

Natural Disasters

Teachable Moments: Using Current Events to Enhance Your Instruction
(Hurricane Harvey, Hurricane Irma, Oregon Wildfire)

Driving Questions

What is the lasting impact of natural disasters on people and the environment they live in?

How can we learn from and help those affected by natural disasters?

Vocabulary

- Avalanche
- Blizzard
- Earthquake
- Drought
- famine
- Flood
- grit
- Hurricane
- Meteorologist
- mudslide
- Natural disaster
- Perseverance
- Relief/aid

- Survival
- survivor
- Tornado
- Tsunami
- Volcanic eruption
- wildfire

Activity Suggestions

Science

- Create a way to help better prepare residents and structures for natural disasters and/or assist recovery efforts. (Engineering Design Process)
- Investigate the effects of natural disasters on the animals and ecosystems in surrounding areas.

Social Studies

- Discuss the role of citizens and government in a natural disaster.
- Explore past natural disasters from around the world (Black Death).
- Identify the economic effect of natural disasters.
- Discuss supply and demand of goods changes (food, bottled water, gas, hotels, airline tickets)
- Evaluate primary sources of natural disasters (personal account of survival).
- Discuss the benefits and challenges related to the development of a highly technological society.
- Create a timeline of natural disasters.

- Categorize natural disasters by regions in which they occur.

Math

- Plot data from past natural disasters (year, location, rainfall, temperature, acreage, population, wind speed, duration, amount of money raised by relief organizations or spent by the government) using tables or graphs.
- Represent statistics as fractions, decimals, percents.
- Determine mean, median and mode from a data set.
- Compare and contrast the measurements of natural disasters (hurricane categories, Earthquake Richter scale).

Language Arts

- Write a persuasive letter to convince others to support Hurricane Harvey Relief.
- Compare and contrast hurricanes with each other or other natural disasters.
- Create an informative brochure about how to protect your house, your pets and your family.
- Research and present on a past natural disaster.
- Create captions for images or headlines for articles.
- Interview a scientist, meteorologist, Relief Worker, health care, firefighter, police officers (first responders), military personnel, or citizen about the experience.
- Identify target audience, author's purpose and the role of the media.
- Compare and contrast writing styles of authors using articles on the same topic.

Music

- Choose an instrument or song that would portray a natural disaster. Explain why.
- Evaluate songs that reference natural disasters in another context.
- Create a song to provide hope to those affected by a natural disaster.

Art

- Create a poster to provide awareness of a natural disaster, to explain safety tips or how to get help.
- Run a Visual Thinking Strategies (VTS) discussion using images.

Physical Education

- Run through safety drills.

Technology

- Digitally create a brochure, poster or flyer to provide safety tips, inform residents.
- Create a skit or powerpoint to showcase relief efforts.
- Create graphs or charts in Excel.
- Type a letter convincing others to take action.
- Explore online resources.

Resources

Building Background

Brainpop <https://www.brainpop.com/>

- Avalanches
- Droughts

- Earthquakes
- Floods
- Hurricanes
- Natural Disasters
- Tsunamis
- Volcanos
- Wildfires

ABC News

Great ~1 minute video explaining how hurricanes form from ABC News's Chief Meteorologist
<http://abcnews.go.com/US/hurricanes-form-explained-abc-news-chief-meteorologist-ginger/story?id=49650211>

CBS affiliate WKRG - Mobile, Alabama and Pensacola, Florida

Stellar weather report and explanation of hurricanes from Chief Meteorologist Alan Sealls.
<https://www.youtube.com/watch?v=XwW6ZWaQ4bs&feature=youtu.be>

The Vox

Great image comparing the amount of water in Hurricane Katrina and the amount of water in Hurricane Harvey
<https://www.vox.com/science-and-health/2017/8/28/16217626/harvey-houston-flood-water-visualized>

Flocabulary

Hurricanes <https://www.flocabulary.com/unit/hurricanes/>

Bill Nye - Storms <https://www.youtube.com/watch?v=3ok00qjBy4I&list=EL-psxbivufL542QObM96daQ>

More About Hurricane Harvey

Newsela *Create a free account*

How to help those affected by Hurricane Harvey.

https://blog.newsela.com/blog/2017/9/5/harvey?utm_source=nws&utm_campaign=harvey&utm_medium=banner

Article - Rising Floodwaters Overwhelm Houston, other parts of Southern Texas

<https://newsela.com/read/hurricane-harvey-hits/id/34413>

Article - Another devastating hurricane? East Coast braces for Irma

<https://newsela.com/read/hurricanes-hitting-united-states/id/34813/>

Article - Storm robs millions of electricity, which could take weeks to restore

Article PRO/CON: Did Hurricane Harvey show the reality of climate change?

Text Set - Lend a Helping Hand <https://newsela.com/text-sets/231679/helping-hand>

Text Set - Hurricane Season <https://newsela.com/text-sets/122531>

Unexpected aspects of the Hurricane

Harvey and Irma are not just a couple of hurricanes, they're a couple!

New York Times

<https://www.nytimes.com/2017/09/07/us/harvey-irma-couple.html>

The Atlantic

Fire Ants Survival

<https://www.theatlantic.com/science/archive/2017/08/fire-ants-flooding-hurricane-harvey/538365/>

Newsela

Article - It sounds crazy, but these scientists fly right into the eye of a hurricane

<https://newsela.com/read/hurricane-matthew-monitors/id/22785>

Today.com

<https://www.today.com/parents/texas-mom-drives-hurricane-harvey-get-son-hospital-brain-surgery-t116015>

Newsela

Article - Wild Animals in Danger from Heavy Rain, Flooding in Southeast Texas

<https://newsela.com/read/hurricane-harvey-animals/id/34482>

Fortune.com

Southwest Airlines flies animals orphaned by Hurricane Harvey!

<http://fortune.com/2017/09/07/southwest-airlines-animals-in-hurricane-harvey/>

Weather.com

Floodwaters from Harvey's affects on Earth's crust

<https://weather.com/storms/hurricane/news/hurricane-harvey-flooding-earths-crust-pushed-down>

Mexican Earthquake

Newsela - Strong earthquake hits Mexico; at least 90 people are dead

LA Times

<http://www.latimes.com/world/mexico-americas/la-fg-mexico-earthquake-20170909-story.html>

Washington Post

https://www.washingtonpost.com/world/massive-earthquake-strikes-off-the-coast-of-mexico-setting-off-tsunami-warnings/2017/09/08/c8114f3a-945b-11e7-aace-04b862b2b3f3_story.html?utm_term=.fa9da46d7bb6

National Geographic for Kids

<http://kids.nationalgeographic.com/explore/science/earthquake/#earthquake-houses.jpg>

United States Geological Society

<https://earthquake.usgs.gov/learn/kids/>

Bill Nye Earthquakes [https://www.youtube.com/watch?v=3ok00qjBy4I&list=EL-
psxbivuFL542Q0bM96daQ](https://www.youtube.com/watch?v=3ok00qjBy4I&list=EL-
psxbivuFL542Q0bM96daQ)

NASA

Johnson Space Center was under water, but Mission Control was still operating because the ISS is still orbiting.

The Verge

<https://www.theverge.com/2017/8/31/16228906/nasa-mission-control-center-tropical-storm-harvey-international-space-station>

Gizmodo - Great image of the water height

<http://gizmodo.com/mission-control-keeps-the-heart-of-the-space-community-1798625797>

There was concern about the James Webb Space Telescope, Hubble's successor and a REALLY expensive piece of equipment. It was being housed in Chamber A for testing.

Scientific American

<https://www.scientificamerican.com/article/james-webb-space-telescope-surrounded-by-rising-floodwaters/>

Space.com - See Hurricane Irma in Motion

<https://www.space.com/38058-hurricane-irma-nasa-noaa-satellite-gifs.html>

International Space Station's View

<https://www.youtube.com/watch?v=XoMRueJI7Rc&feature=youtu.be>

What is the effect on space flight?

CNN

SpaceX is still going to launch

<http://money.cnn.com/2017/09/07/technology/spacex-launch-irma/>

ISS Astronauts returning to Houston after Space Mission

<http://money.cnn.com/2017/09/02/technology/hurricane-harvey-johnson-space-center-houston/index.html>

Columbia River Gorge, Oregon Wildfire

1960 Smokey Bear PSA (4:45)

<https://www.youtube.com/watch?v=MnMsEocNSiU>

US Wildfire Activity Map

<https://www.arcgis.com/apps/PublicInformation/index.html?appid=4ae7c683b9574856a3d3b7f75162b3f4>

CNN Student News - Discusses Hurricanes and Wildfires (10 mins)

<http://www.cnn.com/cnn10>

Newsela

Crews battle forest fire raging in popular destination for nature lovers

<https://newsela.com/read/pnw-fires-gorge/id/34823>

Smokey Bear <https://smokeybear.com/en>

Overview of 2017 Wildfire Season

<http://abcnews.go.com/International/wireStory/wildfire-weary-western-us-coughs-late-season->

[surge-49673121](#)

Wildfire Safety Information <https://www.ready.gov/wildfires>

NASA - Maps <https://www.nasa.gov/feature/goddard/2017/nasa-study-finds-a-connection-between-wildfires-and-drought>

NYTimes Magazine - Great Images

<http://www.nytimes.com/2013/09/22/magazine/into-the-wildfire.html?pagewanted=all>

Books

Nonfiction

- *A Long Walk to Water* by: Linda Sue Park
- *Castaways: Stories of Survival* by: Gerald Hausman
- *What was Pompeii?* by: Jim O'Connor
- *What was the Great Chicago Fire?* by: Janet E. Pascal
- *What was the San Francisco Earthquake?* by: Dorothy and Thomas Hoebler
- *What was Hurricane Katrina?* by: Robin Koontz
- *Soul Surfer- A True Story of Faith, Family, and Fighting to Get Back on the Board* by: Bethany Hamilton
- *I Survived True Stories Nature Attacks* by: Lauren Tarshis
- *I Survived True Stories Tornado Terror* by: Lauren Tarshis
- *I Survived True Stories Five Epic Disasters (Tsunami-Blizzard-Tornado-Flood-Titanic)* by: Lauren Tarshis

Fiction

- *A Week in the Woods* by: Andrew Clements
- *Hatchet* by: Gary Paulsen
- *I Survived - The Destruction of Pompeii, AD 79* by: Lauren Tarshis
- *I Survived - The Great Chicago Fire, 1871* by: Lauren Tarshis
- *I Survived - The San Francisco Earthquake, 1906* by: Lauren Tarshis
- *I Survived - The Shark Attacks of 1916* by: Lauren Tarshis
- *I Survived - The Eruption of Mount St. Helens, 1980* by: Lauren Tarshis
- *I Survived - Hurricane Katrina, 2005* by: Lauren Tarshis
- *I Survived - The Joplin Tornado, 2011* by: Lauren Tarshis
- *I Survived - The Japanese Tsunami, 2011* by: Lauren Tarshis
- *Jake and Miller's Big Adventure: A Prepper's Book for Kids* by: Bernie Carr

More information on survival books.

<https://momwithaprep.com/20-awesome-survival-books-for-kids/>

Exploring Statistics

Earthquakes <https://earthquake.usgs.gov/earthquakes/browse/>

Landslides and Mudslides <https://www.cdc.gov/disasters/landslides.html>

Tornados <https://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology>

-> Indiana <https://www.weather.gov/ind/tornadostats>

Tsunamis <https://www.ngdc.noaa.gov/hazard/tsu.shtml>

Movies for older viewers

Nonfiction

- *Deepwater Horizon* (PG-13) - 2010 Rig Explosion
- *Soul Surfer* (PG)
- *St. Helens* (PG)
- *The Perfect Storm* (PG-13) - 1991 Andrea Gail, fishing boat
- *White Horse* - Chernobyl disaster
- *The Battle of Chernobyl*

Fiction

- *Hours* (PG-13) - Hurricane Katrina
- *The Impossible* (PG-13) - 2004 Indian Ocean Tsunami
- *San Andreas* (PG -13)
- *Twister* (PG-13)

Media Literacy Standards

5th Grade

5.ML.1 Identify how information found in electronic, print, and mass media is used to inform, persuade, entertain, and transmit culture.

5.ML.2.1 Review claims made in various types of media and evaluate evidence used to support these claims.

5.ML.2.2 Identify the role of the media in focusing people's attention on events and in forming their opinions on issues.

6th Grade

6.ML.I Critically analyze information found in electronic, print, and mass media used to inform, persuade, entertain, and transmit culture.

6.ML.2.I Use evidence to evaluate the accuracy of information presented in multiple media messages.

6.ML.2.2 Identify the target audience of a particular media message, using the context of the message (e.g., where it is placed, when it runs, etc.)

Science Standards

5th Grade

5.ESS.3 Investigate ways individual communities within the United States protect the Earth's resources and environment.

5.ESS.4 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

5. L.S.I Develop a model to describe the movement of matter among plants, animals, decomposers and the environment.

3-5.E.2 Construct and compare multiple plausible solutions to a problem based on well each is likely to meet the criteria and constraints of the problem.

3-5.IC.2 Identify the impact of technology on personal life and society.

3-5.IC.3 Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.

6th Grade

6.PS.3 Describe how potential and kinetic energy can be transformed from one form to another

6.PS.4 Investigate the properties of light, sound, and other energy waves and how they are reflected, absorbed, and transmitted through materials and space

6.LS.1 Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.

6.LS.2 Describe the role of photosynthesis in the flow of energy in food chains, energy pyramids, and food webs. Create diagrams to show the energy in animals' food used for bodily process was once energy from the sun.

6.LS.3 Describe specific relationships and symbiotic relationships between organisms. Construct an explanation that predicts why patterns of interactions develop between organisms in an ecosystem.

6.LS.4 Investigate and use data to explain how changes in biotic and abiotic components in a given habitat can be beneficial or detrimental to native plants and animals.

6-8. E.I Identify the criteria and constraints of a design to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

6-8.E.2 Evaluate competing design solutions using a systematic process to identify how well they meet the criteria and constraints of the problem.

6-8.E.3 Analyze data from investigations to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

6-8.E.4 Develop a prototype to generate data for repeated investigations and modify a proposed object, tool, or process such that an optimal design can be achieved.

6-8.IC.2 Analyze the positive and negative impacts of technology on one's personal life, society, and our culture.

6-8.IC.3 Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.

Social Studies Standards

5th Grade

5.3.1 Demonstrate the lines of latitude and longitude are measured in degrees of a circle, that places can be precisely located where these lines intersect, and that location can be stated in terms of degrees north or south of the equator and east or west of the prime meridian.

5.3.2 Identify and describe cultural and physical regions of the United States.

5.3.3 Use maps and globes to locate states, capitals, major cities, major rivers, the Great Lakes, and

mountain ranges in the United States.

5.3.5 Locate the continental divide and the major drainage basins in the United States.

5.3.6 Use maps to describe the characteristics of climate regions of the United States.

5.3.7 Identify major sources of accessible fresh water and describe the impact of access on the local and regional communities.

5.4.7 Predict the effect of changes in supply and demand on price.

6th Grade

6.1.7 Describe how the Black Death, along with economic, environmental and social factors led to the decline of the medieval society.

6.1.7 discuss the benefits and challenges related to the development of a highly technological society.

6.1.8 Create and compare timelines that identify major people, events and development in the history of individual civilizations and/or countries that comprise Europe and the Americas.

6.1.9 Define and use the terms decade, century, and millennium, and compare alternative ways that historical periods and eras are designated by identifying the organizing principles upon which each is based.

6.1.20 Analyze cause-and-effect relationships, keep in mind multiple causations, including the importance of individuals, ideas, human interests, beliefs and chance in history.

6.1.21 Differentiate between fact and interpretation in historical accounts and explain the meaning of historical passages by identifying who was involved, what happened, where it happened, and relating them to outcomes that followed and gaps in the historical record.

6.1.22 Form research questions and use a variety of information sources to obtain, evaluate and present data on people, cultures and developments in Europe and the Americas.

6.1.23 Identify issues related to an historical event in Europe or the Americas and give basic arguments for and against that issue utilizing the perspectives, interests and values of those involved.

6.2.5 Discuss the impact of major forms of government in Europe and the Americas on civil and human rights.

6.3.2 use latitude and longitude to locate the capital cities of Europe and the Americas and describe the uses of locational technology such as Global Positioning Systems (GPS) to distinguish absolute and relative location and to describe Earth's surfaces.

6.3.3 Describe and compare major physical characteristics of regions in Europe and the Americas.

6.3.6 Explain how ocean currents and winds influence climate differences on Europe and the Americas.

6.3.7 locate and describe the climate regions of Europe and the Americas and explain how and why they differ.

6.3.8 Identify major biomes of Europe and the Americas and explain how these are influenced by

climate.

6.3.9 Identify current patterns of population distribution and growth in Europe and the Americas using a variety of geographic representations such as maps, charts, graphs, and satellite images and aerial photography. Evaluate different push and pull factors that trigger migrations.

6.3.11 Define the terms anthropology and archeology and explain how these field contribute to our understanding of societies in the present and the past.

6.3.12 Compare the distribution and evaluate the importance of natural resources such as natural gas, oil, forests, uranium, minerals, coal, seafood and water in Europe and the Americas.

6.3.13 Explain the impact of humans on the physical environment in Europe and the Americas.

6.3.14 Explain and give examples of how nature has impact the physical environment and human populations in specific areas of Europe and the Americas.

Math Standards

5th Grade

5.NS.1: Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using $>$, $=$, and $<$ symbols.

5.NS.6: Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).

5.AT.6: Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that

the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.AT.7: Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values

5.DS.1: Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.

5.DS.2: Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.

6th Grade

6.NS.8: Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b , a to b , $a:b$.

6.NS.9: Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.

6.NS.10: Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line

diagrams, or equations).

6.AF.8: Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

6.AF.9: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.

6.AF.10: Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation

6.DS.1: Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.DS.2: Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.

6.DS.3: Formulate statistical questions; collect and organize the data (e.g., using technology); display and interpret the data with graphical representations (e.g., using technology).

6.DS.4: Summarize numerical data sets in relation to their context in multiple ways, such as: report

the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.