

LESSON 1 Hurricane Awareness

Lesson at a Glance

Students draw their current ideas and impressions of hurricanes in order to stimulate their prior knowledge about hurricanes. They view photos of hurricane wind damage and flooding, and then modify their drawings. Students then complete portions of a K-W-L chart to assess their prior knowledge and determine what they want to learn.

Lesson Duration

One 45-minute period
(Optional) 45-minute period: Drawing activity

Essential Question(s)

What is a hurricane?
Why do we need to know what is used to categorize a storm as a hurricane?

Related HCPS III Benchmark(s):

Science SC.3.1.2
Safely collect and analyze data to answer a question.

Language Arts LA.3.6.1
Use oral language to obtain information, complete a task and share ideas and personal opinions with others.

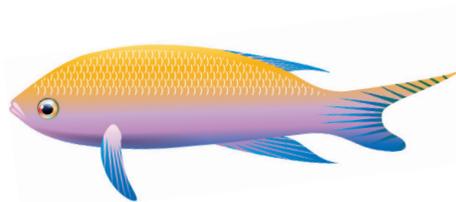
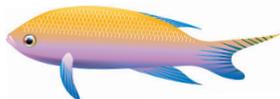
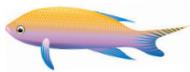
Fine Arts FA.3.1.3
Use observational skills in creating an original work of art.

Key Concepts

- Hurricanes are severe tropical storms with heavy rains, high wind speeds in excess of 73 mph, enormous waves, and subsequent flooding that can damage buildings and beaches.
- Hurricanes are an area of low pressure around which winds blow counterclockwise in the Northern Hemisphere, due to the Coriolis Effect.
- In the North Atlantic and Northeast Pacific Ocean east of the dateline, these severe storms are called hurricanes, but in other parts of the world they are called typhoons and cyclones.

Instructional Objectives

- I can identify and describe a hurricane.
- I can describe the kinds of damage caused when a hurricane moves over land and how a hurricane affects people.



Assessment Tools

Benchmark Rubrics:

Topic		Scientific Inquiry	
Benchmark SC.3.1.2		Safely collect and analyze data to answer a question	
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Summarize and share analysis of data collected safely to answer a question	Safely collect and analyze data to answer a question	With assistance, safely collect and analyze data	With assistance, safely collect data and attempt to analyze data

Topic		Discussion and Presentation	
Benchmark LA.3.6.1		Use oral language to obtain information, complete a task, and share ideas and personal opinions with others	
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Use creative oral language to obtain information, complete a task, and share ideas and personal opinions with others, in a highly effective way	Use oral language to obtain information, complete a task, and share ideas and personal opinions with others	Use typical oral language that sometimes aids in obtaining information, completing a task, or sharing ideas and personal opinions with others	Use inappropriate oral language that does not aid in obtaining information, completing a task, or sharing ideas and personal opinions with others

Topic		How the Arts Communicate	
Benchmark FA.3.1.3		Use observational skills in creating an original work of art	
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Consistently use observational skills in creating an original work of art	Usually use observational skills in creating an original work of art	Sometimes use observational skills in creating an original work of art	Rarely use observational skills in creating an original work of art

Assessment/Evidence Pieces

Lesson

- Students illustrate the elements of a hurricane making sure to include the kinds of damage caused when a hurricane moves over land and how a hurricane affects people.
- This illustration may be used as a pre and post assessment for this lesson

Materials Needed

Teacher	Class	Group	Student
<ul style="list-style-type: none"> Method to present PowerPoint PowerPoint <i>Hurricanes</i> Chart paper Pens 	<p>Suggested children's books</p> <ul style="list-style-type: none"> McLaughlin, Deirdre Mercier. (2006). <i>Yesterday We Had a Hurricane</i>. Rockefeller Center: Bumble Bee Publishing. Wallner, Alexandra (2000). <i>Sergio and the Hurricane</i>. New York: Henry Holt & Co. London, Jonathan (1998). <i>Hurricane!</i> New York: Harper Collins. Lauber, Patricia. (1996). <i>Hurricanes: Earth's Mightiest Storms</i>. New York: Scholastic 	<ul style="list-style-type: none"> none 	<ul style="list-style-type: none"> KWL sheets White letter sized paper (folded in half to create two 8.5 x 5.5 sections)

Instructional Resources

PowerPoint Presentation: *Hurricanes*

Teacher Reading: *Hurricane Awareness*

Student Worksheet: *K-W-L Chart-Hurricanes*

Optional - Student Worksheet: *Unit Self-Assessment* (found in the unit overview)

Student Vocabulary Words

hurricane: a severe tropical storm with heavy rains and high wind speeds in excess of 74 mph, enormous waves, and subsequent flooding that can damage buildings and beaches. An area of low pressure in which winds blow counterclockwise in the Northern Hemisphere. The term hurricane is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. The term typhoon is used for Pacific tropical cyclones north of the Equator west of the International Dateline. The term cyclone is used for Indian Ocean tropical cyclones.

Lesson Plan

Lesson Preparation

- Read the Science Background provided in the Unit’s Overview and the Teacher Reading *Hurricane Awareness*.
- Preview the PowerPoint presentation *Hurricanes* and make arrangements to project it.
- Write out Instructional Objective “*I can*” statement for this lesson.
- Decide whether to duplicate and distribute the KWL chart to individual students, or to create a large classroom KWL chart, or both.
- Duplicate copies of the worksheet, Student Worksheet *K-W-L Chart-Hurricanes*
- Consider creating a Word Wall on which to post hurricane related terms.

I. Check for Understanding: The K-W-L Chart

- A. Take students outside and safely make observations of the current weather conditions. If the current conditions are not safe to take students outside, they may do their observations from a window in the classroom. Teachers may decide whether it is safe to go outside or not.
SAFETY NOTE: Remind students not to look directly at the sun for ANY period of time.
- B. Pass out white, letter sized paper to students. Have students fold the paper in half. (Please refer to the diagram 1-1 below)



Diagram 1-1

Folding the white sheet of paper

Fold along the dotted line

- C. Ask students to make a drawing on one side of their white sheet. Discuss with students the observations they are making. What do they see? What does it mean? (e.g. Trees moving can mean that the wind is blowing from a certain direction. Dark clouds could mean it may rain.) On the back of the drawing students may write a caption to explain their drawing and the current weather conditions they observe.
- D. Ask students to make a drawing of what they think it would look like outside if there was a hurricane and draw that on the other half of their paper. Have students include as much as they know about hurricanes in the drawings. These drawings can act as a pre-assessment for the unit.
- 1) Ask students to include a caption that explains their pictures. Have students date their captions.
 - 2) Students can use these drawings to help them fill out their K-W-L charts.
 - 3) Keep these drawings throughout the unit

E. Develop a KWL Chart

- 1) Ask students to complete the left “K” column of the K-W-L chart, listing what they know about hurricanes. Students may use their drawings and other thoughts to fill out their K-W-L Charts. Here you may want to compile ideas into a class K-W-L chart as the students complete their own individual charts. Discuss with students what they already know or have learned thus far about hurricanes.
 - 2) Help students to think about what they want to learn about hurricanes, and list these ideas in the middle “W” column.
- F. Look ahead. Tell students that they will learn more about hurricanes in this unit, including how scientists predict and observe hurricanes, as well as how they can prepare for a hurricane and protect themselves during a hurricane.

II. Hurricane Visuals

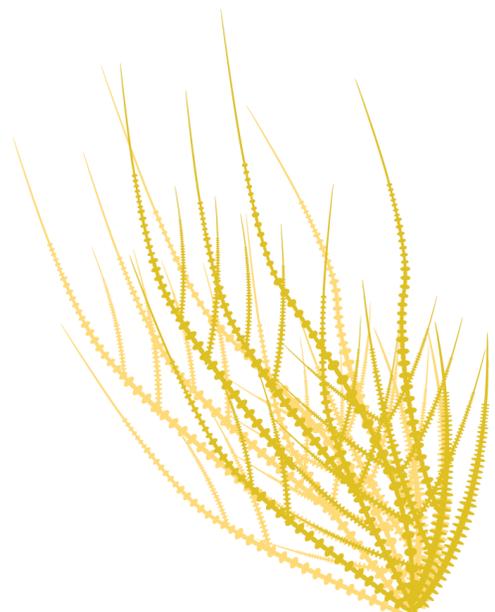
- A. Post the “I Can” statements or Essential Questions for the lesson. Ask students to keep these “I Can” statements or Essential Questions in mind as you present and discuss the PowerPoint.
- B. Present the Power Point slide show *Hurricanes* to students. Refer to the Teacher Notes for key information to present.
- C. Review with students the key elements of a hurricane: high winds, heavy rains, and damage to property. Point out that these are listed in the “I Can” statements.
- D. Suggestion: Teacher may also want to show other hurricane video clips available online to illustrate the concept to students.

III. Update KWL Chart and Drawing

- A. Have students look at their KWL Chart and ask them to decide whether they need to add things to their chart based on what they just learned.
- B. Have students look at their own drawing of a hurricane, and ask them to decide whether they need to add things to their drawings and/or captions based on what they just learned. Time permitting, do a Gallery Walk, or post the drawings for all to see. Discuss how drawings are similar or different.

Extended Activities

1. Create a hurricane bulletin board. Post drawings of hurricanes. Make labels to list the features of hurricanes. Have students work in groups of four to compare the features in their drawings to one another. Then have a speaker report out to the class how their posters were similar and different.
2. If you have a grade appropriate book on hurricanes available, read aloud and share the visuals. An example is *Hurricane!* by Jonathan London
3. Look at more photos of hurricanes, which can be found in the NOAA Photo Library
<http://www.photolib.noaa.gov/nws/hurr1.html>
4. Create a world map and shade and label in to show where hurricanes are called cyclones, and where they are called typhoons and where hurricane is used to describe these storms.
5. Create a world map to show hurricane zones. (What areas have a higher probability of hurricanes forming?)
6. **TO MEET BENCHMARK SC 3.8.2:** Connect the water cycle to hurricanes. An excellent poster of the water cycle can be found at http://www.srh.noaa.gov/srh/jetstream/atmos/hydro_cycle.htm



LESSON 1 Teacher Reading

Hurricane Awareness

Although hurricanes may seem scary and destructive, it is important to keep in mind that they are rare and need certain conditions to form. Hurricanes need a pre-existing weather disturbance, warm ocean waters, moisture, and wind. When these conditions exist for a long period of time, they combine to form a hurricane. Over a three-year period, five hurricanes struck the coastline of the United States.

Hurricanes are a type of **tropical cyclone**, which is a low-pressure weather system in warm tropical seas. Hurricanes are the most severe tropical cyclone. Tropical cyclones are categorized as:

Tropical Depressions, which are a system of clouds and thunderstorms with a defined circulations and maximum sustained winds of less than 39 mph.

Tropical Storms, a system of strong thunderstorms with defined circulation and maximum sustained winds of 39-73 mph.

Hurricanes, a system of strong thunderstorms with well-defined circulation and maximum sustained winds higher than 73 mph

Hurricanes are categorized according to the **Saffir-Simpson Scale** in terms of the speed of the winds and the amount of damage they can cause.

A **Category 1** Hurricane has winds of 74 to 95 mph and causes no substantial damage to buildings though areas on the coast may flood.

A **Category 2** Hurricane has winds of 96 to 110 mph and may cause damage to buildings, especially to mobile homes.

A **Category 3** Hurricane has winds from 111 to 130 mph and may cause structural damage to small residences and considerable coastal flooding.

A **Category 4** Hurricane has winds of 131 to 155 mph and damage may include structural failures, major beach erosion, and flooding.

A **Category 5** Hurricane has winds over 155 miles per hour and damage may include structural failures for residences and industrial buildings and major flooding.

LESSON 1 K-W-L Chart - Hurricanes

Name _____ Date _____

K – What I KNOW	W – What I WANT to learn	L – What I LEARNED