


# Inquiry Based Learning: Leveraging students' natural curiosity to learn about their environment

Dr. Trudi Volk

Dr. William McBeth

Research-Based Best Practices for  
Environmental Education

Annapolis MD, 2011



# Variables Involved in Environmentally Responsible Behavior (adapted from Hungerford and Volk, 1990)

## Entry Level +

## Ownership +

## Empowerment

Knowledge of  
ecological concepts  
and principles

In-depth issue  
knowledge

Environmental  
action knowledge

Issue-related  
Skills

Environmental  
Action skills

Environmental  
Sensitivity

Personal investment  
in issues and the  
environment

Locus of control

**Environmentally  
Responsible  
Citizen  
Behavior**





# Environmentally Responsible Citizen Behavior

Includes . . .

- Direct Action - *positive physical actions taken with respect to the environment* (recycling, riding a bike rather than driving a car, conserving resources, ecological restoration projects, etc.)
- Indirect Action - *broader citizen actions* - persuasion, consumer action, political action, and legal action that work to make an environmental difference in the broader public arena

# Variables Involved in Environmentally Responsible Behavior (adapted from Hungerford and Volk, 1990)

## Entry Level +

## Ownership +

## Empowerment

Knowledge of  
ecological concepts  
and principles

In-depth issue  
knowledge

Environmental  
action knowledge

Issue-related  
Skills

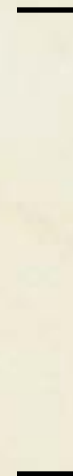
Environmental  
Action skills

Environmental  
Sensitivity

Personal investment  
in issues and the  
environment

Locus of control

**Environmentally  
Responsible  
Citizen  
Behavior**





# Entry Level Variables

- Knowledge of ecological concepts and principles.
- Environmental sensitivity.



# What major factors or experiences develop environmental sensitivity?

- Significant time in the outdoors as a youth - sometimes alone - sometimes with a few friends.
- Family vacations - Familial sensitivity.
- Hunting and fishing.
- Youth organizations or group camping.
- Important role models - family and non-family.
- Books and authors.
- Personal loss of a familiar natural area.



# Educational Implications

- Start at a young age.
- Frequent contact with natural areas and open spaces - alone and in small groups.
- Opportunities to operate with environmentally concerned and active individuals.
- Provide youngsters with teachers who role model environmental sensitivity.
- Focus on local natural areas and issues.
- Engage learners with nature-oriented books and media.
- Strive to foster familial sensitivity.

# Variables Involved in Environmentally Responsible Behavior (adapted from Hungerford and Volk, 1990)

## Entry Level +

## Ownership +

## Empowerment

Knowledge of  
ecological concepts  
and principles

In-depth issue  
knowledge

Environmental  
action knowledge

Issue-related  
Skills

Environmental  
Action skills

Environmental  
Sensitivity

Personal investment  
in issues and the  
environment

Locus of control


**Environmentally  
Responsible  
Citizen  
Behavior**





# Ownership Variables

- In-depth issue knowledge
- Issue-related skills.
- Personal investment in issues and the environment.



# Empowerment Variables

- Environmental action knowledge
- Environmental action skills
- Internal locus of control



# Educational Implications


(for both ownership and empowerment variables)

- Help youngsters develop in-depth understandings of local issues.
- Permit them to thoroughly investigate issues and facilitate their work.
- Listen to their recommendations.
- Help them strategize and evaluate their action plans.
- Encourage and support them in their action.



Encourage and support learners as they carry out ***their*** action plans . . .

*This is an important final step. This sends a strong signal to them that they are responsible powerful citizens . . . that their ideas and work and input are valuable . . . that they are worthy and worthwhile citizens of the community . . . and that they can make a difference. However . . .*



*. . . they must be in charge of which action(s) to take, and whether or not to act.*

*If our aim is to develop responsible citizenship, then we must step back and allow learners to be the agents behind their decisions and actions.*



# IEEIA Effectiveness Research

<u>Variable</u>	<u>Significant difference</u>
Ecological Knowledge	Yes (4/5)
Environmental Sensitivity	No (3/3)
Issue Knowledge	Yes (2/2)
Issue-related Skills	Yes (1); No (1) Mixed results (2)
Critical thinking Skills	Yes (2/2)
Personal Investment	Not measured

# IEEIA Effectiveness Research

<u>Variable</u>	<u>Significant difference</u>
Action Knowledge	Yes (8/8 studies)
Perceived action knowledge	Yes (6/6 studies)
Action Skills	not measured
Perceived action skills	Yes (9/10 studies)
Locus of Control – Individual	Yes (4/7 studies)
Locus of Control-Group	Yes (3/7 studies)
Behavior	Yes (12/12)