Disaster!

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Promoting Geographic Knowledge Through Literature Workshop
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Students are fascinated with the world around them. Natural disasters are continually changing our earth. Knowing what causes these natural disasters and where they occur helps students to better understand their world.

Curriculum Connection: These activities are an integrated unit incorporating geography, social studies, reading, and writing. Students are naturally curious about natural disasters which leads to inquiry.

In reading well-written nonfiction text, important details are difficult for students to determine. Students must learn to discriminate what's important from what's interesting. But, information can be both interesting as well as important. As readers they use their knowledge of what's important to answer questions as well as synthesize the text for themselves and others.

(Harvey & Goudvis 01)

Purpose of the Lesson: Students will investigate natural disasters and develop an understanding of how geography affects humans.

As readers they will utilize text features (table of contents, glossary, index) to help them decide what is important to learn. Students will learn how to write a research project.

Suggested Grade Levels – 3-5

Time: 2 – 3 weeks

Geography Themes – Location, Place, and Human Environment

National Geography Standards:

#1 How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

#3 How to analyze the spatial organization of people, places, and environments on Earth's surface.

#7 The physical processes that shape the patterns of the Earth's surface.

Geography Objectives:	**Reading Objectives**
▪ Describe the characteristics of a Volcano, Earthquake, Tsunami, or Typhoon ▪ Explain how each occurs ▪ Locate the sites of these natural disasters ▪ Analyze the spatial distribution of these natural forces	▪ Determine Importance Select important ideas and rich details, choosing what to remember ▪ Use text features to acquire new knowledge **Writing Objectives:** ▪ Writing with Voice - Research Project/Power Point Presentation

Outline of Procedure:

1. Teacher models thinking during a shared reading lesson using the National Geographic Expedition Book: Weather and Climate ISBN 0-7922-8876-9. The students learn how to determine importance in text. During reading block students are immersed in books about natural disasters. As they read students collect information about their research topic.

2. Students decide what disaster they are interested in researching.

   They write their 3 inquiry questions:

   Initial Student Inquiry Questions:

   What is a _____?
   (volcano, hurricane, typhoon, or tsunami)

   How is a _____ formed?
   (volcano, hurricane, typhoon, or tsunami)

   Students choose a third question of their choice to investigate.

3. Each day during writing workshop, the teacher models for students how to research and write a research report. During reading block, students are immersed in expository text about the disasters of volcanoes, typhoons, tsunamis, and earthquakes.

4. After drafting their research reports, students create a power point presentation that incorporates text features as well as computer skills.

5. During Social Studies students map where the natural disasters occur. In expert groups they will learn locations and the resulting spatial distribution. Each group will be given a transparency and a legend for color coding - red volcanoes, blue tsunamis, etc. They will overlay these transparencies on the overhead to discuss what geographic factors contribute to these spatial patterns. Part 2 involves students investigating how humans deal with natural disasters.

   Detailed Resource - Curriculum Guide - Earth 2U Exploring Geography from National Geographic

Materials:

- Class Text Sets of the following National Geographic Society:

  Weather and Climate KF41270
  Watch the Sky KF41022 Level 4
  Weather Today KF41117 Level 11
  Volcanoes KF41341 Level 24
  Storms KF41335 Level 22
  Volcanoes and Earthquakes KF41268

- Videos
- Chart Paper
- Graphic Organizers
- Mini Lessons on Transparencies
- Curriculum Guide **Earth 2U, Exploring Geography** from National Geographic Society – Transparencies from worksheets – Lesson 6
- Class Independent Library of books on Inquiry Topics of Volcanoes, Earthquakes, Tsunamis, and Typhoons
- Computer Internet Source

Detailed Procedure:

Reading

Students will be reading materials of their own choice as well as meeting with the teacher for guided strategy lessons on determining importance. For more information on determining importance, read **Mosaic of Thought** by Ellen Keene, **Stategies That Work**, Harvey & Gouvis, and **Reading with Meaning**, Debbie Miller. Students will also be accessing information from the internet.

Session 1 – Introduces the strategy of Determining Importance:

Book Introduction: Using a weather related reading text - **Weather and Climate** – Reading Expeditions, together look at the text features: Title and Cover of the book, Table of Contents, Glossary, and Index. Give the students 5-10 minutes to scan for other text features such as maps, comparisons, cutaways, close-ups, graphs, etc. and ask them to write their predictions on Post-its. Read the introduction Weather and Climate page 4-5 and discuss student's predictions.

Shared Reading:

Using **Weather and Climate** – Reading Expeditions – page 7 and 8, teacher models the inner conversation as she reads. As teacher she thinks aloud as she determines what is important in this passage. She may record thoughts on a Post-it or use an organizational chart similar to the following on chart paper.

Determining Importance:

What's Important?	What's Interesting?	Both
▪ Weather is what is happening in the air around you. ▪ Weather changes from day to day ▪ Climate is a region's general pattern of weather over a period of time.	▪ There are 5 layers of atmosphere – the exosphere, thermosphere, mesosphere, stratosphere, and troposphere. ▪ London and Winnipeg are at the same latitude but because London is an island it is warmer because of the body of water around it.	▪ The troposphere is the very lowest part of the atmosphere, and it is where all the weather occurs. ▪ The intensity of sunlight on the earth's surface determines the climate of your region.

Session 2

Shared Reading page 10 – 11 Weather and Climate Teacher Modeling the same as above, ask students to continue reading text pages 13 through 17 working in small groups of 2-4. As they read they record their thinking on a graphic organizer. (organizer included) Discussion follows comparing groups and what they thought was important.

Next Sessions:

Reading Block – Students are reading books about disasters from the reading materials list. Guided Reading Interest Groups will convene for the purpose of helping students learn how to determine importance of text in the books they are reading or teacher may supply an excerpt about a disaster for students to read. As students learn about different natural disasters in their independent reading they color code the location and year on the world maps from **Earth 2U, Exploring Geography** Lesson 6.

Writing

Day One - Writing Workshop

Mini Lesson- You are going to be writing a research report on a disaster of your choice – volcano, typhoon, tsunami, or earthquake. Yesterday your group reading discussed tornadoes. I got really interested and decided I wanted to learn about tornadoes. I went to the World Book Online and printed an entry on Tornado. I'm going to share with you how I take notes and record them to write a research report.

(Using the overhead and chart paper, model for students how to take notes by highlighting on the overhead words and phrases and recording on the chart paper-example below of 1st inquiry question – What are Tornadoes?)

Most violent of all storms	Tornado Alley – Texas, Oklahoma Kansas, Nebraska, and Iowa
Rapidly rotating column of air	Occur spring, and early summer
US has the highest incident of tornadoes	Occur late afternoon and early evening
Winds 300 miles per hour	Small intense cyclones

During write time students go to computer lab to print out their disaster choice -encyclopedia entry.

Day Two: Writing Workshop:

Mini Lesson – Review steps in determining importance and how students collect research. Second Inquiry Question: How do tornadoes form?

Develops from severe thunderstorms	First sign – light rain
Adequate supply of moisture to feed the storm	Followed by heavier rain
Layer of warm, moist air near the ground and a layer of much cooler air above	Rain mixed with hail – golf ball size
Difference in wind speed or direction – wind shear	After hail, tornado may strike
Forms a broad, horizontal tube of swirling air	A funnel shaped cloud descends from wall cloud – touches the ground

During write time students begin highlighting their encyclopedia entry and collect notes. Each note card – goal is 5 words or less.

Teacher walks around to assist.

All students write on the following two questions:

What are _____?

How are _____ formed?

The third inquiry is a question of their choice.

Day Three: Writing Workshop

Mini Lesson - Choice Inquiry Question: The final question you will research is one of your own choice. I chose "Who studies tornadoes?" because of the movie Twister. I want to learn more about what storm chasers do during tornado season. (Again teacher models notetaking and highlighting.)

Scientists called meteorologists	Measure wind, temperature, and air pressure
Records flying debris	Difficult to study outdoors
Teams called “storm chasers”	Doppler radar helps them locate tornadoes
Learns what happens inside tornadoes	Learn to better forecast these destructive storms
Drop instruments in or near paths of storms	Make computer models of tornadoes

During write time students begin highlighting their encyclopedia entry and collect notes. Each note card – goal is 5 words or less.

Teacher walks around to assist. Some students may begin thinking about what their third inquiry question might be.

Day Four: Writing Workshop

Teacher discusses how to write an inquiry question. Students write their choice Inquiry question. Teacher checks inquiry questions while students continue notetaking.

Day Five: Writing Workshop

Mini Lesson - Teacher models how notes are used to write answer to first inquiry question. On the chart paper, cross out the notes used as teacher writes the paragraph. Model thinking as teacher composes the 1st detail paragraph.

What are Tornadoes?

Let’s take a gander at these wild, whirling winds. Just what are tornadoes? Tornadoes are the most violent of all storms. The winds inside a tornado rotate rapidly at 300 miles per hour. The United States is the world’s leader in the incident of tornadoes. The most tornadoes occur in an area of Midwest called Tornado Alley. This includes the states of Texas, Oklahoma, Kansas, Nebraska, and Iowa. These severe storms occur in the spring and early summer. They tend to happen in the late afternoon or early evening.

Write Time - Students continue writing their notes or begin their first inquiry question draft.

Day Six: Writing Workshop

Mini Lesson - Teacher models how notes are used to write answer to second inquiry question.

How Do Tornadoes Form?

What is the recipe for a tornado? The ingredients are: a big thunderstorm; winds blowing from opposite directions; rain and hail, and a strong updraft. A tornado forms when a layer of warm moist air near the ground mixes with a layer of much cooler air above. These two different layers form a wide horizontal tube of swirling air that looks like a funnel falling out of the sky. As the tornado forms it may start out as light rain at first, and then get heavier. Then the rain becomes mixed with hail sometimes the size of golf balls or baseballs. After hail, a tornado may strike.

Write Time - Students continue writing their notes or begin their first or second inquiry question draft.

Day Seven : Writing Workshop:

Mini Lesson - Teacher shares third inquiry question model

Who Studies Tornadoes?

Scientists who study tornadoes are called meteorologists. They study tornadoes in the laboratory and in the out of doors. In the laboratory they make computer models and develop instruments to learn about tornadoes. Storm chasers are teams of scientists that chase tornadoes. It is difficult to study tornadoes because they form very fast and then disappear. It is very difficult to be at the right place at the right time. When the scientists chase a storm, they measure its wind, temperature, and air pressure. They may record the flying debris. They also may drop instruments in or near the paths of tornadoes.

Write Time – Students continue writing their drafts.

Day Eight: Writing Workshop:

Mini Lesson - Share Lead Paragraph and Title. Remind students of how writers choose titles and write leads that has been taught previously in Writing Workshop

Racing Across the Sky

Twisters are one of the most fascinating storms on Earth. A twister isn't likely to take you to Munchkinland, as it did in the "Wizard of Oz," but a strong one can definitely create awe and respect of nature in the people who see it. Tornadoes can destroy buildings and create a damage path a mile wide.

Write Time - Students continue writing their draft.

Social Science:

Curriculum Guide **Earth 2U, Exploring Geography** pages 38 – 41

Part 1: What's spatial about the forces of nature?

1. Students map where natural disasters occur as a group. During independent reading, each student has located different disasters on their maps. In expert groups they will compile locations and analyze the resulting spatial distribution. Each group will be given a transparency and a legend for color coding - red volcanoes, blue tsunamis, etc.

2. Students will overlay these transparencies on the overhead to discuss what geographic factors contribute to these spatial patterns.

3. Align the transparency of the Plate Tectonics map on top of the transparencies of earthquakes and volcanoes. Discuss their similarity.

Part 2: How do we deal with Natural Disasters?

1. Natural Disaster Stories page 67 & 68 –Six stories are cut up and distributed to cooperative groups.

2. Students are asked to sequence the strips, determine its force of nature, and envision its location.

Extensions

1. Research own community to determine what community has done to prepare for natural disasters.

2. Create a poster to teach others in their community about disaster preparedness.

Assessment

1. Writing Rubric

2. Oral Presentation of Power Point

Resources

Curriculum Resource:

Curriculum Guide **Earth 2U, Exploring Geography**

National Geographic Society – To order phone: 202-775-6701 or check

www.nationalgeographic.com

Mosaic of Thought - Ellen Keene Heinemann Publishers ISBN: 0435072374

Strategies That Work - Harvey and Goudvis 2001 Stenhouse Publishers ISBN: 1571103104

Reading for Meaning – Debbie Miller Stenhouse Publishers ISBN: 1-57110-307-4

Reading Materials:

National Geographic

Weather and Climate KF41270

Watch the Sky KF41022 Level 4

Weather Today KF41117 Level 11

Volcanoes KF41341 Level 24

Storms KF41335 Level 22

Volcanoes and Earthquakes KF41268

Geo Kit – Dynamic Earth KF90560

Videos:

Killer Wave – Power of the Tsunami KF51904

Volcano – KF51411

Volcano – Nature's Inferno KF51901

Ring of Fire

Harcourt Brace ISBN 0-15-323158-0

Tornadoes
by Seymour Simon

Natural Disaster (Fast Forward Series)
by Jenny Vaughn, Nick Hewitson (Illustrator), N. J. Hewetson (Illustrator), Jenny Vaughan

Earthquakes and Volcanoes (Reader's Digest Pathfinders)
by Lin Sutherland

Do Tornadoes Really Twist?: Questions and Answers About Tornadoes and Hurricanes (Scholastic Q & A)
by Melvin Berger

DK Readers: Twisters! (Level 2: Beginning to Read Alone)

Hurricanes (Natural Disasters)
by Kris Hirschmann (Hardcover - June 2001)

Earthquakes (Natural Disasters)
by Allison Lassieur (Hardcover - January 2002)

Volcanoes (Natural Disasters)
by Allison Lassieur (Hardcover - September 2001)

See More Readers: Super Storms -Level 2
by Seymour Simon (Paperback - April 2002)

Tsunamis (Natural Disasters)
by Luke Thompson (Paperback - September 2000)

Natural Disasters: Quick & Easy Internet Activities for the One-Computer Classroom
by Jordan D. Brown, Ivy Rutzky (Illustrator) (Paperback - January 2002)

Secret Worlds Tornadoes and other Dramatic Weather Systems

By Michael Allaby ISBN 0-7894-7980-X

Magic School Bus Series

Volcanoes Mountains of Fire ISBN 0-679-88641-9

Magic Treehouse Series

Earthquake in the Morning ISBN 0-679-89070-X

Vacation Under the Volcano ISBN 0-679-89050-5

Websites:

Tsunami

http://www.geophys.washington.edu/tsunami/

http://www.tsunami.org/

http://www.germantown.k12.il.us/html/tsunami.html

http://observe.arc.nasa.gov/nasa/exhibits/tsunami/tsun_bay.html

http://walrus.wr.usgs.gov/tsunami/

Volcanoes

http://volcano.und.edu/

(within Volcano World there is a listing of many more sites to visit)

Earthquakes

http://earthquake.usgs.gov/4kids/

http://www.germantown.k12.il.us/html/earthquakes.html

http://www.fema.gov/kids/quake.htm\

http://library.thinkquest.org/J003007/

Typhoons or Hurricanes

http://www.aoml.noaa.gov/hrd/tcfaq/tcfaqHED.html

http://kids.earth.nasa.gov/

http://kids.mtpe.hq.nasa.gov/archive/hurricane/creation.html

http://www.ns.ec.gc.ca/weather/hurricane/kids.html

Teacher Model

Racing Across the Sky

Twisters are one of the most fascinating storms on Earth. A twister isn't likely to take you to Munchkinland, as it did in the "Wizard of Oz," but a strong one can definitely create awe and respect of nature in the people who see it. Tornadoes can destroy buildings and create a damage path a mile wide.

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Name _____ Topic

_____

Inquiry

Question: _____

Notetaking

Model of Student's Power Point

Model of Diaster Power Point

Volcanoes

By I

3rd Grade

Mrs. Hughes Class

Introduction

If you could travel anywhere, where would you go? New York? Disney World? France? I bet you never thought of traveling back in time to AD 79 to the city of Pompeii, where Vesuvius erupted. That is where I would go. I would go there to learn about volcanoes. But you don't have to travel back in time just to learn about volcanoes, you can just read my article. In this article, you will learn about what volcanoes are, how they are formed, and volcanoes on Mars. I hope you learn a lot.

Page I

Acknowledgments/Copyright

With special thanks to Google for providing me with the pictures and information needed to make this. I would also like to thank my teacher Mrs. Hughes for providing me with books and information needed to make this.

By Ila Standlin

Page I

What is a volcano?

Just what is a volcano? A volcano is an opening in the Earth's surface that spews magma, poisonous gases, rock, cinders, volcanic bombs (lumps of cooled lava), and thin strands of lava (Pele's hair). Magma (or molten rock) changes into lava when it touches air. Lava and molten rock are both melted rock. Neither magma nor lava can be put out by water. A volcano is considered active if it erupts from time to time. A volcano is considered dormant if it has erupted in the past, but does not erupt anymore. The word volcano comes from the Roman word Vulcan, the "god" of fire. Vulcan was a blacksmith. He made spears, arrows, and thunderbolts for the "gods" to use in battle. There were many famous volcanoes. One is Vesuvius (Ve-suv-ee-is). It is in Italy. It erupted in AD 79. Vesuvius was in Pompeii. The most current eruption is in the Democratic Republic of the Congo. The volcano is called Nyiragongo. It erupted in January 18, 2002.

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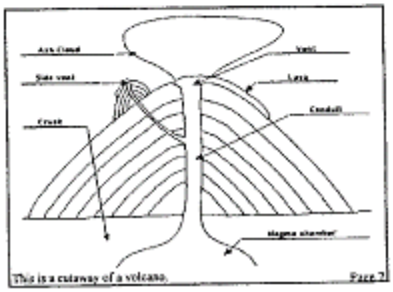

This is a cutaway of a volcano.

Page 2

Types of Volcanoes

These are the 3 types of volcanoes. The Composite, The Cinder Cone, and The Shield Volcano.

Page 3

Glossary

Article	A piece of information, usually found in a magazine or newspaper.
Italy	A country in Europe.
Lava	Melted rock once it has touched air.
Magma	Melted rock.
Mars	The 4th closest planet to the sun.
Molten Rock	Melted rock.
Nyragongo	The volcano that erupted most recently.
Olympus Mons	The biggest volcano on Mars.
Pele	A goddess of fire.
Poisonous	Something dangerous to touch, smell, or taste.
Pompeii	A city in Italy.
Roman	An ancient civilization.
Vesuvius	A famous volcano that erupted in Pompeii, Italy.
Volcanic Bombs	Lumps of lava.
Volcano	An opening in the Earth's surface with steam, magma, rock, and gas.
Vulcan	The Greek/Roman god of fire.

Page 6

How is a volcano formed?

A volcano is formed underwater. It starts out as an underwater mountain. There is magma inside the mountain. The magma rises up and bursts through the top of the mountain. The lava cools and makes the volcano higher. The volcano eventually reaches the top of the water by erupting continuously. Most volcanoes occur near the Ring of Fire. We do not have volcanoes in Illinois because it is not located near the Ring of Fire, but Japan is. Japan used to be underwater. The islands of Japan started out as volcanoes. The volcanoes kept erupting and the islands of Japan were formed. The Polynesians believed that Pele, the "goddess" of fire caused volcanoes to erupt when she was angry. To keep Pele happy, they threw pigs and fish into the volcano.

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Are there volcanoes on Mars?

Yes, there are volcanoes on Mars. That is one of the things Earth and Mars have in common. Mars has some of the biggest shield volcanoes. The biggest volcano on Mars is Olympus Mons. Olympus Mons is Latin for Mount Olympus. It is 17 miles tall. That is three times taller than Mount Everest! Wow! That is a tall volcano. It is 370 miles in diameter. Imagine that! Having to walk 370 miles just to get to the other side of a volcano. I wonder if anyone can climb Olympus Mons.

This is a volcano on Mars.

Page 5

Notice the use of conventions. Tadpole Diary was used as a shared reading model.

Name _____

Determining Importance

Title of Text _____

What's Important	What's Interesting	Both

Summarize: _____