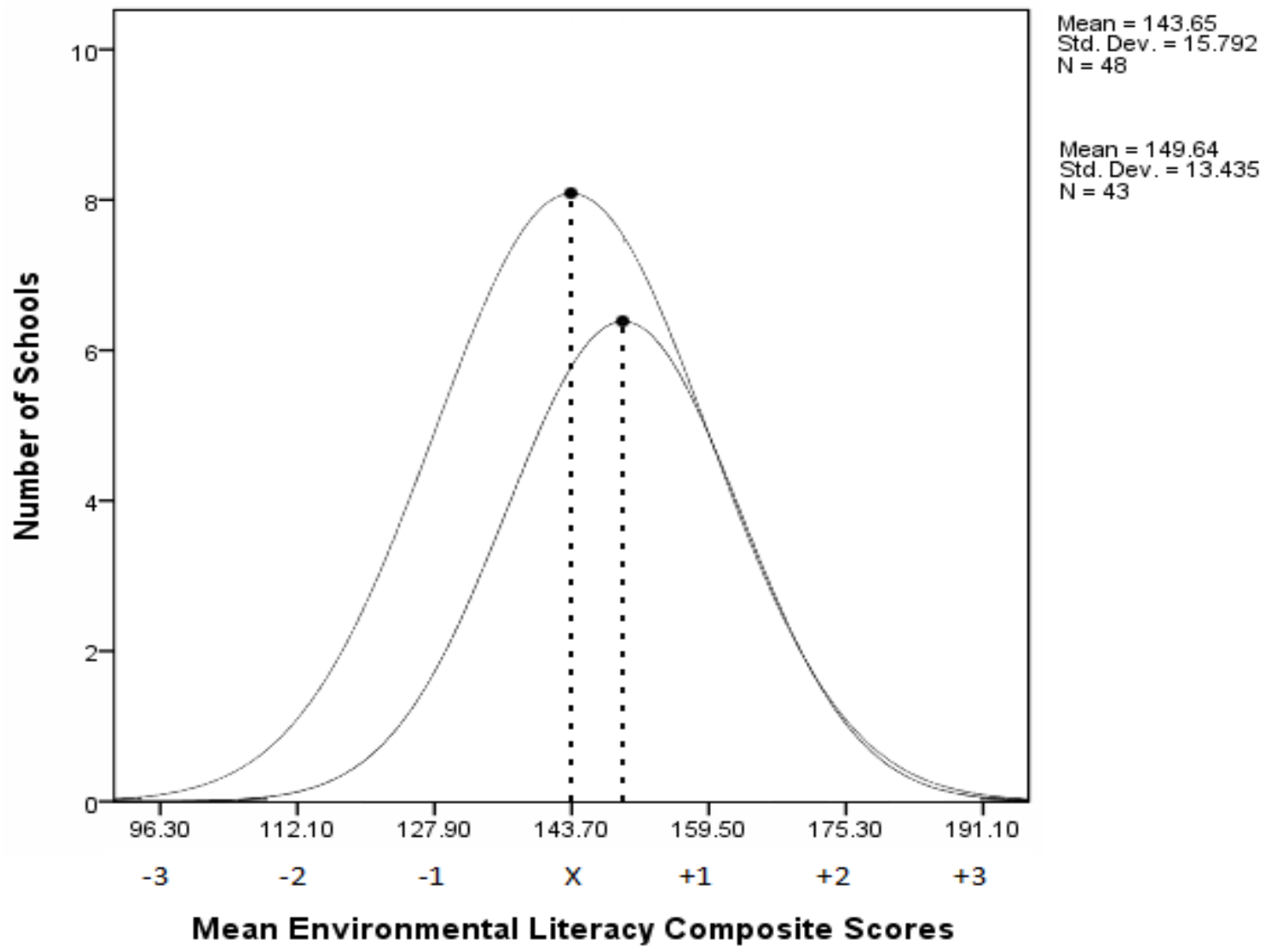
| | Phase One | Phase Two |
|-----------------|-----------|------------|
| Sample Type | Random | Purposeful |
| States | 30 | 27 |
| Schools | 48 | 64 |
| Sixth Graders | 1,042 | 3,134 |
| Seventh Graders | 0 | 2,693 |
| Eighth Graders | 962 | 2,138 |
| Total Students | 2,004 | 7,965 |



***= significant at .01 level; determined using the Bonferroni method (Cohen, 1988) by dividing the pre-set alpha level ($p \leq .05$) by the number of t-tests run (5) for each grade level.**

Component Adjusted Means and Hypothesized Environmental Literacy Levels

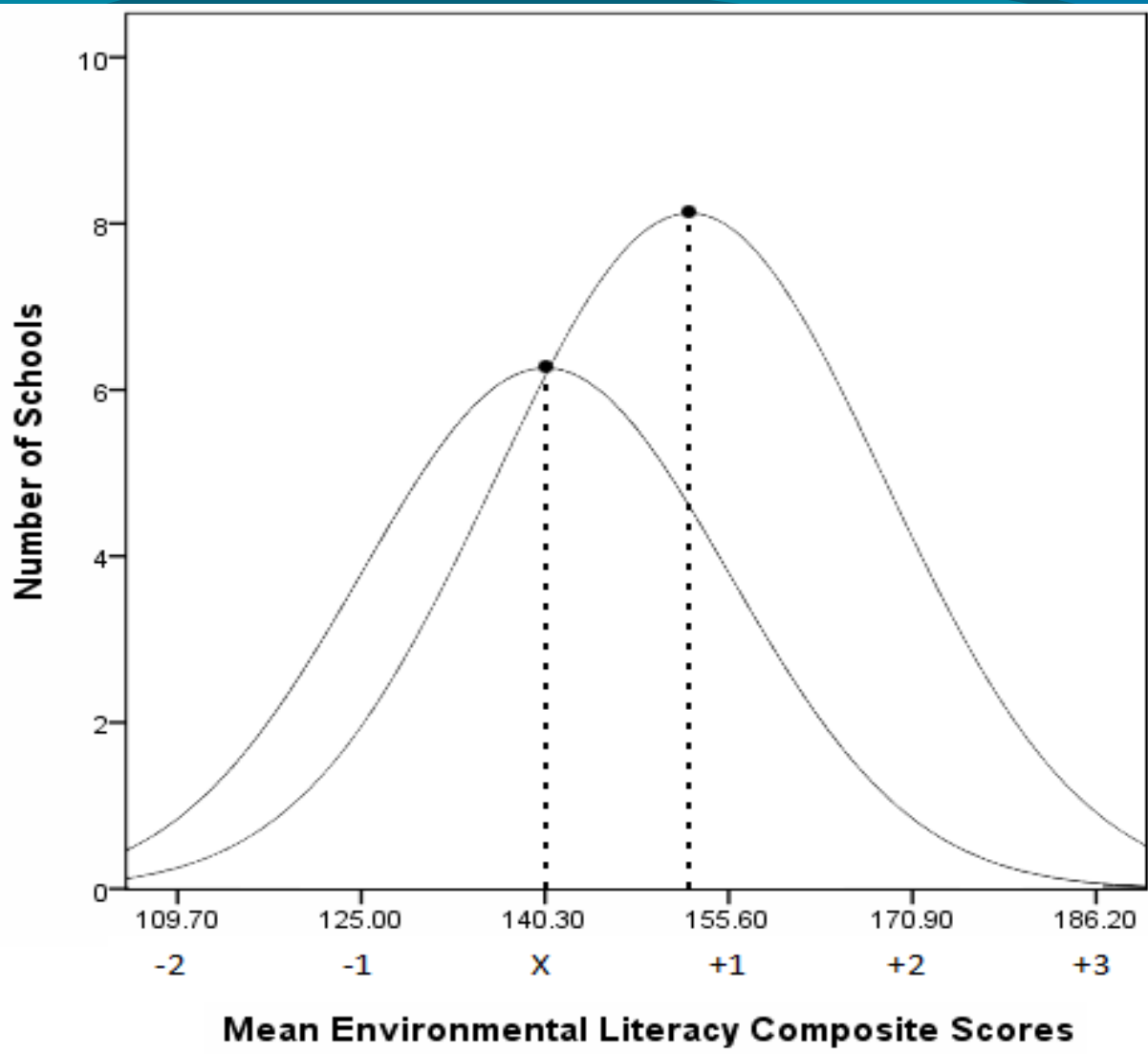
| | Ecological Knowledge (low = 0-20; mod = 21-40; high = 41-60) | Environmental Affect (low = 12-27; mod = 28-44; high = 45-60) | Cognitive Skills (low = 0-20; mod = 21-40; high = 41-60) | Behavior (low = 12-27; mod = 28-44; high = 45-60) |
|----------------------------|--|---|--|---|
| Phase One Sixth Grade | 39.77 (mod) | 40.18 (mod) | 25.53 (mod) | 38.17 (mod) |
| Phase Two Sixth Grade | 41.68 (high) | 42.11* (mod) | 24.94 (mod) | 40.90* (mod) |
| Phase Two Seventh Grade | 44.11 (high) | 41.14 (mod) | 26.50 (mod) | 39.89 (mod) |
| Phase One Eighth Grade | 41.04 (high) | 38.25 (mod) | 25.93 (mod) | 35.05 (mod) |
| Phase Two Eighth Grade | 43.77 (high) | 40.86* (mod) | 28.27 (mod) | 39.46* (mod) |



Sixth Grade: Effect Size = +38%

Mean = 140.32
Std. Dev. = 15.286
N = 48

Mean = 152.35
Std. Dev. = 16.204
N = 33



(*) Eighth Grade: Effect Size = + 72%

Findings

- More classrooms and schools in Phase Two scored above the Phase One mean than below.
- As a group sixth- and eighth-grades students in the U.S. are moderate to high in their ecological understandings
- Results from different grade levels within a school were not always consistent.
- As a group Phase Two eighth grade composite scores were significantly higher than those of Phase One

Findings Continued:

- Socioeconomic status and ethnicity appear to differentiate between schools in the top and bottom quartiles (based on the School Information Form).
- Cognitive skills, while hypothesized at moderate levels are at the low end of the this range and can be an area where significant gains are made.
- Schools with on-going school-based environmental programs can and do make a difference across major components of environmental literacy.

Phase Three Data (Variables/Characteristics)

- Student Survey
- School Form
- Program Form
- Teacher Form

Student Survey Samples:

- Age
- Grade
- Gender
- Ethnicity

School Survey Samples

(10):

- Grade Level Configuration (e.g., K-8, 6-8...)
- Enrollment
- Type of school (e.g., Charter, Magnet...)
- Location
- Student/teacher ratio
- Number reduced/free lunch
- School-wide theme (e.g., environmental)

EE Program Survey Samples

(17):

- Grade level involvement in EE
- Nature of EE program
- Years of Program existence by grade level
- Program affiliation with EE network
- Program use of EE curricula
- Classroom teaching methods
- Classroom assessment techniques

Teacher Information Survey

Samples (23):

- Years Teaching
- Certification type
- EE college courses (number and type)
- Gender
- Ethnicity
- Teacher perception of importance of EE to students
- Teacher perceptogn of importance of EE to self
- Teacher sensitivity toward the environmental
- Teacher concern on environmental problems/issues
- Teacher level of environmental action

Survey Questions on Teachers' Self-reported Characteristics

| | Not at all/ Slightly | Mod | Considerably/ Extremely |
|--|-------------------------|-----|----------------------------|
| Importance of EE to students | | | |
| Phase One Teachers | - | 15% | 80% |
| Phase Two Teachers | - | 6% | 92% |
| Importance of EE to self | | | |
| Phase One Teachers | 1% | 14% | 80% |
| Phase Two Teachers | - | 7% | 91% |
| Sensitivity toward the environmental | | | |
| Phase One Teachers | 1% | 17% | 76% |
| Phase Two Teachers | - | 7% | 91% |
| Concern about environmental problems/issues | | | |
| Phase One Teachers | 1% | 12% | 82% |
| Phase Two Teachers | 1% | 7% | 90% |

The NELA Phase 1 Report URL is:

http://www.oesd.noaa.gov/pubs_reports/Final_NELA%20minus%20MSELS_8-12-08.pdf

The NELA Phase 2 Report URL is:

http://www.oesd.noaa.gov/pubs_reports/NELA_Phase_Two_Report_020711.pdf