**TEACHER RESOURCE PAC**

Grade 4



Based on the Writing for Understanding Approach, Vermont Writing Collaborative

Class Research Project on

*Natural Disasters*

(Full Class Introduction to Research and Writing, Focus on Tornadoes)

*Note: Sample responses are included for teacher reference, actual student responses will vary.*

**Research Project Overview**

**Research Question:** What hazards can result from tornadoes and what can we do to reduce the impact of tornadoes?

**The “Rule of Three”: A Plan for Gradual Release of Responsibility**

**ENGAGEMENT:** Students listen to the picture book *A Storm Called Katrina* by Myron Uhlberg, Illustrated by Colin Bootman, and discuss natural disasters in general and the hazards of hurricanes in particular. Students also watch a short video about natural disasters around the world to set the context for the research.

**INSTRUCTION** **Project #1**.: After reading the anchor text aloud, *Storm Warnings, Tornadoes* , by Chris Oxlade, aloud, the class focuses on the whole book for a first read. After the first read students do a close reading of certain sections of the text that address the focusing question. Together, the class does research, takes notes and writes a class report on the hazards that can result from tornadoes and what can be done to reduce their impact.

**GUIDED PRACTICE Project #2:** After the class research report described above on tornadoes, the class works in small groups to research a different natural disaster. The teacher provides instruction as needed, but the small groups of students work more independently and support each other as a group. The class divides into four study groups: hurricanes, blizzards, earthquakes, and floods. Using the whole text provided and an additional resource, each group researches their natural disaster and uses evidence from the text to take group notes that answers the focusing question/research question provided above. Each student in the group then writes an individual essay about the group’s natural disaster.

**INDEPENDENT RESEARCH Project #3:** The third writing research component is totally independent. Each student individually chooses a different natural disaster to study from the books and resources available, works through the same research packet, adds one additional source to their own research, and completes a research paper completely independently.

**STANDARDS ADDRESSED**

**NGSS Standard**

**ESS3.B: Natural Hazards**

**A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.**

**CCSS Writing Standards:**

W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g. headings) illustrations, and multimedia when useful to aiding comprehension.

b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

c. Link ideas within categories of information using words and phrases (e.g. another, for example, also, because).

d. Use precise language and domain-specific vocabulary to inform about or explain the topic.

e. Provide a concluding statement or section related to the information or explanation presented.

W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

**Supporting CCSS Reading Standards:**

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.4.3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

RI.4. Interpret information presented visually, orally, or quantitatively (e.g. in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

RI.4.5. Describe the overall structure (e.g. chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

RI.4.10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band independently and proficiently, with scaffolding as needed at the high end of the range.

**TEXTS**

**Introductory Text (context/engagement):** *A Storm Called Katrina* by Myron Uhlberg, Illustrated by Colin Bootman

**Anchor Text: (for whole class research):** *Storm Warnings: Tornadoes* by Chris Oxlade

**Supplementary Text to Anchor Text (for whole class research):** Weather WizKids: “Tornadoes” (http://weatherwizkids.com/weather-tornado.htm)

**Student Texts: (for small group and individual research):**

1. *Violent Skies: Hurricanes* by Chris Oxlade
   1. Paired with: Weather WizKids: “Hurricanes”

http://weatherwizkids.com/weather-hurricane.htm

1. *White-Out: Blizzards* by Claire Watts
   1. Paired with: Weather WizKids: “Winter Storms”

http://weatherwizkids.com/weather-winter-storms.htm

1. *Shaky Ground: Earthquakes* by Mary Colson
   1. Paired with: *Time for Kids: Earthquakes! They make the ground shake*
2. *Wild Water: Floods* by Tony Allan
   1. Paired with: Weather WizKids: “Rain & Floods” http://weatherwizkids.com/weather-rain.htm

**SAMPLE STUDENT RESPONSES**

Below are sample student responses similar to those expected of students at the end of this sequence. Actual responses will vary. ***This section is for teacher reference only. DO NOT SHARE WITH STUDENTS***.

CLASS RESEARCH PROJECT (Tornadoes)

SAMPLE GRAPHIC ORGANIZER FOR FULL CLASS ESSAY WRITING

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| **Tornadoes**  **Research Question:** What hazards can result from tornadoes and what can we do to reduce the impact of tornadoes? |
| Part 1: What hazards (problems, dangers) can result from tornadoes? Why are tornadoes so dangerous? |
| Random and unpredictable-erupt any time   * Moves * Winds can be 300 mph (source: Weather WizKids: “Tornadoes”)   • Can happen any time of the year (source: Weather WizKids: “Tornadoes”)   * Changes shape * Changes sizes * Don’t know where it will land or go |
| Destructive   * Debris flies all over * Dangerous-debris flies out of tornado * Homes, crops, etc. destroyed * People and animals can die |
| Cause other problems   * Fires * Flooding * Flash floods |
| Part 2: What can we do to reduce the impact of tornadoes and keep ourselves safe? |
| People can:   * Listen to warnings * Watch the weather * Educate themselves about conditions that produce tornadoes * Find shelter inside and outside * Use a safe room * Practice drills * Have and emergency kit |
| Scientists can:   * Keep studying tornadoes * Use storm chasers for help-they are there on site * Learn from machines that study tornadoes * Educate people |
| So What? So why is it important to learn as much as we can about tornadoes?   * can’t stop tornadoes * have to take precautions * deaths have already decreased |
| Sources:   1. Storm Warnings: Tornadoes by Chris Oxlade 2. Weather WizKids: “Tornadoes” (http://weatherwizkids.com/weather-tornado.htm) |

SAMPLE STUDENT ESSAY FOR FULL GROUP ESSAY

Terrible Tornadoes

Tornadoes are the most violent storm. Tornadoes begin in large thunderclouds, the biggest kind of clouds. Spinning winds inside the thundercloud drop down to the ground, causing a tornado. Tornadoes are different. Most tornadoes are not dangerous and last only a few minutes. But some tornadoes are very dangerous and last a long time. We have to be very careful in dealing with tornadoes. They can be very dangerous, but luckily there are steps we can take to reduce the impact of tornadoes.

Dangers ahead!

Tornadoes can be dangerous for a variety of reasons. One reason is that they are random and we don’t know a lot about them. They can form quickly, change shape or size, and move at different speeds. Another reason they are dangerous is they cause a lot of destruction. Strong winds pick up large and small items in the air. This flying debris can land anywhere, causing a lot of damage. Tornadoes can also cause other problems like fires and flooding. A tornado can be a very violent and dangerous storm.

Reducing Impacts and Staying Safe

How can we reduce the impact of tornadoes and keep ourselves safe? People can keep themselves safe by listening to warnings from weather forecasters who study weather and predict tornadoes. If the conditions are right for a tornado, they issue a tornado watch or warning so people can prepare and find shelter. People find shelter inside in basements, and safe rooms. People lie down in ditches or run to underground shelters if they are outside. Scientists can reduce the impact of tornadoes by learning more about them. Storm spotters help people prepare for tornadoes in their area. Information from storm spotters helps scientists learn more about tornadoes. They give scientists information about what the specific tornado looks like and what it is doing. Machines called turtles help scientists get more information about what is happening inside the tornado. Even though we can’t prevent a tornado, we can reduce their impact and keep ourselves safe.

The more we learn about tornadoes, the less damage they can do. According to *Storm Warning: Tornadoes* by Chris Oxlade, “the number of people killed by tornadoes is doing down. Today in the United States, about 80 people die each year. In the 1930s, it was 200 a year.” Hopefully in the next 20 years, there will be even fewer deaths.

Sources: *Storm Warning: Tornadoes* by Chris Oxlade

Weather WizKids: “Tornadoes” (http://weatherwizkids.com/weather-tornado.htm)

SMALL GROUP RESEARCH PROJECT

SAMPLE GRAPHIC ORGANIZERS FOR EACH BOOK BELOW

**Group #1--Hurricanes**

**Graphic Organizer**

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| **Hurricanes**  **Research Question:** What hazards can result from hurricanes and what can we do to reduce the impact of hurricanes? |
| Part 1: What hazards (problems, dangers) can result from hurricanes? Why are hurricanes so dangerous? |
| Random, unexpected, and unpredictable   * Can become powerful * Winds can get stronger * hurricane season is very long (source: Weather WizKids: “Hurricanes”) * Keeps on going, hard to stop * Path is unpredictable * Changes speed, direction, strength |
| Destructive   * Debris flies all over * Dangerous-debris flies around in wind * Houses are smashed * Washes away cars * Trees are uprooted * People and animals can die |
| Cause other problems   * Mudslides * Disease spreads * Snakes are scared-may bite * Storm surge-wall of water hitting land (source: Weather WizKids: “Hurricanes”) * Flooding * Flash floods |
| Part 2: What can we do to reduce the impact of hurricanes and keep ourselves safe? |
| People can:   * Listen to warnings, weather reports * Contact a vet to help care for pet (source: Weather WizKids: “Hurricanes”) * Always stay indoors! (source: Weather WizKids: “Hurricanes”) * Watch the weather * Educate themselves about conditions that produce hurricanes * Find shelter inside and outside, go to existing shelters * Board up the house-add hurricane shutters * Put water in containers * Practice drills * Have and emergency kit |
| Scientists can:   * Keep studying hurricanes, find patterns * Study past hurricanes, use that data, measurements * Use temperature of water * Use satellites * Planes observe hurricane in the air called Hurricane Hunters (source: Weather WizKids: “Hurricanes”) * Learn from machines that study tornadoes * Educate people |
| So What: So why is it important to learn as much as we can about hurricanes?   * Can’t stop hurricanes * Have to take precautions * You will not die if you are prepared * “You are not likely to die if you are well prepared.” P. 42 |
| Sources:   1. Violent Skies: Hurricanes by Chris Oslade 2. Weather WizKids: “Hurricanes” (http://weatherwizkids.com/weather-hurricane.htm) |

**Group #2—Blizzards**

**Graphic Organizer**

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| **Blizzards**  **Research Question:** What hazards can result from blizzards and what can we do to reduce the impact of blizzards? |
| Part 1: What hazards (problems, dangers) can result from blizzards? Why are blizzards so dangerous? |
| Dangerous   * Can become more powerful * Winds can get stronger, and gust up to higher mph * Blinding snow * Keeps on going for up to three hours * Can cause hypothermia * Wind causes snow drifts, and re-arranges snow on the ground * Snow blocks and covers the roads * Low visibility |
| Destructive   * Power lines come down * Electricity goes off * No power to houses * Roads shut down, close * People and animals can die of exposure outside and inside |
| Cause other problems   * Avalanches * Slippery, dangerous roads * Pipes can burst * Snow drifts |
| Part 2: What can we do to reduce the impact of blizzards and keep ourselves safe? |
| People can:   * Listen to warnings, know different terms for warnings (source: Weather WizKids: “Winter Storms”) * Watch the weather * Educate themselves about conditions that produce blizzards * Stay off the roads * Stay in cars if stranded-do NOT go outside * Have and emergency kit in cars * Have supplies if snowed in at home * Eat regularly for energy and body heat (source: Weather WizKids: “Winter Storms”) * Let someone know if you go out (source: Weather WizKids: “Winter Storms”) |
| Scientists can:   * Keep learning about blizzards * Warn people of the dangers * Keep collecting data on blizzards and snowstorms |
| So What: So why is it important to learn as much as we can about blizzards?   * Can’t stop blizzards * Have to take precautions * you will not die if you are prepared * “People can die if they are not careful. If you are in a place where blizzards strike, make sure you are prepared. It may help you survive.” P. 42 |
| Sources:   1. White-Out: Blizzards by Claire Watts 2. Weather WizKids: “Winter Storms” (http://weatherwizkids.com/weather-winter-storms.htm) |

**Group #3—Earthquakes**

**Graphic Organizer**

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| **Earthquakes**  **Research Question:** What hazards can result from earthquakes and what can we do to reduce the impact of earthquakes? |
| Part 1: What hazards (problems, dangers) can result from earthquakes? Why are earthquakes so dangerous? |
| Random, unexpected, and unpredictable   * Tectonic plates are moving all the time, causing earthquakes all the time, but not all of them can be felt * Small earthquakes (foreshocks) often come before big earthquakes (source: *Time For Kids: Earthquakes!*) * Can be powerful and destructive * Duration is unpredictable |
| Destructive   * Roads split open and railroad tracks bend * Bridges break * Buildings fall * Houses (and other buildings), people, and animals fall into large crevices * Creates land slides * Telephone poles collapse * Gas and water pipes burst * People and animals can die |
| Cause other problems   * Land slides * Avalanche (source: *Time for Kids: Earthquakes!)* * Fires (from gas pipes breaking) * Floods * Tsunamis or large waves at sea * Volcanoes to erupt * Lack of communication (from telephone poles collapsing) * Liquefaction (which causes buildings to sink into the ground) |
| Part 2: What can we do to reduce the impact of earthquakes and keep ourselves safe? |
| People can:   * Educate themselves   + Read awareness information   + Organize as a community * Listen to warnings * Find shelter inside and outside when an earthquake starts   + If inside, go under a table and stay away from windows, mirrors, cupboards, and shelves (source: *Time for Kids: Earthquakes!)*   + If outside, find shelter on the ground, away from buildings, tree, power lines and cover yourself * Expect aftershocks * Put out any fires; turn off gas or leave building if you cannot |
| Scientists can:   * Keep studying earthquakes, find patterns * Continue using seismic stations and Global Positioning System * Provide information on best building materials and practices * Help governments create disaster plans * Educate people |
| So What: So why is it important to learn as much as we can about earthquakes?   * Can’t stop earthquakes * Have to take precautions * you are less likely to die or be injured if you are well prepared |
| Sources:   1. Shaky Ground: Earthquakes by Mary Colson 2. Time for Kids: Earthquakes! They make the ground shake |

**Group #4—Floods**

**Graphic Organizer**

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| **Floods**  **Research Question:** What hazards can result from floods and what can we do to reduce the impact of floods? |
| Part 1: What hazards (problems, dangers) can result from floods? Why are floods so dangerous? |
| Random, unexpected, and unpredictable   * Can be powerful and destructive * Duration is unpredictable   Can be caused by:   * Heavy rainfall (can cause flash flooding, also) * Dam breaking * Monsoons (winds that bring heavy rainfall in summer) * Hurricane * Tsunami |
| Destructive   * Ruin or destroy telephone and electrical poles * Ruin homes and other buildings * Completely “sweep away” homes, buildings, villages * People and animals can die |
| Cause other problems   * Torrent (rushing stream of water) * Erosion * No electricity (from electrical poles collapsing) * Lack of communication (from telephone poles collapsing) |
| Part 2: What can we do to reduce the impact of floods and keep ourselves safe? |
| People can:   * Plant trees and bushes; properly take care of their land (farmers dig ditches to drain fields) * Build houses on stilts if they live in area that floods often * Educate themselves   + Know different warning terms (source: Weather WizKids: “Rain & Floods”)   + Create a disaster plan (source: Weather WizKids: “Rain & Floods”)   + Prepare disaster supplies kit (source: Weather WizKids: “Rain & Floods”) * Listen to warnings and prepare   + Turn off gas, electricity, and water supply   + Move belongings to highest level in home/building   + “If told to evacuate, do so immediately.” (source: Weather WizKids: “Rain & Floods”) * Find shelter inside and outside when an earthquake starts   + If inside, go to highest level of building   + If outside, do not stay in a car or try to walk in the water. Move to “high ground.” |
| Scientists can:   * Use data from satellites to track weather * Monitor rivers and determine danger level * Build dams and dikes * Raise the height of riverbanks, by building embankments or levees * Provide information to governments on the harm gases emitted into the Earth’s atmosphere can cause * Educate people |
| So What: So why is it important to learn as much as we can about floods?   * can’t stop floods * have to take precautions * you are less likely to die or be injured if you are well prepared |
| Sources:   1. Wild Water: Floods by Tony Allan 2. Weather WizKids: “Rain & Floods” (http://weatherwizkids.com/weather-rain.htm) |

Name:

Grade 4 Date:



Based on the Writing for Understanding Approach, Vermont Writing Collaborative

My Class Research Project on

Tornadoes

Research Question:

What hazards can result from tornadoes, and what can we do to reduce the impact of tornadoes?

Becoming an Expert

**Class Research Packet**

*Building Knowledge and Understanding through Research*



|  |  |  |
| --- | --- | --- |
| **Becoming an Expert** | | |
| Date Completed | Steps | |
|  | Where Am I Going? | Text Structure |
|  | First Read Part 1 | Close Read Part 1 |
|  | First Read Part 2 | Close Read Part 2 |
|  | The Fab Five | Rolling Knowledge Journal |
|  | Reading for Evidence | |
|  | Recording Evidence | |
|  | Additional Evidence | Focus Statement |
|  | Working with Evidence | |

Research Question:

What hazards can result from tornadoes, and what can we do to reduce the impact of tornadoes?

**Where Am I Going?**

Work with your group to answer the questions below.



**?**

What is your research question?

*What hazards can result from tornadoes, and what can we do to reduce the impact of tornadoes?*

Skim your source. In one or two sentences describe what this text is mostly about.

*This text is about how tornadoes form, some examples of tornadoes and the destruction they do, and how to protect ourselves and stay alive if we’re in a tornado.*

How will this source help you answer your research question?

*This book has many chapters of different information about tornadoes, and parts that show and tell the hazards. At the end there are charts that list the things people should do to stay alive and protect themselves.*

Use the copyright information for your text to complete the section below.

Title: *Storm Warnings: Tornadoes*

Author: Chris Oxlade

Type of text: nonfiction book article website excerpt other

Publisher: *Raintree Publishing Company*

Publication date: *2006*

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**Text Structure**

With a partner, answer these questions about the structure of your text.

Let’s take a look at how your source is put together.

1. Look at the Table of Contents. Read the chapter titles. How many chapters are there? Seven chapter titles and seven chapters.

Look at the whole book. What kind of information is in the chapters at the beginning of the book? Information about disasters, how they are formed.

What kind of information is in the middle? What happens when one hits.

What kind of information is at the end? How to prepare and protect yourself

from a disaster, resources, glossary and index.

1. Choose one chapter. Turn to the first page in that chapter. What page does the chapter start on?

Chapter 3, Terrible Tornadoes starts on page 16.

How many subheadings are there?

There are four sub-headings.

1. Leaf through the chapter you chose from Question 2. How many pictures are there?

There are three pictures and two maps inserted onto the page.

What do you notice about the blue and tan boxes next to the pictures?

The blue and tan boxes are on the sides of the pages and over or under pictures. The ones under or over pictures are captions and the blue boxes on the side are called side-bars. They help give information.

What are these blue boxes called?

side-bars

1. What do you notice about the bottom of most pages?

There are important words at the bottom of the page with a definition. The word on the bottom matches the bolded word in the text on that page.

1. Turn to a page with a bolded word. Find the glossary, look up the word, and write the word and definition here. See if the definition in the glossary matches the definition at the bottom of the page.

Page 16: swarm: l*arge group of things moving close together.* *Yes, it does.*



**First Read Part 1**

Use options below to read pages 4-19 of the text aloud and/or the first half of the text. Check a box to show the option you chose.

Ideas for a First Read:

* Take turns reading, have each person read a page or paragraph.
* Choose one or two people to read aloud. The rest of the group reads along silently while listening.
* Listen to a recording of your book, reading along silently while you listen.
* Another idea: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**First Read Part 2**

Use options below to read pages 20-43 of the text aloud and/or the first half of the text. Check a box to show the option you chose.

Ideas for a First Read:

* Take turns reading, have each person read a page or paragraph.
* Choose one or two people to read aloud. The rest of the group reads along silently while listening.
* Listen to a recording of your book, reading along silently while you listen.
* Another idea: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Close Read Part 1**

With a partner, reread parts of your book for deeper understanding.

Work together to follow the directions in each box.

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| --- | --- |
| Reread page 5, in Chapter 1, with a partner. | Why are tornadoes the most violent storms on Earth?   * Grow in size * Destroy anything in it’s path |
| Reread pages 6-9 and look at the pictures with a partner. | Draw and label the relationship between a thundercloud and a tornado.  Note: the illustration on page 7 shows the illustration the students should make, the labels are in the blue illustrated picture. The labels are important, and the thundercloud should be attached to and above the tornado. |
| Reread pages 16-17 and look at the pictures with a partner. | Make a list of some of the hazards (problems) caused by tornadoes.   * Roofs are torn off * Trucks are turned over * Debris is all over the place * The frames of houses and business are ripped apart |

**Close Read Part 2**

With a partner, reread parts of your book for deeper understanding.

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Work together to follow the directions in each box.

|  |  |
| --- | --- |
| Reread pages 20 and 24 with a partner. Look at the maps on each page. | On page 20, what do the red dots mean? On page 24, what does the red shading mean?  The red shading shows the areas where tornadoes have hit. The map shows Tornado Alley, a place where a lot of tornadoes hit. |
| Reread pages 28-29 with a partner. | How do people know when to find shelter?  People know when to find shelter when there has been a tornado warning which comes after a tornado watch. People must find shelter immediately. |
| Look at the pictures and read the captions on pages 30-35 with a partner. | Turn and talk about what damage these tornadoes caused?   * Trees were uprooted * Cars were wrapped around a tree * Debris flies everywhere * Mobile home is tipped over * Roofs fly off houses * Kitchen sink was wrapped around a tree * Road sign and a tree are wrapped together |
| Reread pages 42-43 with a partner. | Make a list of actions you can take to stay safe when there is a tornado.   * Listen to the radio for warnings * Go to basement or shelter * Stay away from windows * Kneel down and protect your head if tornado hits * Watch out for debris * Do NOT leave the shelter till all clear sign has sounded * Get out of a vehicle and lie down in a ditch |

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**The “Fab Five”**

With a partner, identify 5 important words from the text.

From your central text, chose 5 words that are important to understanding the central idea of the text.

Next use your 5 words to write about the most important idea of the text. Write one sentence for each word that shows you understand the meaning of the word.

|  |  |
| --- | --- |
| **Important Word** | **Sentences about the Central Idea** |
| 1. Debris | Strong winds from tornadoes cause a lot of **debris** to fly around in the air. **Debris** can be dangerous and can hit people. |
| 2. hot spot | There are tornado **hot spots** around the world where a lot of tornadoes have hit. Tornado Alley is a hot spot in the middle of the United States. |
| 3. shelter | When there is a tornado warning, people should protect themselves by finding **shelter** quickly. **Shelters** protect people from the tornado. |
| 4. radar | Meteorologists study **radar** to predict when tornadoes might touch down on the ground in bad weather. Radar shows meteorologists when the weather is right for a tornado to occur. |
| 5. drill | People should practice tornado **drills** so they know what to do if there is a real tornado warning. **Drills** help protect people and keep them safe. |

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**Rolling Knowledge Journal**

Keep track of all you’re learning!

1. After you read *each* resource, stop and think about what the big learning was. What did you learn that was new *and important* about the topic from *this* resource? Write, draw, or list what you learned from the text about (topic).
2. Then write, draw, or list how this new resource added to what you learned from the last resource(s). Add pages if needed.

|  |  |  |
| --- | --- | --- |
|  | **Write, Draw, or List** | |
| **Title** | **New and important learning about the topic** | **How does this resource add to what I learned already?** |
| *A Storm Called Katrina* | Hurricanes are full of hazards like strong winds, floods, and dangerous animals in the flood waters. | I didn’t realize the impact on animals and family pets. |
| *Storm Warning: Tornadoes* | Tornadoes are not all dangerous. Many tornadoes happen during tornado season. Some tornadoes break into smaller tornadoes. | I didn’t know that one tornado can turn into little tornadoes. |
| Supplementary text:  Weather WizKids: Tornadoes | * 300 mph winds * can look different in the sky * meteorologists don’t know how tornadoes stop * can happen any time during the year | I didn’t know that a wind in a tornado is strong enough to make a straw go into a tree. That gives me an idea about how strong the wind is. |



**Reading for Evidence**

Work as a group to gather and share information that will help you answer your research question: **What hazards can result from tornadoes and what can we do to reduce the impact of tornadoes?**

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Follow these steps to complete the graphic organizer together:

1. First, break into groups. Assign each group a part of the text to reread and search. Record the assignments below.

|  |  |
| --- | --- |
| Section  (page numbers) | People Responsible  *Teacher’s Note: This is a good opportunity to differentiate when you group students to do research and find specific evidence in the text. The first part of the book (pages 4-25) is more complex, and the second section of the book (pages 26-43) are more accessible for students that might need more supportive text.* |
| **Pages 4-25**  Find information to add to the “Problems” and “Solutions” sections of the graphic organizer |  |
| **Page 26-43**  Find information to add to the “Problems” and “Solutions” sections of the graphic organizer |  |

1. As a group, look at the graphic organizer. Discuss: What is your Research Question? What kinds of information will go in each column?
2. Now reread the part of the text you were assigned. When you find a part of the text that will help you answer your research question **mark it with a sticky note.**

If the evidence is about problems of tornadoes, mark the sticky note with a “P.” If the evidence is about solutions to the problems, mark the sticky note with an “S”.

1. Repeat this process until all the important information from this section has been marked.



**Recording Evidence**

Share what you have found with your group to complete the graphic organizer.

Focusing Question:

*What hazards can result from tornadoes, and what can we do to reduce the impact of tornadoes?*

1. Meet with the full group again. Take turns sharing one piece of information you found. Talk about what words or phrases to write on the graphic organizer, then fill in the appropriate row on your own organizer. You will need notes on all the information found by the group for your final project.
2. Repeat this process until all the information from this source has been recorded on your graphic organizer.

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| --- |
| **Tornadoes**  **Research Question:** What hazards can result from tornadoes and what can we do to reduce the impact of tornadoes? |
| Part 1: What hazards (problems, dangers) can result from tornadoes? Why are tornadoes so dangerous? |
| Random and unpredictable-erupt any time   * Moves * Changes shape * Winds can be 300 miles per hour * can happen any time of the year * changes sizes * Don’t know where it will land or go |
| Destructive   * Debris flies all over * Dangerous-debris flies out of tornado * Homes, crops, etc. destroyed * People and animals can die |
| Cause other problems   * Fires * Flooding * Flash floods |
| Part 2: What can we do to reduce the impact of tornadoes and keep ourselves safe? |
| People can:   * Listen to warnings * Watch the weather * Educate themselves about the conditions that produce tornadoes * Find shelter inside and outside * Use a safe room * Practice drills * Have and emergency kit |
| Scientists can:   * Keep studying tornadoes * Use storm chasers for help-they are there on site * Learn from machines that study tornadoes * Educate people |
| So What: So why is it important to learn as much as we can about tornadoes?  -can’t stop tornadoes  -have to take precautions  -deaths have already decreased |



**Additional Evidence**

On your own or with a partner, add additional information to the graphic organizer.

Read one or more additional sources. Mark information that will help you answer the research question with sticky notes. Add it to your own graphic organizer. Use a different colored pencil for each source, so you will remember where your information came from.

Using the same colored pencils, list your additional sources below.

Title:Weather WizKids: Tornadoes

Author:

Publisher/URL: http://weatherwizkids.com/weather-tornado.htm

Title:National Geographic

Authors:

Publisher/URL: Neok12.com

*--------------------------------------------------------------------------------*

**THE FOCUS STATEMENT!**

Sum up what you have learned.

What is the “big idea”?

Look carefully at all of the evidence you have gathered. What is the “big idea” your evidence shows? Try to state what you have learned in just a sentence or two. Your teacher and classmates will help you.

Focus Statement:

We have to be very careful in dealing with tornadoes. They can be very dangerous, but luckily there are steps we can take to reduce the impact of tornadoes.



**Working with Evidence**

Work with your group to better understand the information you have gathered.

To prepare for the activity:

Review your notes. Your teacher will lead you in the following activity.

Create a Scene! (a full class activity)

To begin the activity, your teacher will break you into groups. Each group will be given a set of cards with people involved in a tornado.

You will have five minutes to work with your group to determine how each person might be involved in a tornado. Then, create a scene to act this out.

Watch as each group presents their scene to the class. Following each scene, discuss the following questions:

1. What did you see that was accurate?
2. What do you know now that you didn’t know before?

Reflect on the scenes presented. How did planning, presenting, and watching the scenarios deepen your understanding of the hazards resulting from tornadoes and what we can do to reduce the impact of tornadoes?

Possible groupings

Group 1: meteorologist, storm spotter, child outside, parent outside, person in a car, paramedic

Group 2: radio announcer, storm spotter, woman inside with an outside storm shelter, child inside, firefighter, sibling at school



**Sharing Your Expertise**

**Writing Resource Packet**

*Deepening Your Understanding and Communicating What You Have Learned*

**Save this packet**, you will use it as a resource each time you

write about ***natural disasters****.*

As you finish each step, record the date on the Sharing Your Expertise Record Sheet.

|  |
| --- |
| **Writing Resource Packet**  You will follow these Steps to Write an Informative/Explanatory Piece |
| Analyze a Model |
| Write an Introduction |
| Write Proof Paragraph 1 |
| Write Proof Paragraph 2 |
| Write the Conclusion |
| Final Revision and Editing |
| Add a Visual! |
| Share and Celebrate! |



**Analyze a Model**

Read the model. Then follow the directions to analyze the piece and see how it is put together.

Directions: *Follow these steps as you work with the model Violent Volcanoes.*

Materials: Crayons, and a copy of the blank painted essay. (*Note: if students have not done a painted essay before, this work with the model will need lots of guidance!*)

1. Read the model aloud. What do you notice about the model?
2. Reread the introduction.
   1. Find the focus statement in the introduction and underline it. Then color it green.
   2. Now, find the two points that tell more about the focus statement. Color the first one yellow, and the second one blue.
   3. Color the rest of the introduction red.
3. Reread the first proof paragraph. Notice what kinds of information it has.
   1. Color the first proof paragraph yellow.
4. Reread the second proof paragraph. Notice what kind of information it has. Now, notice how the first sentence of the second proof paragraph ties the two proof paragraphs together.
   1. Color the words in the first sentence that relate to the first proof paragraph yellow.
   2. Color the rest of the words in the first sentence blue.
   3. Now color the rest of the second proof paragraph blue.
5. Reread the conclusion. The last paragraph will repeat the focus, and do a little more thinking about why it’s helpful to know about volcanoes, so we can protect ourselves from harm.

a. Use a mixture of yellow and blue to color the conclusion green.

1. What color would you color the title? Why?

Violent Volcanoes

Volcanoes are dangerous and destructive natural disasters. Volcanoes begin underground in the middle of the earth. The liquid rock pushes up to the surface through the weak parts of the earth’s crust, causing an eruption. Volcanoes are different. Many volcanoes are dormant and haven’t erupted in years. But some volcanoes are active and erupt all the time. We have to be very careful when dealing with volcanoes. They can be dangerous and destructive, but luckily, there are steps we can take to reduce the impact of volcanoes.

Dangers ahead!

Volcanoes are dangerous for a variety of reasons. One reason is they are random and unpredictable so we don’t know a lot about them. Active volcanoes erupt all the time at any time and are dangerous to go near and study. Another reason they are dangerous is because they cause a lot of destruction. The hot lava kills plants, animals, and people. Land can disappear and gets covered in rock. Volcanoes cause other problems like fires, tsunamis, and acid rain. Volcanoes can be a dangerous unpredictable natural disaster.

Reducing Impacts and Staying Safe

How can we reduce the impact of volcanoes and keep ourselves safe even though they are dangerous? People can keep themselves safe by listening to warnings from volcanologists who study volcanoes and predict possible eruptions. If the conditions are right for a volcano, they issue a warning and give directions to people that tell them what to do to stay safe. People that live near volcanoes should have an emergency plan to get away from the volcano safely. They should have a survival checklist and supplies like goggles and facemasks to protect them from the volcanic ash and gas. Scientists can reduce the impact of volcanoes by learning more about them. Vulcanologists study volcanoes by going inside the volcano. Geologists, seismologists, and volcanologists work together to share information about volcanoes and the earth’s movements. Machines like the tiltmeter give scientists information about the changes in the volcanoes shape. Even though we can’t prevent a tornado, we can reduce their impact and keep ourselves safe.

Volcanoes are dangerous, but we have ways to keep ourselves safe. The more we learn about volcanoes, the less damage they can do. According to *Earth Erupts: Volcanoes,* by Mary Colson, “we can hope that developments in technology will help vulcanlologists understand more about volcanoes.” Hopefully in the next 20 years, there will be fewer deaths, and more people will survive volcanic eruptions.

Sources: *Earth Erupts: Volcanoes,* by Mary Colson

Weather WizKids: “Volcanoes” (http://weatherwizkids.com/weather-volcano.htm)



**Write an Introduction**

On your own, write, revise and edit the **introduction** for your informative/explanatory essay.

*The first paragraph of your essay is called the INTRODUCTION. The job of the introduction is to give some background information, or context, so that the reader can understand the piece. In your introduction, provide context about how the natural disaster you are writing about forms or starts. The introduction must also to catch your readers’ attention, so that they will want to read more! The introduction ends in a FOCUS STATEMENT. The FOCUS STATEMENT tells the main idea of your piece. In this essay, the focus statement is one sentence near the end of the introductory paragraph, followed by two points.*

***Analyze***

Read the model introduction below. Lightly shade the title and the context red and the focus statement green. Then shade point one yellow (the dangers), and point two blue (the steps we can take to keep people safe).

Violent Volcanoes

Volcanoes are dangerous and destructive natural disasters. Volcanoes begin underground in the middle of the earth. The liquid rock pushes up to the surface through the weak parts of the earth’s crust causing an eruption. Volcanoes are different. Many volcanoes are dormant and haven’t erupted in years. But some volcanoes are active and erupt all the time. We have to be very careful when dealing with volcanoes. They can be dangerous and destructive, but luckily, there are steps we can take to reduce the impact of volcanoes.

***Talk***

With a partner talk about what you will write for your introduction. Decide together what you should write for your focus statement. Remember, your focus statement needs to include two points, one about the dangers and problems of your natural disaster, and one about how to reduce the impact to help people stay safe.

***Write***

On a piece of lined paper, write the introduction for your piece. Be sure to include the focus statement and two points.

***Revise and Edit***

When you have finished, revise and edit your paragraph so that your writing is clear and correct.



**Write Proof Paragraph 1**

On your own, write, revise and edit **proof paragraph one** of your informative/explanatory essay.

*The next paragraph is called PROOF PARAGRAPH 1. Its job is to give evidence and reasons to support the first part of your focus. In this essay, the first part describes why your natural disaster is dangerous to people and possibly the environment. Notice how the model uses the words “one reason” and “another reason” to describe two reasons this natural disaster is dangerous. You might want to use the same or similar words in your essay when you write about the reasons your natural disaster is dangerous. Use “Part 1” of your graphic organizer to write this paragraph.*

***Analyze***

Read the model proof paragraph below. Underline the topic and concluding sentences. Lightly shade the evidence from the text and the elaboration yellow.

Volcanoes are dangerous for a variety of reasons. One reason is they are random and unpredictable so we don’t know a lot about them. Active volcanoes erupt all the time at any time and are dangerous to go near and study. Another reason they are dangerous is because they cause a lot of destruction. The hot lava kills plants, animals, and people. Land can disappear and gets covered in rock. Volcanoes cause other problems like fires, tsunamis, and acid rain. Volcanoes can be a dangerous unpredictable natural disaster.

***Talk***

Choose three pieces of evidence from your Part 1 graphic organizer to use in your writing. With a partner, point to each piece you have chosen and talk about what you are going to write.

***Write***

Reread what you have already written. Then, underneath the introduction, write the first proof paragraph for your piece.

***Revise and Edit***

When you have finished, revise and edit your paragraph so that your writing is clear and correct.





**Write Proof Paragraph 2**

On your own, write, revise and edit **proof paragraph two** of your informative/explanatory essay.

*The next paragraph is called PROOF PARAGRAPH 2. Its job is to give evidence and reasons to support the second part of your focus. In this essay, the first sentence in the second proof paragraph is the transitional sentence from the first proof paragraph to the second proof paragraph. The second proof paragraph uses information from the Part 2 of your notes. You may want to check off parts in your notes that you use in your essay. Pay attention to the second proof paragraph’s construction. The sentences after the topic sentence are ways people can protect themselves. The second part of the paragraph is how scientists can keep us safe. Use the same two parts in your own proof paragraph.*

***Analyze***

Read the model proof paragraph below. Underline the topic sentence and the concluding sentence. Lightly shade the evidence from the text and the elaboration blue.

How can we reduce the impact of volcanoes and keep ourselves safe even though they are dangerous? We can keep ourselves safe by listening to warnings from volcanologists who study volcanoes and predict possible eruptions. If the conditions are right for a volcano, they issue a warning and give directions to people that tell them what to do to stay safe. People that live near volcanoes should have an emergency plan to get away from the volcano safely. They should have a survival checklist and supplies like goggles and facemasks to protect them from the volcanic ash and gas. We can reduce the impact of volcanoes by learning more about them. Vulcanologists study volcanoes by going inside the volcano. Geologists, seismologists, and volcanologists work together to share information about volcanoes and the earth’s movements. Machines like the tiltmeter give scientists information about the changes in the volcanoes shape. Even though we can’t prevent a volcanic reaction, we can reduce their impact and keep ourselves safe.

***Talk***

Choose three pieces of evidence from your graphic organizer to use in your writing. With a partner, point to each piece you have chosen and talk about what you are going to write.

***Write***

Reread what you have already written. Then, underneath the first proof paragraph, write the second proof paragraph for your piece.

***Revise and Edit***

When you have finished, revise and edit your paragraph so that your writing is clear and correct.



**Write the Conclusion**

On your own, write, revise and edit the **conclusion** for your informative/explanatory essay.

*The final paragraph is called a CONCLUSION. Its job is to wrap up the piece.*

*In your conclusion, you need to repeat your focus (the “what”), but you also need to add some of your own reflection (the “so what”).*

*In this essay, you will re-read the introductory paragraph and the two proof paragraphs before writing your conclusion. The conclusion for this essay should have a sentence that restates the focus of the piece. The other sentences are the “so what”. They include some thinking about the question, “So why is it helpful to learn as much as we can about this natural disaster?”, a quote from one of the resources, and a hopeful reflective sentence.*

*Now you try. Remember to use the “so what?” section of your notes to help you think about your conclusion.*

***Analyze***

Read the model conclusion below.

Find and underline the restated focus. Find the quote from the text and put a star by the quote. Underline a sentence that is the answer to the question about why it’s important to learn about natural disasters and how to reduce their impact (the “so what” question).

Volcanoes are dangerous, but we have ways to keep ourselves safe. The more we learn about volcanoes, the less damage they can do. According to *Earth Erupts: Volcanoes,* by Mary Colson, \*“we can hope that developments in technology will help vulcanlologistsunderstand more about volcanoes**.”** Hopefully in the next 20 years, there will be fewer deaths, and more people will survive volcanic eruptions.

*Note to teacher: it may be too difficult for some or most students to include the quote. Use your judgment about whether to ask students to include the quote in their own writing.*

Sources: *Earth Erupts: Volcanoes* by Mary Colson

Weather WizKids: “Volcanoes” (http://weatherwizkids.com/weather-volcano.htm)

***Talk***

With a partner talk about what you are going to write. Check to be sure you have clearly restated the focus.

***Write***

Reread what you have already written. Then, on a piece of lined paper, write the conclusion for your piece.

***Revise and Edit***

When you have finished, revise and edit your paragraph so that your writing is clear and correct.

***Sources***

At the end of your piece, skip a line, and then list the sources you used in your research. Be sure to include the title or website address and the author.



**Final Revision and Editing**

Use the checklist below to put the final touches on your paper.

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics of an Effective Informative/Explanatory Writing Piece** | **Got it!** | | |
| My piece shows the knowledge and understanding gained through my research. |  |  |  |
| I have an introduction that gives the reader some needed information about the topic. |  |  |  |
| I state my focus clearly and my writing stays focused. |  |  |  |
| My information is grouped in paragraphs. |  |  |  |
| Evidence from the text helps the reader to clearly understand my focus. |  |  |  |
| I use linking words to connect ideas within categories of information. |  |  |  |
| I use facts, definitions and details from the text to explain my ideas. |  |  |  |
| I use illustrations and formatting to help the reader understand information and ideas. |  |  |  |
| I use science words to show that I am knowledgeable about this topic. |  |  |  |
| I have a conclusion that restates the focus of the piece and does some “so what” thinking about natural disasters. |  |  |  |
| I use more than one source and list my sources. |  |  |  |
| Spelling, capitalization and punctuation is correct. |  |  |  |



**Add a Visual!**

Choose from the ideas below and in your text.

*Ideas for Visuals and Formatting that make sense for your piece:*

* Proof paragraph headings
* Illustrations and captions
* Side bars
* Maps, diagrams
* Lists
* Important Facts

Directions: Go back to the model and think about what visuals would make sense for that piece.

**Share and Celebrate!**



Congratulations! You are an expert (and a scholar!).

Your teacher will share plans for sharing and celebration!

If you want to learn even more, check out these resources:

* Blizzard Facts

<https://kidskonnect.com/science/blizzard/>

* *Disaster Strikes: Blizzard Night* by Marlane Kennedy
* How Floods Form by Ruth A. Musgrave

<http://kids.nationalgeographic.com/explore/science/flood/>

* Hurricanes 101 – Ep. 3

<http://kids.nationalgeographic.com/videos?videoGuid=8cc7d3e0-8db4-4b03-9c4f-ca55328328be>

* *If You Lived at the Time of the Great San Francisco Earthquake* by Ellen Levine
* Discovering the Mysteries of Earthquakes by Milwaukee Journal Sentinel, adapted by Newsela staff

<https://newsela.com/articles/Wisconsin-earthquakes/id/4834/>

* Volcanoes

<http://www.weatherwizkids.com/weather-volcano.htm>

**Optional Lesson for Writing Introduction**

Note: Writing introductions is sometimes difficult for students. Consider using the lesson below as a guide when you help your students write their introductions on the full class essay.

****

**Introduction to Tornadoes**

Discuss answers from close read questions as a class.

Answer the questions in each box below.

|  |  |
| --- | --- |
| What does it mean for a storm to be violent? Is the tornado the most violent storm? | A violent storm does a lot of damage and kills a lot of people. There are many violent storms, but the tornado is the most violent of all natural disasters. |
| How do tornadoes form? | Tornadoes form when there are large thunderclouds. The thundercloud has spinning winds inside it that drop to the ground an cause a tornado. |
| Where do most tornadoes happen? | Most tornadoes happen in “Tornado Alley.” |
| Are all tornadoes dangerous? Please explain your thinking with evidence from the text. | Tornadoes are different from each other. Most tornadoes are not dangerous because they are smaller and last only a short time. Some tornadoes are dangerous. They last a long time, have strong winds, and do a lot of damage. |
| Is there anything we can do to reduce the impact of tornadoes? | There are steps we can take to reduce the impact of tornadoes that keep us safe. |

The first paragraph of the essay is called the INTRODUCTION. The job of the introduction is to give some background information (called context) so that the reader can understand the piece. The first sentence of the introduction hooks the reader in, and makes them want to read your piece. Use the answers to the questions above to write the introduction.

**INTRODUCTION**

|  |
| --- |
| A violent storm does a lot of damage and kills a lot of people. There are many violent storms, but the tornado is the most violent of all natural disasters. Tornadoes begin in large thunderclouds. The spinning winds inside the thundercloud drop down to the ground causing tornadoes. Tornadoes are different. Most tornadoes are not dangerous and last only a short time. Some tornadoes are dangerous. They last a long time, have very strong winds, and do a lot of damage. Luckily there are steps we can take to reduce the impact of tornadoes. |