The Climate Literacy Zoo Education Network (CLiZEN)

A presentation to the Climate Literacy Network CLN on Feb. 14, 2012

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Co-PI: Dr. Susan R. Goldman, co-director of the Learning Sciences Research Institute at the University of Illinois at Chicago
Climate Literacy Zoo Education Network
Participant institutions

• Partnership of nine U.S. zoos & PBI
  • Columbus Zoo & Aquarium, OH
  • Como Zoo & Conservatory, St. Paul, MN
  • Indianapolis Zoo, IN
  • Louisville Zoological Garden, KY
  • Oregon Zoo, Portland, OR
  • Pittsburgh Zoo & PPG Aquarium, PA
  • Roger Williams Park Zoo, Providence, RI
  • Toledo Zoological Gardens, OH

• Earth System Sciences Center at Penn State Univ.

• Learning Sciences Research Institute at Univ. Illinois at Chicago

• Conservation Psychology network (APA)

• Polar Bears International
Zoo and Aquarium Audience Survey on Climate Change 2011

- Columbus Zoo & Aquarium
- Como Zoo & Conservatory
- Indianapolis Zoo
- Louisville Zoological Garden
- Oregon Zoo
- Pittsburgh Zoo & PPG Aquarium
- Roger Williams Park Zoo
- Toledo Zoological Gardens
- Chicago Zoological Society at Brookfield Zoo
- Woodland Park Zoo
- Monterey Bay Aquarium
- National Aquarium
- New England Aquarium
- San Francisco Aquarium of the Bay
- Shedd Aquarium
Climate Literacy
Zoo Education Network

Goal: Inspire people to make personal connections to climate change by creating a sense of caring and concern for animals whose very existence is threatened by climate change.
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- Efforts to educate people about climate change have realized limited success
- Experts relay information to the public via myriad media
- Strong scientific consensus has emerged in recent years

Yet the proportion of Americans who believe that evidence supports the occurrence of climate change has changed little (Pew Research Center, 2009).

Why? Climate change education has not taken into consideration the ways people learn and change their behavior.
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• Develop a new approach to climate change education, that explores the associative and affective pathways known to dominate the decision-making of the general public.

• Different from the common approaches to climate change education which are largely didactic in nature

Planning Phase Goals
1. Research preconceptions, attitudes, beliefs, and learning modes of zoo visitors regarding climate change
2. Prototype innovative learning environments and tools
3. Develop a viable partnership
Affective connections drive behavioral decisions
Scientific evidence has limited effect
Zoos establish personal connections to animals threatened by climate change
CLiZEN Vision

• “…development of a network of U.S. zoos, in partnership with climate change domain scientists, learning scientists, conservation psychologists, and other stakeholders, serving as a sustainable infrastructure to investigate strategies designed to foster changes in public attitudes, understandings, and behavior surrounding climate change.”
Core Assumptions

• Behavior change can be fostered through understanding and empathetic responses to the impacts, causes, and remediation strategies for animal species who live in habitats already “at the edge” of climate change.

• The resources of U.S. zoos, which host over 120 million visitors per year, can effect significant impact on fostering understanding and empathetic responses surrounding those impacts, causes, and remediation strategies.
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Early deliverables:

• Literature Review (e-Book)
• Prototype education interventions
  – youth interpreters
  – video game
• Survey of Zoo and Aquarium audiences regarding Climate Change
• Partnership viability
Climate Change Education: A primer for Zoos and Aquariums
E-Book Table of Contents

• Preface. Grajal
• Climate Change Science: A Summary, Recent Updates, and Resources: Mann
• Polar animals and Climate Change: Armstrup, Nielsen
• Teaching about Climate Change: The Roles of Formal and Informal Science Education. Pellegrino
• Psychological Barriers and the role of emotions to Understanding and Responding to Climate Change. Clayton Goldman, Celio
• Applying Psychology Zoo Messaging about Climate Change. Saunders
• Zoo Audiences and Climate Change. Luebke, Owens
• How Technology Can Help Foster Environmentally-Friendly Behaviors and Enhance the Zoo Experience. Moher, Lyons, Slattery
• What Roles can Online Social Information Networks Play in Climate Literacy? Hood
• Zoo Experiences in Climate Change Education. Stanoss
• Aquarium Experiences in Climate Change Education. Spitzer
• Climate Change Education at Zoos and Aquariums: Where do we go from here?. Grajal, Goldman, Mann
Using movement and pressure sensors, zoo visitors participate in a virtual game that simulates a polar bear trying to walk and swim between ice floes to reach a destination and capture a seal.

Users walk and swim “in the paws” of the animal they have just seen at the zoo, a polar bear.

Interactive, participatory, embodied simulation activity

Explores how to affect the public’s conceptions of change over large temporal and spatial scales.
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Youth Interpreters: Inquiry-based interpretation

• Collaboration between Woodland Park Zoo and Brookfield Zoo (Boeing Corp. funding)

• No significant changes in audiences in Climate Literacy (due to large variability- *more later*).

• Significant growth in scientific identity about youth’s ability to deliver climate change messages in an inquiry-driven activity

• Significant depth in STEM indicators of youth interpreters.
Developed two independent paper-based visitor surveys

- Form A contained 15 survey items from “Six Americas” survey
- Form B contained other items concerning climate change beliefs, perceptions, and behaviors

Administered between June and August 2011 to +7,200 zoo and aquarium visitors at 15 locations across the United States

Utilized the SPSS syntax from the Six Americas study to categorize zoo and aquarium visitors into the six segments
Zoo & Aquarium Visitors are Receptive Audiences for Climate Change Education

Six Americas Segmentation Results

- Alarmed: 24% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 12% (National Sample May 2011 N = 981)
- Concerned: 40% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 27% (National Sample May 2011 N = 981)
- Cautious: 18% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 25% (National Sample May 2011 N = 981)
- Disengaged: 4% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 10% (National Sample May 2011 N = 981)
- Doubtful: 7% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 15% (National Sample May 2011 N = 981)
- Dismissive: 6% (Zoo/Aquarium Visitors Summer 2011 N = 3,558) - 10% (National Sample May 2011 N = 981)
Visitors Perceive Climate Change as a Geographically Distant Threat

How much do you agree with the following statements regarding climate change?

- It threatens the survival of wildlife in arctic areas: 44%
- It threatens the survival of wildlife in my region of the country: 28%
- It threatens human health: 27%

Percent indicating ‘Very much so’

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Visitors are More Likely to Engage in Consumer than Support Behaviors

Visitors’ current behaviors to help address climate change

- Swap out all regular light bulbs for fluorescents: 37%
- Turn down thermostat: 29%
- Make at least one dinner a week meatless: 25%
- Drive a fuel-efficient car: 17%
- Buy food grown locally: 10%
- Sign a petition or take political action for conservation: 9%
- Donate money to a conservation/ environmental group: 8%
- Talk to others about addressing climate change: 8%

Percent indicating ‘Always do it’
The Gap Between Consumer and Support Behaviors Varies With Strength of Animal Connection

Would you say you feel a sense of connection with the animals you see at a zoo or aquarium?

Overall behaviors to help address climate change: Average Ratings

<table>
<thead>
<tr>
<th>Connection Level</th>
<th>Overall Consumer behaviors</th>
<th>Overall Conservation support behaviors</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very little or not at all</td>
<td>2.46</td>
<td>3.76</td>
<td>1.30</td>
</tr>
<tr>
<td>Moderately or somewhat</td>
<td>3.41</td>
<td>4.29</td>
<td>0.88</td>
</tr>
<tr>
<td>Feel a strong connection</td>
<td>4.05</td>
<td>4.59</td>
<td>0.54</td>
</tr>
</tbody>
</table>
Almost One-Half of Visitors Believe They Can Have Little to No Impact on Climate Change

How much of an impact do you believe you can have personally on addressing climate change?

- A great deal: 8%
- A fair amount: 43%
- Not very much: 35%
- Almost none at all: 9%
- None: 5%
Most Visitors Report at Least One Barrier to Doing More

Would you like to do more to address climate change? If yes, what is standing in your way of doing more to address climate change? (select all that apply)

- I don't know what actions would be effective: 39%
- Necessary actions would cost too much money: 25%
- I'm unsure if my actions will make a difference: 20%
- Necessary actions are too time consuming: 15%
- Necessary actions are too inconvenient or difficult: 11%
- Necessary actions would make life less comfortable: 10%
- My family or friends would not support my actions: 4%

Percent of respondents selecting at least 1 barrier: 92%
Big finding: Even the Most Certain and Motivated Visitors Perceive Barriers

Barriers are high even among visitors who highly believe climate change is happening and want to do more to address climate change.

The effect of the zoo experience on climate change behaviors is mediated by three main factors:

- Instrumentality (ability do be effective)
- Concern (for animals, human health)
- Certainty (that Climate Change is happening)
Zoo and Aquarium Visitor Survey Results: Summary

• Visitors are receptive audiences for climate change education

• Visitors perceive climate change as a geographically distant threat

• Visitors are more likely to engage in consumer than environmental support behaviors

• Visitors with a strong sense of connection with animals are more likely to engage in desired behaviors

• Almost one-half of visitors believe they can have little to no impact on climate change

• Even the most certain and motivated visitors perceive barriers to doing more to address climate change
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Working hypothesis for Phase II Implementation

• Youth Interpreters offer powerful interventions: intergenerational, apolitical, social context

• General communication strategies focused on providing deeper information about climate change are not likely to have significant effects in climate literacy for all audiences

• Audiences are diverse and effects of education interventions are hard to measure due to great variability in response variables. A segmentation design is needed.

• Favorable audiences still face significant barriers to climate literacy and mitigation behaviors
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*Project focus for Phase II Implementation*

- Youth Interpreters affecting visitor’s climate literacy and increasing self-efficacy
- Social Learning Circles over several years: adaptive design with longitudinal interventions
- Top 2 audience categories: addressing barriers for ‘alarmed’ and ‘concerned’
- Survey zoo and aquarium audiences at regular 2-yr. intervals
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