



Growing capacity among *all* environmental educators.

# Climate Change Environmental Education: A Project-based Online Learning Community Alliance (POLCA) Product

Supported by EECapacity -- a partnership of U.S.EPA, Cornell University, and NAAEE

February 11, 2014



Growing capacity among *all* environmental educators.

# CCEE POLCA

- Online professional learning/working group to create useful product(s) to expand efforts to address climate change in the broader environmental education community.
- Collaborated April through November 2013 via phone and electronically.
- EECapacity presented a certificate of participation and published the product, acknowledging authorship.

# Technology utilized

- Conference Line Call-In
- Archived Recordings of Calls
- Google Docs/ Drive

(Each member committed at least 4 hours/month.)

# Climate change environmental education (CCEE)

*CCEE is the full array of interdisciplinary learning opportunities citizens need to develop the competencies, dispositions and knowledge to address climate change – including an understanding of the socio-political and economic considerations, the scientific basis, plus the communication, collaborative problem-solving and analytical skills needed to generate and implement feasible solutions.*

# Today's Presentation: A Cook's Tour

by working group facilitators:

- **Christopher Johnson**, Educational Consultant
- **Deborah Shiflett-Fitton**, Cape Light Compact
- **Jennifer Hubbard-Sánchez**, Kentucky State University
- **Kristen Poppleton**, Will Steger Foundation
- **Lisa LaRocque**, Intercambios
- **Lori Kumler**, University of Mount Union
- **Susan Jane Gentile**, Antioch University and Living Routes

# Educators' Needs: our assessment

- Methodology
- What we learned ...  
especially about informal educators & social  
studies resources  
See pages 6-7/10

# The Research

Summary of Research in 3 relevant areas  
& suggestions for applying it to  
multidisciplinary climate change education

- How people learn
- Environmental Psychology
- Basic concepts of climate change

# Learning Theories & Teaching Strategies

- How People Learn

  - Action Competence (see p.2/11)

  - Activity Theory

  - Place-based Education

  - Significant Life Experiences

  - Systems Theory & Systems Thinking

  - Service Learning

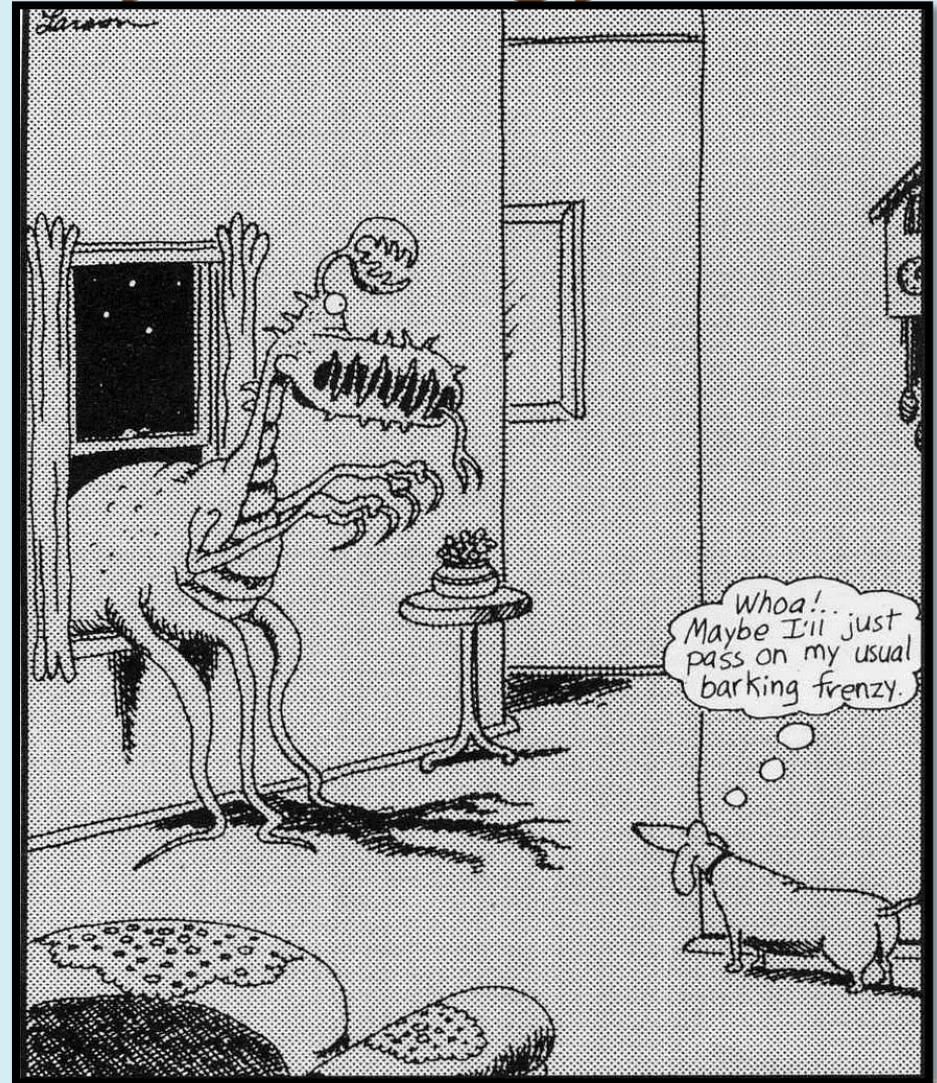
- Suggestions for applying these in teaching

# Environmental Psychology

## *Primal drivers:*

- Immediate
- Visible
- Simple
- Certain

Center for Research on Environmental Decisions (CRED). (2009)



# Environmental Psychology

## See Chart on page 3/7

Lists principles of climate change communication from Center for Research on Environmental Decisions (CRED)

And

Suggests educational strategies for applying them (in right-hand column).

Scroll down to #2 ...framing in a relevant context

# What research shows re Climate Change

- Evidence
- Causes
- Effects on natural environment
- Effects on humans
- Local impacts
- Possible global solutions
- Strategies for students

# Standards & Teaching Suggestions

Analyses of the latest academic standards showing where climate change fits + suggestions for lessons and units

- NGSS & Grade-banded Units
- Common Core Literacy Standards
- Social Studies Standards

# NGSS Correlated Units

**A unit designed to address NGSS has been developed for each grade band, drawing on CLEAN resources.**

Next Generation Science Standards Correlations

Unit Overview

Unit Goals

Time Requirements

Materials and Resources

Activities

Unit Evaluation



# Grades 6-8 Arctic Investigations

Unit Overview: By participating in inquiry-based activities, students become climate scientists as they investigate rapid changes happening in the Arctic regions. Students will use real data collected by climate scientists to determine the rate and severity of changes such as melting sea ice, population declines, and impacts on local peoples. The unit will conclude with activities geared towards a reduction of use of energy and natural resources that will help students connect their lifestyle choices to reducing the rate of changes in the Arctic.



See pages 14 – 20/29

# Common Core Literacy

Highlights Common Core standards most appropriate for Climate Change Units:

reading

writing

speaking & listening

Specific suggestions for extending science units and addressing common core standards – e.g. see pages 8-10/11 for grade 6-8 language arts connections

# Social Studies Standards & Suggestions for Climate Change Educ.

- Civics and government (CCE, Center for Civic Education)
- Social studies education (NCSS, National Council for the Social Studies)
- Geography education (NCGE, National Council for Geographic Education)

# Civics and government

- Climate change is not specifically mentioned anywhere in document
- Closest:  
“Students will explain the effects of significant political, demographic, and environmental trends in the world. Describe environmental conditions that affect the United States, e.g., air pollution.”

# Social studies education

- Mentions climate in one standard (same one for both middle and high school)
  - **People, Places and Environments**
- But, does not use term “climate change”
- Has more references to environment than Civics and government (in three strands)

# Geography education: Grade 8

- Mention of climate in five standards
- Of these, two are typical “social studies” territory (three more natural sciences)
  - Standard 3: How to analyze the spatial organization of people, places, and environments on Earth's surface
  - Standard 15: How physical systems affect human systems

# Geography education: Grade 12

- Standard 9: The characteristics, distribution, and migration of human populations on Earth's surface.
- Standard 13: How the forces of cooperation and conflict among people influence the division and control of Earth's surface
- Standard 14: How human actions modify the physical environment
- Standard 15: How physical systems affect human system
- Standard 18: How to apply geography to interpret the present and plan for the future

# Learner-focused Inquiries

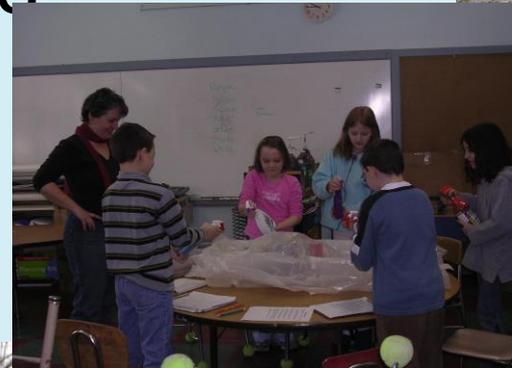
**Essential Questions** regarding Climate Change have been developed for the following grade bands:

Grades K-2

Grades 3-5

Grades 5-8

Grades 9-12



# Inquiry-Based Action Projects



An inquiry-based action project template and sample activity have been created for each grade band and for adults.



# **Inquiry-Based Action Project Template**

- 1) What can WE do about climate change? (generate list of possibilities)**
- 2) What can WE do HERE about climate change? (which items are feasible for us)**
- 3) What project will we do? (select from possibilities listed in 1)**
- 4) What is the goal of our project? (what we will accomplish)**
- 5) How will we accomplish this goal? (action steps)**
- 6) What do we need to do our project (resources--people, materials, equipment, money...)?**

**7) How will we distribute the work? (who will do what)**

**8) What is our timeline? (when action steps will be accomplished)**

**9) How will we know if we have accomplished our goal? (what the indicators of success are and how we will measure/assess them)**

**10) How will we celebrate our project? (how we will make others aware of our accomplishment and take pride in our work)**



See file **G\_2 POLCA Action Projects** for a copy of these questions to guide groups in planning inquiry-based action projects and for examples of action projects planned and pursued by each grade band and adults.

# What is POLCA doing now?

- Spreading the word
- Using these resources in our work
- Pursuing research