Evaluating the Effects of Art-based Environmental Education Programs on Children’s Environmental Perceptions

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Outline

• Why I chose this research?
• What were the objectives?
• Who participated in the study?
• How was the research conducted & scored?
• What were the results?
What are the issues?

- Children becoming increasingly isolated from nature
- Technology draws or keeps children indoors
- Lack of exposure to nature has adverse affects on children’s environment perceptions
Possible Solutions?

- Environmental Education (EE) programs
- NAAEE’s “Guidelines for Excellence” encourage engaging & innovative methods of teaching & learning
- Art activities in EE programs are one possible method
Why Art & EE?

• Studies have shown:
  • Art integration into curriculum advances student knowledge & understanding of subjects
  • Participants in EE programs have more positive environmental attitudes & greater awareness
  • Interaction of art & EE may produce even greater benefits
Research Question

What is the effect upon children’s environmental perceptions when art is integrated into EE programs?
Objectives

• Develop a reliable & valid survey to measure the effect of art activities on children’s environmental perceptions (EP)

• Establish a baseline measure of EP in children

• Evaluate the effect of a one-week art-based EE program relative to a control on children’s EP
The Study

- Evaluate one-week, day-camp summer programs in Athens-Clarke County, GA:
  - Sandy Creek Nature Center
  - Memorial Park
- Summer 2010-2011
Methods

• Pre-test/post-test design
• Compared three groups:
  • Control group with no EE program
  • Treatment group with a traditional EE program
  • Treatment group with an art-based EE program
Methods

- Total of 285 campers:
  - Ages Groups: 6-7, 8-9, 10-12
  - Male & Female
  - Ethnic Groups: African American, Asian, Hispanic/Latino, White
  - Income Levels
Survey

- Part 1: Likert-type scale attitude statements
  - 8 - Eco-affinity  (preference & behavior)
  - 8 - Eco-awareness  (importance & sustainability)
  - 4 - Art-appreciation

- Factor Analysis

- Cronbach’s Alpha
  - Pre-test = 0.848  •  Post-test = 0.874
### Eco-affinity

<table>
<thead>
<tr>
<th></th>
<th>1. I like to learn a lot about plants and animals.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Disagree" /></td>
<td><img src="image" alt="Disagree" /></td>
<td><img src="image" alt="Not Sure" /></td>
<td><img src="image" alt="Agree" /></td>
<td><img src="image" alt="Strongly Agree" /></td>
<td></td>
</tr>
</tbody>
</table>

### Eco-awareness

<table>
<thead>
<tr>
<th></th>
<th>2. Plants and animals are very important to people.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Disagree" /></td>
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<td><img src="image" alt="Agree" /></td>
<td><img src="image" alt="Strongly Agree" /></td>
<td></td>
</tr>
</tbody>
</table>

### Art-appreciation

<table>
<thead>
<tr>
<th></th>
<th>3. I like to spend time drawing and coloring.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Not Sure</td>
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<td><img src="image" alt="Agree" /></td>
<td><img src="image" alt="Strongly Agree" /></td>
<td></td>
</tr>
</tbody>
</table>
• Part 2: Open-ended drawing section
  • Draw-An-Environment Test
    1. Draw a *habitat* or *ecosystem* that you see or play in almost everyday.
  • Draw-An-Animal Test
    2. Draw your favorite *animal*, the *habitat* or *ecosystem* where it lives, & the things it needs to *survive*.
Survey

• Graded using modified version of:
  • Draw-An-Environment Test Rubric (DET-R)
  • Draw-An-Animal Test Rubric (DAT-R)

• Other subscales used:
  • Habitat Type
    • Indoor, backyard, park/playground, & outdoors
  • Environmental Components
    • Presence of animals, plants, # of birds, etc.
# Draw-An-Environment Test Rubric

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not Present</th>
<th>Present</th>
<th>Basic Interaction</th>
<th>Complex Interaction</th>
<th>Explicit Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>(0 pts)</td>
<td>(1 pts)</td>
<td>(2 pts)</td>
<td>(3 pts)</td>
<td>(4 pts)</td>
</tr>
<tr>
<td>Biotic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abiotic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 points</td>
</tr>
<tr>
<td>Human Built or Designed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>highest score</td>
</tr>
</tbody>
</table>
DET: Pre-test
DET: Post-test
# Draw-An-Animal Test Rubric

<table>
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<tr>
<th>Factor</th>
<th>Not Present</th>
<th>Present</th>
<th>Basic Interaction</th>
<th>Complex Interaction</th>
<th>Explicit Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0 pts)</td>
<td>(1 pts)</td>
<td>(2 pts)</td>
<td>(3 pts)</td>
<td>(4 pts)</td>
<td></td>
</tr>
<tr>
<td>Ecosystem Complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 points</td>
</tr>
<tr>
<td>Shelter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>highest score</td>
</tr>
</tbody>
</table>
DAT: Pre-test

crab
DAT: Post-test

- crab
- fish
- cloud
- blazing sun

grass and sand
Pre-test Results: Likert-type Items

• Art-appreciation
  • Females scored higher than males
  • Low income scored higher than high income

• Eco-affinity
  • Ages 6-7 scored higher than older age groups

• Eco-awareness
  • Ages 10-12 scored higher than younger age groups
Pre-test Results: Likert-type Items

- Eco-affinity & Eco-awareness
  - Hispanic/Latinos & White ethnic groups scored higher than African Americans & Asians
Pre-test Results: Drawing Items

• DET-R & Environmental Components
  • Hispanic/Latinos & White ethnic groups scored higher than African Americans & Asians

• DAT-R & Environmental Components
  • Females scored higher than males

Habitat type subscale showed no statistically significant differences
Post-test Results: Likert-type Items

• Art-appreciation & Eco-affinity
  • No statistically significant differences in adjusted-mean scores between three experiment groups

• Eco-awareness
  • EE treatment group scored higher than both the control & art-based EE treatment group
Results: Likert-type Item Subscales

Mean Score Differences (Post-Pre)

- Eco-Affinity
- Eco-Awareness
- Art-Appreciation

Control | EE Treatment | Art EE Treatment

N = 285
Post-test Results: Drawing Items

- DET-R, DAT-R, & Environmental Components
  - EE treatment group scored higher than both the control & art-based EE treatment group
  - The control group declined across all three subscales

Habitat type subscale showed no statistically significant differences
Results: Drawing Item Subscales

Mean Score Differences (Post-Pre)

- DET-R
- DAT-R
- Env. Components

Control  |  EE Treatment  |  Art EE Treatment
--- | --- | ---
N = 285
Potential Implications

• Results may lead to more effective educational methods, materials, & resources integrating the arts into EE programming

• Help educators better understand children’s beliefs, way of thinking, & cognitive grasp of environmental issues.
Future Research

- Look into how the use of art in EE effects...
  - ...children with learning disabilities?
  - ...children with discipline issues?
- Long term effects of art in EE?
- Art as an EE evaluation tool?
Questions?