

Knock Down the Silos: Outdoor Science Learning and Literature

Virginia Association of Environmental
Education

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George Mason Science & Technology Campus
Manassas, Virginia

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BLANDY
EXPERIMENTAL FARM



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Blandy Experimental Farm

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Field Ecology Research Station

State Arboretum of Virginia



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Our Mission: To increase understanding of the natural environment through research and education.



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Education Outreach



- Hands-on, outdoor, experiential field investigations
- ~7000 PK-12 students per year
- Inquiry, Science Process and Skills focused programs
- Correlated to state and national standards
- Field-based STEM Learning
- Teacher professional development



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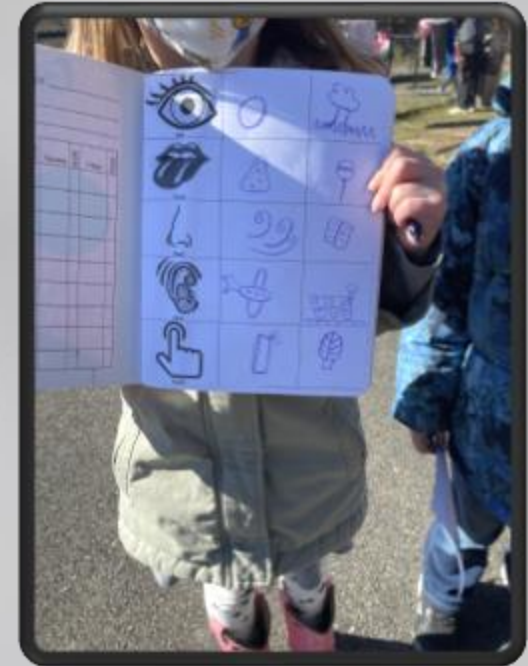
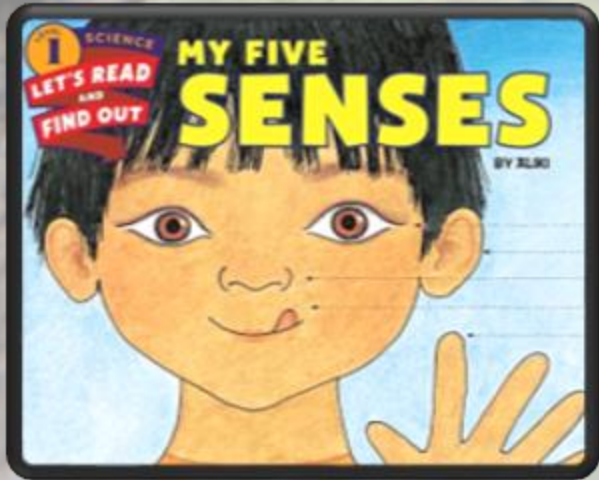
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Plan



- Introduction
- Background to the project
- Resource development
- Model an activity
- Reflect & Share resources

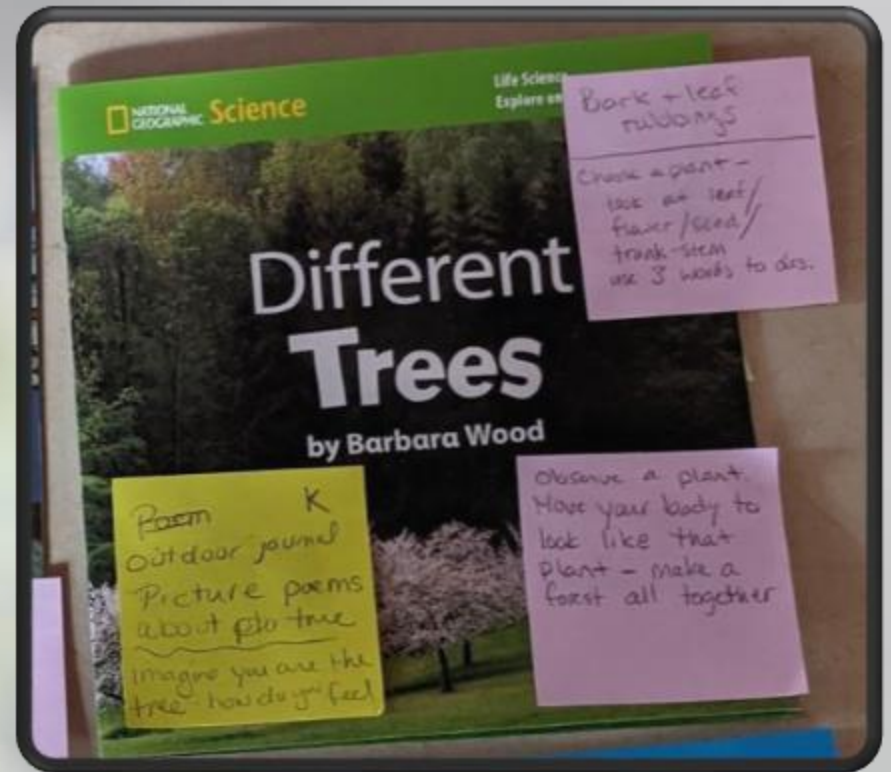
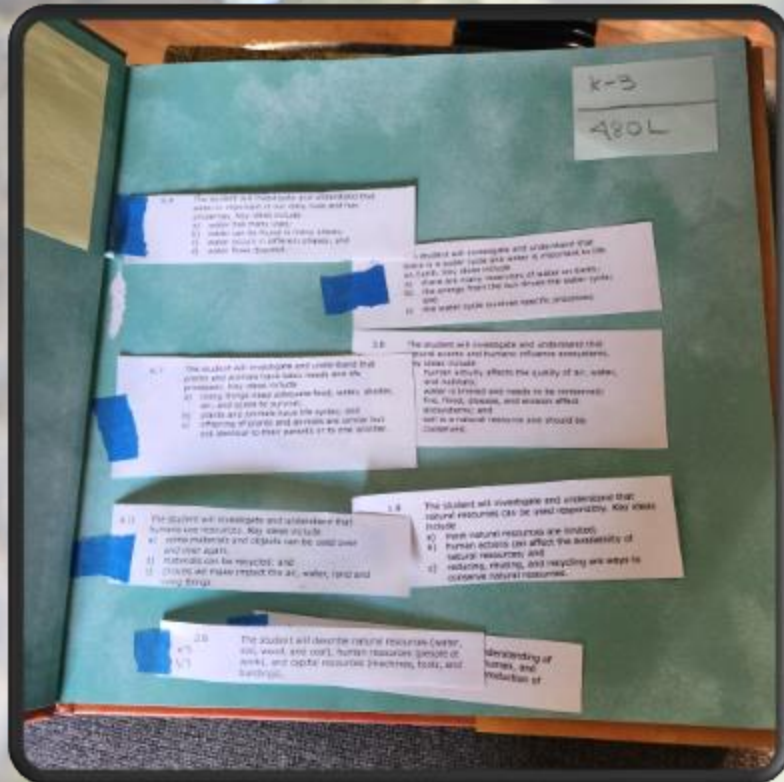
K-3 Literacy in the Schoolyard



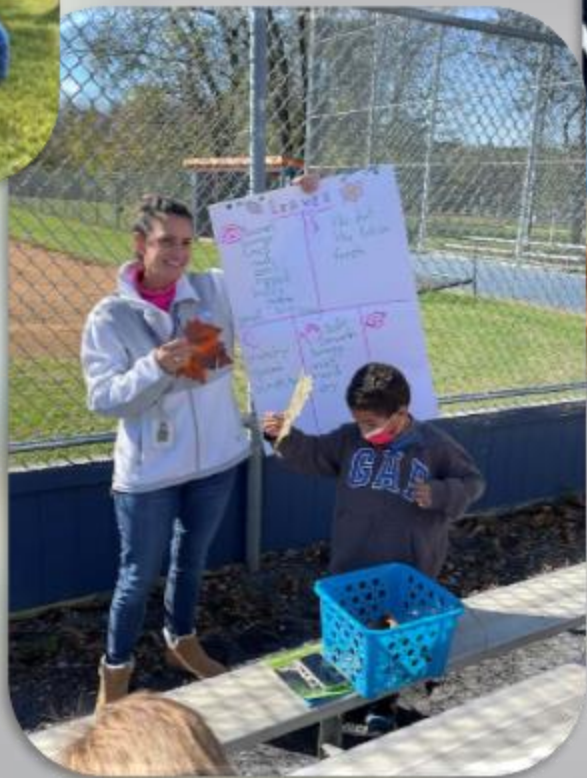
<https://blandy.virginia.edu/content/ccps-noaa-k-3-literacy-project>

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Resource Development



Resource Development



Required information during the PD

Lesson Title	Animal Adaptations	Planned Teaching Date	
Learning Objective			
Through reading, writing reflection, and an outdoor investigation students gain an understanding of some physical (camouflage, mimicry) and behavioral adaptations that can protect an animal from predation.			
Essential Question (s)			
<ol style="list-style-type: none"> How do physical and behavioral adaptations (such as camouflage, behaviors, and mimicry) help an animal survive in its habitat? How are these physical features and behaviors examples of an animal adapting to its environment? 			
Materials/Supplies/Data Sheets			
Reading: Student journals & pencils for writing Outdoor activity: Variety of toy animals with various coloration patterns Whiteboard clipboards, datasheet & pencil			
Bloom's Level and Question(s) or DOK			
Reading, Writing, & Science Literacy Connections		SOL Emphasis	
<u>National Geographic Book</u> <i>Tricks, Traps, and Tools</i>		Science 3.1f, 3.4b English 3.4, 3.6 b), d), f), g)	
<u>Supplementary Book</u> , <i>Looking for Animals</i> by Lawrence F. Lowery (NSTA Press)		Science 3.4b English 3.4	
<u>Outdoor Activity</u> (connected to the readings)- Color Crazy from Project Wild		Science 3.4b	
<u>Writing Activity</u> Record observations about camouflage during the outdoor activity.		English 3.9	
Differentiation			
For the journaling activity, some students can draw and color examples of animals with camouflage and mimicry instead of writing in their journals. They can explain their examples to you. Ladders are differentiated for three different reading levels.			
Assessment		Vocabulary	
<p>Formative. During the engage activity, are students accessing prior knowledge to discuss why some animals are easy to find and some are not? Are they also discussing and how these features can be an advantage?</p> <p>Summative. Color Crazy- Show photos of camouflage and mimicry. Can students differentiate between camouflage and mimicry when they see examples of animals in different habitats? Can students explain the adaptive advantages of these physical characteristics?</p>		<p>Adaptation, camouflage, mimicry, physical adaptations, behavioral adaptations (Review words: habitat, survival, physical characteristics)</p>	

Blandy and Clarke Co. teachers reviewed lesson templates, then modified a lesson template that the teachers already were familiar with.



Model an Activity



Share your Discoveries.

**How can you apply
resources used here in your
learning habitat?**

[USDA and Forest Service: Learn about Lichens](#)

"Lichen forest" by jim_mcculloch is licensed
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Online Resources

- Blandy K-3

<https://blandy.virginia.edu/content/ccps-noaa-k-3-literacy-project>

- K-3 Lesson

Plans https://drive.google.com/drive/folders/12CWBxtu3_3IRwk_PK14nhNtv0LG8ppZp

- Picture Perfect Science <https://www.nsta.org/book-series/picture-perfect-science>

- Slides of Teacher Gains <https://drive.google.com/drive/u/0/folders/1sSqdTqbv1JzZPtue7nGspOeBOHx-bfQg>

Thank you!



Blandy Education Web Pages & Resources <https://blandy.virginia.edu/pk-12-education>

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Required information during the PD

Lesson Title	Letters and Leaves	Planned Teaching Date	
Content Objective			
Exploring and understanding the physical properties of leaves through multiple senses			
Essential Question (s)			
How can we compare the physical properties of leaves? How can we use those properties to create something new?			
Materials			
<ul style="list-style-type: none"> Journals or pages (with letters if needed), writing tools if needed Gluesticks Paper grocery bag <i>Different Trees</i> <i>Leaf Man</i> 			
Bloom's Level and Question(s) or DOK			
Recall: identify letters, different body parts are used for different senses Skill/Concept: Observe, Collect, Compare leaves using different senses, graph frequency of letters Strategic thinking: Construct a creature out of leaves			
Reading, Writing, & Science Literacy Connections		SOL Emphasis	
<u>National Geographic Book Title:</u> <i>Different Trees</i>		2018 Science: K.3 , K.7, 1.4	
<u>Supplementary Book Title</u> <i>Leaf Man</i> by Lois Ehlert		2018 Science: K.3 , 1.4, 2.5 2017 Eng: K.7 (adjectives)	
<u>Outdoor Activity (connected to the readings)</u> Leaf collection, sensory observation		2018 Science K.1, K.3 , K.5	
<u>Writing Activity</u> Leaf letter mosaic		2017 Eng: K.6	
Differentiation			
Reading/writing instruction adjusted to the ability of the students.			
Assessment		Vocabulary	
Formative-			
Summative-			

Hook/Engage	
Indoor/outdoor: Read <i>Different Trees</i> Indoor/outdoor: Discuss parts of a <u>tree</u> , and the words that describe the trees as different. What parts of a tree were compared? What senses were used to explore the different trees?	
Guided Lesson/Instructional Strategy	
<u>Outdoor:</u> Leaf collection - fill a paper grocery bag with leaves. Consider giving specific instructions, for example: find one big leaf and one small leaf, find a smooth leaf and a leaf with jagged edges, find leaves of different colors...	
<u>Indoor/outdoor:</u> Leaves and senses - "Looking at Leaves" from <i>Growing Up Wild</i> . During the PD we will complete this activity all together on one big poster, however this could be done in small groups or independently. Alternatively, students could develop oral skills by making video recordings of themselves describing what they sense. <ul style="list-style-type: none"> Students select and carefully observe a leaf. They describe and record what they smell, see, hear, and feel (omit taste unless food leaves are used). 	
<u>Indoor/outdoor:</u> Read <i>Leaf Man</i>	
<u>Indoor/outdoor:</u> Letters and Leaves collage: Depending on the abilities of your students, have prepared block letters (upper and lowercases) of the first letter of their name, have them write the letters in larger print in their journal, have them write their entire full name, or perhaps have them write the name of a type of tree. Students glue leaves over the letters to fill it up. Then use extra leaves to try to create a leaf creature/picture that starts with their letter. Leaves may be cut or torn to fit. It could be fun to have a hole punch to make leaf confetti	
Indoor/outdoor: Have students arrange open journals in alphabetical order. Graph the frequency of the letters.	
Technology/Computer Science Students can make video recordings of what they sensed. Use a smartboard to make a simple graph of letters used	Expected student products or learning objectives met -Mandatory: Use of senses other than taste to describe leaves, letter leaf collage -Optional/preferred:
Reflection/Notes	
Supporting Resources	
Extension activities: <i>Growing Up Wild</i> p 30 - "Who Lives in Trees?" and <i>More Picture Perfect Science</i> p 109 - "Be a Friend to Trees", <i>My Leaf Book</i> by Monica Wellington - create a leaf nature journal, focus on colors, textures, shapes, and senses.	