Engaging Students in Outdoor Education

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Agenda

- Getting to Know Who is in the Room
- Why outdoor education?
- Hands-on Activities and Connections to NGSS
- Meaningful Engagement
- Citizen Science
- Putting it All Together: D'Abate Elementary
- How we can help
- Final Thoughts & Goals

Why Outdoor Education?

- Students who have opportunities to engage in outdoor learning have:
  - Increased ability to think creatively and critically
  - Improved performance on standardized tests
  - Renewed enthusiasm for learning
  - More active and engaged as community citizens

(Ballantyne & Packer, 2002; Lieberman & Hoody, 1998; Rickinson et al., 2004)

Why Outdoor Education?

These cognitive, affective, interpersonal/social, and physical/behavioral impacts of outdoor learning that are occurring through three kinds of outdoor learning activities:

1) Fieldwork and outdoor visits
2) Outdoor adventure education
3) School grounds and community projects

(Rickinson et al., 2004)

Why Outdoor Education?

It allows us to engage students in process skills:

- Questioning
- Observing
- Measuring
- Inferring
- Predicting
- Classifying

Two Key Process Skills in Science

Observation-

- Using your 5 senses to gather information about your surroundings

Inference-

- A conclusion based on evidence
- Using what you observe and what you know to reach a conclusion

Why Outdoor Education?

- Good way to practice making observations and inferences (process skills)

- Reinforces concept that scientific knowledge is based on observations and inferences (nature of science)

Why Outdoor Education?
Easy Connection to NGSS Practices & Concepts

- Practices
  - Asking questions (for science)
  - Planning and carrying out investigations
  - Analyzing and interpreting data
  - Using Mathematics and computation thinking
  - Engaging in Argument from Evidence
  - Obtaining, Evaluating, and Communicating Information
- Concepts
  - Patterns
  - Cause and Effect
  - Scale, Proportion and Quantity
  - Systems and System Models
  - Energy and Matter: Flows; Cycles, and Conservation
  - Structure and Function
  - Stability and Change

Meaningful Engagement

- Fish and Wildlife Survey
  - Cost
  - Accessibility
  - Not feeling welcome
  - Not knowing what to do when there - ‘only-ness’
  - Safety

Meaningful Engagement

- Always start with a check-in. Helps gauge the comfort level of audience
- Create sense of 'ownership' and harbor sense of place (ex. Trail naming)
- Having curriculum/message is important, but if you leave having done nothing except create a positive experience in nature with them, that is a win
- Be careful of what you say when hiking through areas that are familiar to your audience (ex. Feeding geese)

Meaningful Engagement

- Reiterate that they have an important role as stewards on the land
- Learn to appreciate the area around them – show them how to observe
- They will take pride in an area and want to bring change to it
  - Dog Poop Program
- Always leave with a positive message of what they can do

12 Inch Hike

Process Skills Used:

- Questioning
- Observing
- Measuring
- Inferring
- Predicting

NGSS Connections:

- Using Mathematics and computation thinking (practices)
- Scale, Proportion and Quantity (cross cutting concept)

Across Curriculum and Extensions:

Early Elementary- How to use a ruler, graphing the results
Upper Elementary- Area/Perimeter, Categorizing/Percents
Middle School- Proportions & Transects
Writing- Compare/Contrast 2 different sites

What do you notice?
What do you wonder?

Process Skills Used:

- Questioning
- Observing
- Inferring
- Classifying

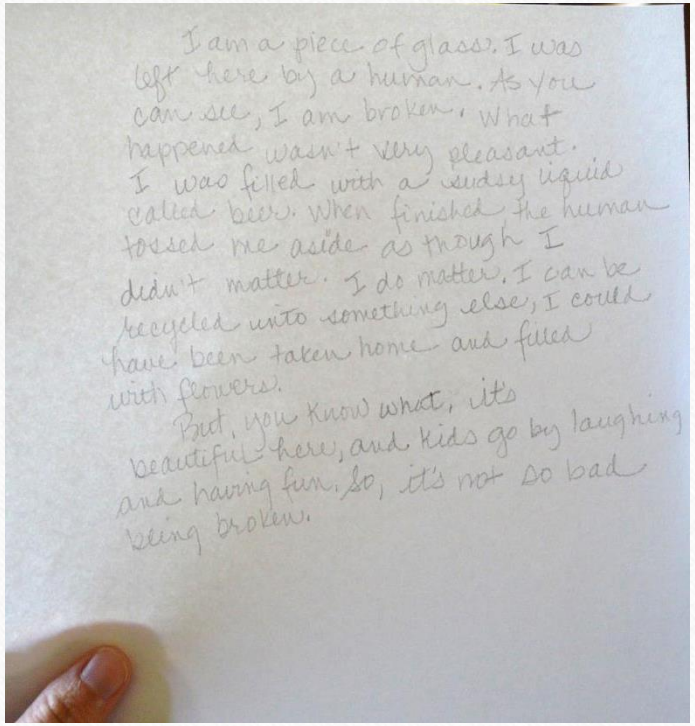
NGSS Connections:

- Asking questions (practice)
- Obtaining, Evaluating, and Communicating Information (practice)
- Structure and Function (cross cutting concept)

Across Curriculum and Extensions:

Early Elementary- tie in to life cycle , animal needs
Upper Elementary- abiotic/biotic
Middle School- biomimicry
Art- sketching
Writing- expository piece (research object), descriptive writing, poetry

Example by a Teacher



"I am a piece of glass. I was left here by a human. As you can see, I am broken. What happened wasn't very pleasant. I was filled with a sudsy liquid called beer. When finished, the human tossed me aside as though I didn't matter. I do matter. I can be recycled into something else, I could have been taken home and filled with flowers. But, you know what, it's beautiful here and kids go by laughing and having fun. So it's not so bad being broken."

Getting Started with Citizen Science

- What is Citizen Science?
  - public engagement in scientific data collection
  - collaborations between scientists and volunteers
  - provides access to scientific information for community members

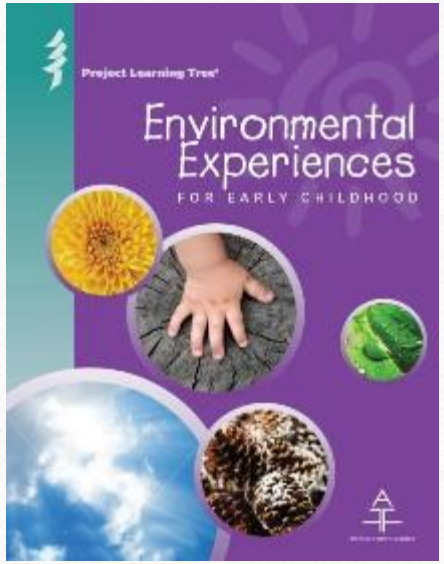
Project Frog Watch

- Monitor Frogs and Toads by learning calls
- Learn about wetlands in your area
- Online at: https://www.aza.org/frogwatch/

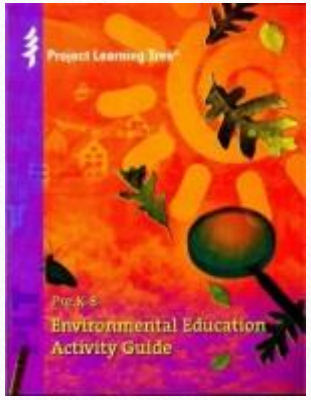
Students worked in groups to study the various habitats found at the park.

Back in the classroom, students created models of the habitats they were studying.

Students then engineered new critters out of recycled materials that would be able to survive in their habitats.



Project Learning Tree®



RHODE ISLAND RiEEA
Environmental Education Association

Advancing Environmental Education Through Collaboration
http://rieea.org/

- Data Base
- Social Media: Facebook, Pinterest, Instagram
- Professional Development Scholarships
- Events
- Professional Development Opportunities
- Resources

I AM A CURIOUS PERSON

I See~ I Wonder~ I try~ I See Better

I Wonder More~ I try More~ I understand

I am a Scientist

-Philip D. Roskos, Chemist & Scientist