EMPOWERING
PRE-COLLEGE STUDENTS TO ENGAGE IN CLIMATE CHANGE SOLUTIONS

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Climate Leadership and Energy Awareness Program
UNC-Chapel Hill Institute for the Environment
This student science enrichment program is made possible with support from:

In partnership with the UNC Department of Physics and Astronomy
Overarching Program Goals

• Improve students’ competence in science
• Nurture students’ enthusiasm for science
• Foster student interest in science-related careers
Program Components

• One-week, non-residential summer institute

• Seven academic year activities
  – Four Saturday academies
  – Three teacher workday excursions

• Student-led community outreach project
Proximity to Research and Industry

- Universities
  - UNC, Duke, NCSU
- Research Triangle Park
  - EPA, NIEHS, RTI
- 500+ Clean Tech Industries
WE NEED A WAY OF EXPLORING ENVIRONMENTAL ISSUES THAT IS REALISTIC AND HONEST, YET HOPEFUL AND INSPIRATIONAL.

M.G.H. Gilliam, Publisher, Orion
Strategies to Empower Students To Engage In Climate Change Solutions

• Use energy story to frame climate change as a symptom of society’s use of fossil fuels;
• feature scientists and engineers who are working to develop solutions to move us to a lower carbon economy;
• provide opportunities to develop science communication and leadership skills.
We are burning fossils AND contributing CO₂ and other greenhouse gases to the atmosphere.

BUT this is contributing to climate change.

THEREFORE we must find ways to decrease our CO₂ emissions.

Civic Engagement
Energy Conservation
Energy Efficiency
Nuclear Energy
Renewable Energy

Increased CO₂ emissions

Decreased CO₂ emissions
Program Content

5 Day Summer Institute

Energy Basics | Climate Science | Climate Impacts | Energy Solutions

Academic Year Academies

Climate Change and Human Health | Sustainability & Civic Engagement | Green Buildings and Sustainable Design | Solid waste and climate change | Nuclear Energy

Leadership Training and Activities
Students engage in hands-on science enrichment activities
Numerous scientists directly interact with participants

Presentations
Lab Activities
Lab tours
Field trips
Program alumni serve as peer mentors.
Empowering Students To Engage In Climate Change Solutions

126 (88%) students completed the program (2009-2011)

- 86 (68%) completed at least one community outreach project;
- 43 (34%) participated in one or more ACE leadership trainings;
- 28 (25%) were selected to serve as Climate LEAP peer mentors.
Inspiring Behavior Change

- A survey of program alumni (n=28) indicated that 89% of respondents were motivated by the program to make at least one behavior change to conserve energy and resources in their daily life.
### Table 1. Evaluation of 2011 Summer Institute: Student Knowledge and Understanding of Climate Change Science and the Solutions that Exist to Address Climate Change

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Survey (n=38)</th>
<th>Post-Institute Evaluation (n=48)</th>
<th>Paired Samples t test (n=35)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall knowledge of climate change?</strong></td>
<td>6.41 (1.56)</td>
<td>8.13 (0.89)</td>
<td>p &lt;0.001</td>
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<tr>
<td><strong>Overall knowledge of the various solutions that exist to address climate change?</strong></td>
<td>5.51 (1.85)</td>
<td>8.23 (1.12)</td>
<td>p &lt;0.001</td>
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<tr>
<td><strong>Overall knowledge of available alternative energy sources?</strong></td>
<td>6.08 (1.96)</td>
<td>8.25 (1.19)</td>
<td>p &lt;0.001</td>
</tr>
</tbody>
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On a scale of 1 to 10, with 10 being very knowledgeable, how would you rate your:
Informal learning assessment strategies

What is the connection between energy consumption & global warming?

Pre- and Post- Concept Maps
Informal learning assessment strategies

Pre- and Post-Drawings
Informal learning assessment strategies

Pre-Drawing

Post-Drawing