

# Evaluating Environmental Education:

## Challenges & Opportunities



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# Early Definition of Environmental Education

Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

Stapp, W.B, et al. 1969. The Concept of Environmental Education. *The Journal of Environmental Education*. 1(1):30-31.

# Intergovernmental Conference on EE in Tbilisi, Republic of Georgia

- To foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas.
- To provide every person with opportunities to acquire the **knowledge, values, attitudes, commitment and skills** needed to protect and improve the environment.
- To **create new patterns of behavior** of individuals, groups, and society as a whole, towards the environment.

(UNESCO, 1977)

# Excellence in Environmental Education— Guidelines for Learning (Pre K–12)

(NAAEE, 2004)

- STRAND 1— Questioning, Analysis and Interpretation Skills
- STRAND 2— Knowledge of Environmental Processes and Systems
- STRAND 3— Skills for Understanding and Addressing Environmental Issues
- STRAND 4— Personal and Civic Responsibility

<http://www.naaee.org/programs-and-initiatives/guidelines-for-excellence>



# Environmental Education Research:

- Numerous studies have documented change

- **Affective**

- **Cognitive**

Example: Place-based curricula, Environment as an Integrating Context

<http://www.seer.org/pages/research.html>

- Mixed results documenting behavior change

# Challenges of Measuring Environmental Behaviors

- Expectations may not match program possibilities
- Short time frame of many evaluations = difficult to document behavior change
- Instruments which rely on personal recall are subject to socially desirable response bias

# Challenges of Measuring Environmental Behaviors

- Programs often fail to make clear personal behavior link
- Lack of recognition of local, cultural and contextual barriers to participation



# Additional Challenges for Environmental Data Collection

- Informed consent issues:  
problematic for studies of  
underage populations  
(e.g. schools)
- Environmental attitudes  
& behavior influenced by  
external factors



# Recommendation: Establish Evaluation Partnership Early

- Work collaboratively
- Cooperate to develop data collection tools to fit program deliverables
- Provide formative feedback

Example: Center for Learning & Teaching in the West



# Recommendation: Utilize Theory of Change Approach

- Envision “big” picture
- Distinguish between short term & long term goals

Example: Yellowstone National Park  
“Windows into Wonderland”  
evaluation



## TARGET AUDIENCES

## PROGRAM ACTIVITIES

## SHORT TERM OUTCOMES

## LONG TERM OUTCOMES

People at a distance who can't visit YNP:

- Teachers
- Middle School students
- Homeschoolers
- Foreign guests
- Families /other individuals

WIW Virtual Field Trips

Lesson Plans

Understanding of significant science concepts evidenced in YNP

Interest in organisms, ecosystems & natural places

Understanding the scientific process in the study of natural systems

Enrichment of YNP visitor experience

Participation in more WIW eTrips

Interest in preserving & protecting natural places

Interest in spending time in natural places

Participation in stewardship activities for local & national lands

Future generations who value, visit & protect national parks



# Recommendation: Use a Mixed Methods Approach

- Value added from both quantitative and qualitative measures

Example: GK12 Program, Big Sky Institute



# Wide Variety of Evidence

- 18-item pre- & post- survey on science interest
  - E.g. "Science is one of my favorite classes."
- Interviews with students

*Definitely more interested. It's given me a better view of what science really is, because before it was some distant thing that we read in a textbook, it wasn't personal. This has brought it to more of a personal level.*

Anderson School 8th grade Boy, 5/25/07



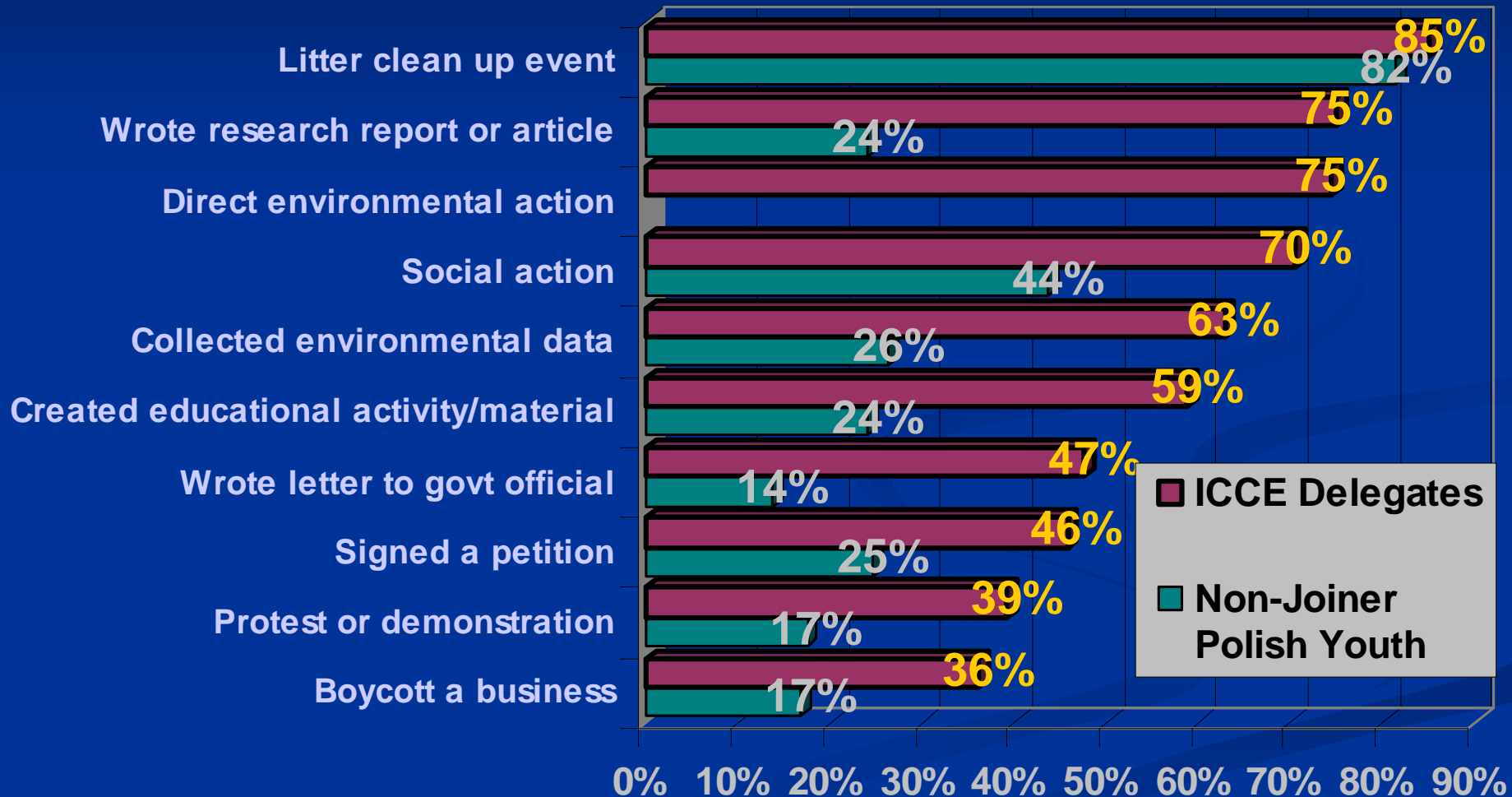
# Recommendation: Use appropriate measures of behavior

- Consider population
- Devise authentic measures of behavior related to program

Example: Study of Environmentally Engaged youth



# Measurement Index: 10-Item Environmental Action Index



# Recommendation: Articulate Personal Behavior Actions

- Anticipated behavioral changes must be clearly identified, with appropriate measurement indices.

Example: Family Nutrition & Education Program, VietNam



# **Recommendation: Disseminate Lessons Learned**

- Publish results of evaluations
- Present findings at conferences (AEA, AERA, etc.)



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