

# How to Build a Forest

Integrated arts & science lesson, grades 4

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## Lesson overview

In this lesson, students will learn about natural disasters, such as hurricanes and flooding, and consider the relationship between physical changes on the Earth's surface and the plants and animals (including people) that live there. Students will use K.E.W.L. charts and the Big Six Research Process to guide their thinking and projects.

## Learning objectives & "I can" statements

### Learning objectives

Students will be able to

- give examples of how the surface of the Earth changes due to slow processes such as erosion and weathering.
- give examples of how the surface of the Earth changes due to rapid processes such as landslides, volcanic eruptions, and earthquakes.
- create a product or illustration to demonstrate changes on the Earth's surface.
- explain how people adapt their behavior to changes in their habitats.
- use the internet to conduct research.
- conduct research using the Big Six Research Method.
- give an oral presentation.

### "I can" statements

"I can give examples of how the surface of the Earth changes due to slow processes such as erosion and weathering."

“I can give examples of how the surface of the Earth changes due to rapid processes such as landslides, volcanic eruptions, and earthquakes.”

“I can create a product or illustration to demonstrate changes on the Earth’s surface.”

“I can explain how people adapt their behavior to changes in their habitats.”

“I can use the internet to conduct research.”

“I can conduct research using the Big Six Research Method.”

“I can give an oral presentation.”

## **Common Core State Standards & North Carolina Essential Standards**

- 4.E.2.3. Give examples of how the surface of the Earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.
- 4.L.1.1. Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful.
- 4.L.1.2. Explain how humans can adapt their behavior to live in changing habitats (e.g. recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion.)
- 5.RL.3 Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
- 5.RI.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
- 5.RI.6 Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
- 5.W.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
- 5.SL.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

## **Materials**

- Student journals (composition notebooks)
- K.E.W.L. chart inside of student journals
- Soil, grass, recycled materials found outside (for the optional outdoors activity)

- Crayons
- Markers
- Glue
- Newspaper, flour, water or clay (if making papier-mâché or clay landforms)
- Access to the internet
- Big Six Research Method (<http://www.big6.com>)

## Lesson-specific student preparation

If students do not have prior background knowledge about Hurricane Katrina or hurricanes in general, you will have to help them build such knowledge. For example, share video snippets and stories about Hurricane Katrina.

### Before the performance

Complete a K.E.W.L. chart. (K.E.W.L. is pronounced “cool,” where K – Know; E – Explain and/or Examples; W – Want to Know and/or Wonder; and L – Learned or Love.) In the “K” section, students will write what they think they know about the impact hurricanes have on the environment and the people that live in that environment. In the “E” section, students will write examples to explain what they know or why they think something is a certain way. “W” is where students can ask questions (their wonderings) and/or list what they want to know. “L” is to list the things they learned and/or loved and want to research further. The K.E.W.L. chart can be used at the beginning, during, and after the lesson.

Provide students with background information about the play (<http://sites.duke.edu/howtobuildaforest/background/>).

You can view various clips regarding Hurricane Katrina or natural disasters in general to provide additional background knowledge. Encourage students to use their K.E.W.L. chart to list their wonderings. You should serve as a facilitator at this point, allowing students to ask questions and lead the conversations.

Prepare the students about how to conduct themselves while viewing the play. Explain how this play is different from previous plays they may have seen. Encourage them to draw, wonder, and listen as you discuss the artists’ Core Values (<http://sites.duke.edu/howtobuildaforest/files/2012/07/FinalWrittenMaterialsforDuke1.pdf>) and as you watch the play.

View the time lapse video of *How to Build a Forest* ([http://pearldamour.com/?page\\_id=33](http://pearldamour.com/?page_id=33)). Allow students to make observations, journal, and complete their K.E.W.L. charts.

## During the performance

During the performance, students should use their K.E.W.L. charts and journals to write down wonderings, claims, questions, and observations. Take a break from the play and go outside and make nature art. Students can use items found on the ground to make art, such as tree rubbings, leaf prints, or use grass and dirt as crayons to make pictures or provide students with recyclable materials. Have students write down examples of elapsed times and make connections to the performance. How do places change over time? Have students listen to the stories that are being told in the audience and use the field guide to enhance this experience.

## After the performance

Review Hurricane Katrina and how this play was influenced by the hurricane. Complete the K.E.W.L. chart and discuss the play in terms of whether it met their expectations and in general. Compare and contrast the play in terms of character and setting with other plays. (If students have limited background knowledge about other plays, you can provide them with hints and suggestions, such as that in other plays the set is already built, but in this play they are building the background and set because it is a major component of the play.) Discuss the K.E.W.L. chart for their wonderings, what they loved, and additional questions they might still have. Allow students time to talk with their classmates about their play.

To demonstrate and model the Big Six Research Method, as a class, have your students research what Holland did to ensure a similar problem did not occur again after their levees broke.

## Assessment

Using the completed K.E.W.L. chart to help guide your assessment, have students select one of their wonderings to complete a research project based on the Big Six Research Process (<http://www.big6.com>). Rather than providing choices, confer with the students to see what they would like to research further. Students will create a presentation

(poster, Powerpoint, and/or some type of artifact) that demonstrates what they learned from both the play and the related activities. Students' journals can also serve as a means of assessment.

Another type of assessment can be to create a menu of activities for students to choose from to assess their knowledge gained from participating in the fieldtrip/activities.

Possible activities might include:

- Students can participate in a town hall meeting or mock trial on whether or not to rebuild the levee or what should have been done prior to the levees breaking. Students will have to research and create note cards to make their points.
- Students can research the impact Hurricane Katrina had on the natural resources in Louisiana and Mississippi.
- Read *Ants in Your Pants, Worms in Your Plants* by Diane Degroat, and have students create their own comic book. If this book isn't available, show any graphic novel and encourage students to create their own.
- Read *The Giving Tree*, or watch it on YouTube, and compare and contrast how "the boy" or the tree felt throughout a given time; or make connections to/compare and contrast with how Lisa D'Amour might have felt about L'Esperance.

### **Additional Activities**

- Create a poster related to the play.
- Choose a specific scene, make a quick sketch of this scene, then write a script for the builders during this scene.
- Predict what would happen if we did not recycle.
- Have students look at the label on their shirt to see where their shirts were made. Then research to see if they were made with recycled materials.
- Make a brochure on ways to conserve energy. Complete some of the activities you listed in your brochure and make a chart or what you did for five days.
- Create a recycling program to be used in your school.
- Encourage your principal to allow you to have a gardening club.
- Make a list of the items you throw away in a given week. Choose one item like a cardboard box or milk carton and come up with a creative way to reuse that item.
- Create a diorama or art project out of recycled materials.
- Research why recycled materials weren't used to make the forest in the play.
- Write an Earth Day related poem.
- Create a diorama of what you think a perfect environment should look like.
- Make up a dance routine that should be incorporated into the play and explain why it should be incorporated and/or what the movements represent. For

example, swaying your arms represents branches and wiggling your toes and fingers could be roots spreading.

- Research the BP Oil spill.
- Research local natural disasters or environmental catastrophes. For example, NC Hurricane Fran, Evans Road Wildfire, the waste in the Neuse River, pollution caused by pig farming, and unhealthy air in Charlotte.
- Create model landforms and to demonstrate how erosion, landslides, and etc. change the Earth's surface. Consider how these changes affect the plants and animals living on the surface.
- Create a terrarium or garden, and have students research things that are beneficial and harmful to their terrarium, garden, or plant.
- Provide students with a list of concepts to research further and have them write persuasive arguments on why that particular concept is better for humans. For example, an argument for or against recycling; biking versus carpooling; planting trees and shrubs to prevent flooding versus a large rock garden; or minimizing your carbon footprint versus "going green". Or, they can simply choose one area to write a persuasive argument on.

## Additional Resources

### Suggested Booklist

- *The Great Kapok Tree: A Tale of the Amazon Rain Forest* by Lynne Cherry
- *The Lorax* by Dr. Seuss
- *Story of a Storm: A Book about Hurricane Katrina* by Reona Visser
- *Just a Dream* by Chris Van Allsburg
- *The Wump World* by Bill Peet
- *Brother Eagle, Sister Sky* by Susan Jeffers and Chief Seattle
- *The Wartville Wizard* by Don Madden
- *The Adventures of a Plastic Bottle: A Story About Recycling* by Alison Inches
- *Recycle! A Handbook for Kids* by Gail Gibbons
- *Michael Recycle* by Ellie Bethel
- *The Giving Tree* by Shel Silverstein
- *The Mangrove Tree* by Susan L. Roth and Cindy Trumbore
- *Compost Stew* by Mary McKenna Siddals
- *10 Things I Can Do to Help My World* by Melanie Walsh
- *Cloudy with a Chance of Meatballs* by Judi Barrett

## Related Websites

- Scholastic News Site and Teacher Guide for Hurricane Katrina  
<http://teacher.scholastic.com/scholasticnews/indepth/hurricanekatrina/articles/index.asp?article=tips&topic=1>
- Vicki Blackwell a Technology Teacher from Tangipahoa Parish, Louisiana website with lots of links related to teaching about Hurricane Katrina. (Please note some links might be inactive.) <http://www.vickiblackwell.com/Katrina/index.htm>
- Hurricane Katrina Resource Guide provided by the Los Angeles County Office of Education  
[http://score.rims.k12.ca.us/score\\_lessons/special\\_events/katrina/#curr](http://score.rims.k12.ca.us/score_lessons/special_events/katrina/#curr)
- Rainforest Alliance <http://www.rainforest-alliance.org/kids>
- Students for the Environment <http://www.epa.gov/kids>
- Weather Wiz Kids <http://www.weatherwizkids.com/>
- The Weather Channel for kids <http://www.theweatherchannelkids.com>
- Interactive Weather Maker <http://www.scholastic.com/kids/weather>
- FEMA for kids <http://www.fema.gov/kids>
- National Geographic Habitats  
<http://environment.nationalgeographic.com/environment/habitats/>
- Habitat Electronic Fieldtrip  
[http://happeninhabitats.pwnet.org/what\\_is\\_habitat/habitat\\_types.php](http://happeninhabitats.pwnet.org/what_is_habitat/habitat_types.php)
- Lots of links related to forestry education  
[http://breitlinks.com/myforestry/for\\_teachers.htm](http://breitlinks.com/myforestry/for_teachers.htm)
- Request free brochures related to forestry  
<http://ncforestservice.gov/publications.htm>
- Online book list of related books  
[http://www.schoollibraryjournal.com/slj/articlereview/889962-451/earth\\_day\\_resources\\_2011.html.csp](http://www.schoollibraryjournal.com/slj/articlereview/889962-451/earth_day_resources_2011.html.csp)