Natural Events: Investigating the Impacts and Responses

Social Studies, History and Geography (Revised 2013), Grade 7, Political and Patterns in Physical Geography
Mathematics, Grade 7, Data Management and Probability

Overview

These lessons are designed to further students' understanding of the potential impacts of natural phenomena on people's lives. Students investigate physical, social, environmental, and financial implications related to natural events (natural disasters) resulting from natural phenomena and look at ways to assist people in need as a result of these events.

Connections to Financial Literacy

Students examine the financial, social, physical, and environmental impacts of natural events. They develop a compassionate awareness for the effects of natural events on people's lives and learn how they can assess the effectiveness and efficiency of aid/relief efforts.

Connections to Curriculum

Students gather and process geographic information about natural phenomena and make arguments based on the data. The content focus is in the strands, *Patterns in Physical Geography* and *Data Management and Probability*. The curriculum expectations addressed in each lesson are identified within the lesson plan. The curriculum expectations, including examples and other supporting information, can be accessed through a hyperlink within the lesson. Many supporting materials can be accessed through a hyperlink within the lesson.

Considerations for Planning

A study of natural phenomena, but not necessarily the effects on people of natural phenomena should have occurred at this point.

Teachers may prepare in advance for the lessons by compiling a list of past natural events and various aid/relief agency responses to these natural events. Alternately, these lessons could be used after a natural disaster has occurred and is profiled in the news.

Students should understand that natural events result from natural phenomena. Natural phenomena are environmental events, which in themselves are not disasters, but which can have effects which sometimes result in natural events/disasters that impact people's lives. The lessons can form the context for a review or extension of students' work with math concepts such as data analysis and problem solving, using life examples. Teachers must be sensitive to the life experiences of students in the class – some of them may have relocated because of a tragic natural event in their homeland. Depending on their willingness to share, these students could also be the source of information for their peers.

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Investigating the Effects of Natural Events Lesson 1

Students investigate physical, social, environmental, and financial effects of natural events (natural disasters) with a focus on the impact of these events on people's lives.

Connections to Financial Literacy

Students examine the financial, social, ethical, and environmental impacts of natural events. As students learn how they can assess the effectiveness of natural event aid/relief efforts, they develop a compassionate awareness about the effects of natural events on people's lives.

Curriculum Expectations

Click here to access expectations in full, with examples.

Social Studies, History and Geography, Grade 7, Patterns in Physical Geography

A2. Inquiry: Investigating Physical Features and Processes

use the geographic inquiry process to investigate the impact of natural events and/or human activities that change the physical environment, exploring the impact from a geographic perspective

FOCUS ON: Geographic Perspective

A2.1 formulate questions to guide investigations into the impact of natural events and/or human activities that change the physical environment

A2.2 gather and organize data and information from a variety of sources and using various technologies on the impact of natural events and/or human activities that change the physical environment, ensuring that their sources provide more than one perspective

Mathematics, *Data Management and Probability*

- make and evaluate convincing arguments based on the analysis of data

– read, interpret, and draw conclusions from primary data and from secondary data presented in charts, tables and graphs (including relative frequency tables and circle graphs)

Learning Goals

Students will:

- understand that natural events which affect people result from natural phenomena
- research the effects of natural events on people's lives and on the environment
- read and interpret charts and graphs with data about natural events

Sample Success Criteria

I can identify the ways natural phenomenon can cause natural events.

I can use a variety of resources to find appropriate information about specific natural events, which affect people physically, socially, environmentally, and financially.

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Investigating the Effects of Natural Events Lesson 1

Considerations for Planning

Readiness

Students should:

- understand the difference between natural phenomena and natural events
- have strategies to use for conducting effective research to gather information about their selected natural event
- know how to read and interpret data from charts and graphs

Terminology

Natural phenomena:

- Hurricane
- Blizzard
- Tsunami
- Tidal wave
- Earthquake
- Typhoon
- Avalanche
- Tornado
- Forest Fire
- Volcanic Eruption
- Climate change
- Drought
- Flood
- Landslide
- Monsoon

Materials

BLM 1– Natural Events Research Planning Sheet

Websites for teacher use:

Environment Canada http://www.ec.gc.ca/default.asp?lang=en

Prevention Web http://www.preventionweb.net/english/

National Geographic
http://environment.nationalgeographic.com/environment/natural-disasters/?source=NavEnvND

UNICEF http://www.unicef.ca/en

Canadian International Development Agency (CIDA)
Humanitarian responses to crises
http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/JUD-24125515-P24

Reducing the impact of natural disasters
http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/JUD-218113033-MD6

Interactive maps of CIDA funded projects
http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/En/CAR-12516047-SN2

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Mathematics, Grade 7, Data Management and Probability

Investigating the Effects of Natural Events Lesson 1

Minds On	Connections
Whole Class → Read-aloud Read-aloud: read a book about natural disasters to the class (suggested titles: DK Readers: Earthquakes and Other Natural Disasters, I'll Know What to Do: A Kid's Guide to Natural Disasters) Following the reading, ask some guiding questions about the four areas in which people are affected by natural events (physical, social, environmental, financial) • *What natural event affected the people or characters in the book?* • *What natural phenomenon led to the natural event?* • *In what ways are the people or characters physically/socially/ environmentally/ financially affected by the natural event?* • *In what ways did local and international aid agencies play a role in the story?* Create list of vocabulary which is associated with natural events (word web, word wall, student glossary) Either as a whole class or in small groups, students brainstorm a list of natural events of which they are aware (be aware of the fact that, they may not be familiar with many natural events).	***Assessment*** Assessment **for** learning Check that students understand the terms natural phenomenon and natural event and that they understand the different effects that natural events have on people (physical, social, environmental, financial). ***Differentiated Instruction:*** If possible, obtain multiple copies of the text for some students to read along or project imagery onto a screen using a data projector.

Action!	Connections
Groups of Four → Natural Event Research Distribute BLM #1 Natural Events Research Sheet. As a class, co-construct success criteria for effective research. Sample success criteria include: • I can construct a research question that examines the physical, social, environmental and financial impact of a natural event. • I can find relevant sources to answer my research question • I can find relevant sources that represent different perspectives on my research question. • I can document all sources of information accurately Post the list of co-constructed success criteria for students to refer to and update as necessary. In small groups, students begin to research a natural event of their choice (based on a list compiled by the teacher). Students work through the **BLM #1 – Natural Events Research Sheet**. After they have completed the sheet, students think about questions they still have about the natural event which have not been answered.	***Assessment*** Assessment **as** learning While circulating, provide oral feedback to groups, based on the co-constructed success criteria, as they discuss the information they have gathered.

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Investigating the Effects of Natural Events Lesson 1

Consolidation	Connections
<u>Groups of Four → Sharing Information</u> Revisit understanding of the terms natural phenomenon/phenomena and natural event – write out full definitions on chalk/white-board. These definitions, once complete, will be written on chart paper and posted in the classroom for the duration of study. Each group presents their information. They may simply report on their findings or if there is time, create a visual presentation that highlights the key points. During presentations, students consider the following questions: • *What information in the presentation supports the class definition for the term "natural event"?* • *What information suggests that we should make changes to the class definition?*	***Assessment:*** Assessment **for** learning Students hand in their research sheet after it has been presented. Provide written descriptive feedback on their presentation and/or research sheet, using the co-constructed success criteria. ***Differentiated Instruction: (see above)*** Students may present information in a variety of ways – through the creation of a PowerPoint presentation, a news report, screening written work using data projector, etc.

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Investigating Responses to Natural Events Lesson 2

Students study various responses available to those affected by natural events according to the location and magnitude of the natural event. Students will compare and contrast different responses to the same natural event.

Connections to Financial Literacy

Students focus on the effectiveness and efficiency associated with various responses by aid/relief agencies following a natural event.

Curriculum Expectations

Click here to access expectations in full, with examples.

Social Studies, History and Geography, Grade 7
Patterns in Physical Geography

A2. Inquiry: use the geographic inquiry process to investigate the impact of natural events and/or human activities that change the physical environment, exploring the impact from a geographic perspective (FOCUS ON: *Geographic Perspective*)

A2.1 formulate questions to guide investigations into the impact of natural events and/or human activities that change the physical environment

A2.2 gather and organize data and information from a variety of sources and using various technologies on the impact of natural events and/or human activities that change the physical environment, ensuring that their sources provide more than one perspective
A2.4 interpret and analyse data and information relevant to their investigations, using various tools and spatial technologies

A2.5 evaluate evidence and draw conclusions about the impact of natural events and/or human activities that change the physical environment

A2.6 communicate the results of their inquiry, using appropriate vocabulary and formats appropriate for a specific audience

Mathematics
Data Management and Probability
• make and evaluate convincing arguments based on the analysis of data
– read, interpret, and draw conclusions from primary data and from secondary data presented in charts, tables and graphs (including relative frequency tables and circle graphs)

Learning Goals

Students will:

- understand that there are a variety of ways that aid/relief agencies can respond to natural events
- investigate various responses to selected natural event
- accurately interpret charts and graphs of data about natural events

Sample Success Criterion

I can identify the ways in which at least two aid/relief agencies responded to the natural event that I have researched.

I can use a variety of resources to find appropriate information about specific responses to natural events, which affect people physically, socially, environmentally, and financially.

I can express a data-informed opinion about the effectiveness and efficiency of an aid/relief agency's response to a natural event.

Planning Considerations		
Readiness Students should: • understand the difference between natural phenomena and natural events which affect people • have strategies to use for conducting effective research to gather information about aid/relief agency responses to the natural event • know how to read and interpret data from charts and graphs	**Terminology** • Aid • Relief • Development • NGO • Efficiency • Effectiveness • Donor • Budget • Expenses • Shipping • Distribution • Canadian International Development Agency (CIDA)	**Materials** **BLM 2– Responses by Aid/Relief Agencies to Natural Events** **BLM 3– Venn Diagram Template** **Suggested Emergency Aid/Relief Agencies*:** • UNICEF • Global Medic • Red Cross/Red Crescent • World Vision • Medecins sans Frontiers/Doctors Without Borders • Save the Children • CARE Canada • Caritas/CCODP (Canadian Catholic Organization for Development and Peace) • Canadian International Development Agency (CIDA) *this list of agencies, while not exhaustive, presents agencies with Canadian charitable status; most also receive CIDA (the Canadian International Development Agency) matching funds for emergency relief efforts

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Investigating Responses to Natural Events Lesson 2

Minds On	Connections
Whole Class → Understanding Relief and Development Write the Chinese proverb on the board, "Give a man a fish, and he eats for a day. Teach a man to fish, and he can feed himself for life." (or give a person a fish and they eat for a day. Teach a person to fish and they can feed themselves for life -Note that it may be preferable to use gender neutral language, ie. "give *one* a fish…") Students turn to an elbow partner to discuss what this quotation means. Guiding Questions: *Is this proverb really about fish?* *Is it better to teach than to give?* What is charity and what is support for self-sufficiency? *How might this relate to natural events?*	***Assessment*** Assessment **for** learning Students will understand the differences between charity and support for self-sufficiency.
Action!	**Connections**
Whole Class → Aid/Relief vs. Development Sort Brainstorm a list of aid/relief and development agencies. Using a t-chart, guide students toward understanding the difference between **aid/relief** (immediate emergency response – short-term, which seek to provide basic needs to recipients) and **development** (long-term projects, which seek to improve the overall lives of recipients). **Pairs → Natural Event Responses by Aid/Relief Agencies** Students will divide their research group from lesson 1 into pairs, so that each pair can research the responses of one aid/relief agency (they may choose the agency of their choice; ensure that the two pairs are not researching the same agency) to the natural event, which they researched. Students may use the BLM #2 – Agency Response Research to organize research. After distributing BLM #2, the class discusses whether the success criteria developed for lesson 1 still apply to this research project. Do any criteria need to be changed or added? After students have had sufficient time to research their aid/relief agency, the pairs swap their research sheets.	***Assessment:*** Assessment **for** learning Students will understand the difference between aid/relief and development. Assessment **as** learning Students will be able to express concretely the various ways that aid/relief agencies respond to natural events. ***Differentiated Instruction:*** *As needed, Reduction in number of questions asked* *Different groupings (individual, groups of 3)* *More than one group researches the same aid/relief agency (collate responses)*

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Investigating Responses to Natural Events Lesson 2

Consolidation	Connections
Whole Class → Defining Effectiveness and Efficiency Have a class discussion about the following questions: • What would be an effective response from an aid agency? • What would be an efficient response from an aid agency? List the criteria for effective and efficient responses on chart paper to be referred to when the groups are completing the consolidation activity. **Groups of Four → Analyzing the Responses of Aid/Relief Agencies** After organizing the information, the group must come to a consensus about which agency they believe to have been most effective and efficient in their response to the natural event. The question may be framed as, *"if you were a donor, to which agency would you donate? Why?"* The original groups (from lesson 1) will gather together to choose which agency they believe has done the best job in responding to the needs of those affected by the natural event. First, they will discuss the similarities and differences of each agency using **BLM3 - Venn Diagram.** Groups will present their choice by creating a Public Service Announcement/advertisement, commercial for the agency, newspaper editorial, oral presentation, visual presentation, or individual journal entries.	***Assessment:*** Assessment **as** learning Provide written descriptive feedback on their presentation and/or research sheet, using the success criteria. ***Differentiated Instruction:*** The various presentation choices allow for a variety of different intelligences to be honoured.

BLM1: Natural Events Research Sheet

Group Members: _____
Natural Event: _____
Location: _____
Date(s): _____

In the chart below, organize your research into the following categories:

Physical Effects What physical damage occurred as a result of this natural event?	**Social Effects** How did the event change the way in which the community functions?	**Environmental Effects** What happened to the water sources, trees, etc.? What were the short- and long-term effects of these changes?	**Financial Effects** What losses did people experience? What happened to the economy in the area?

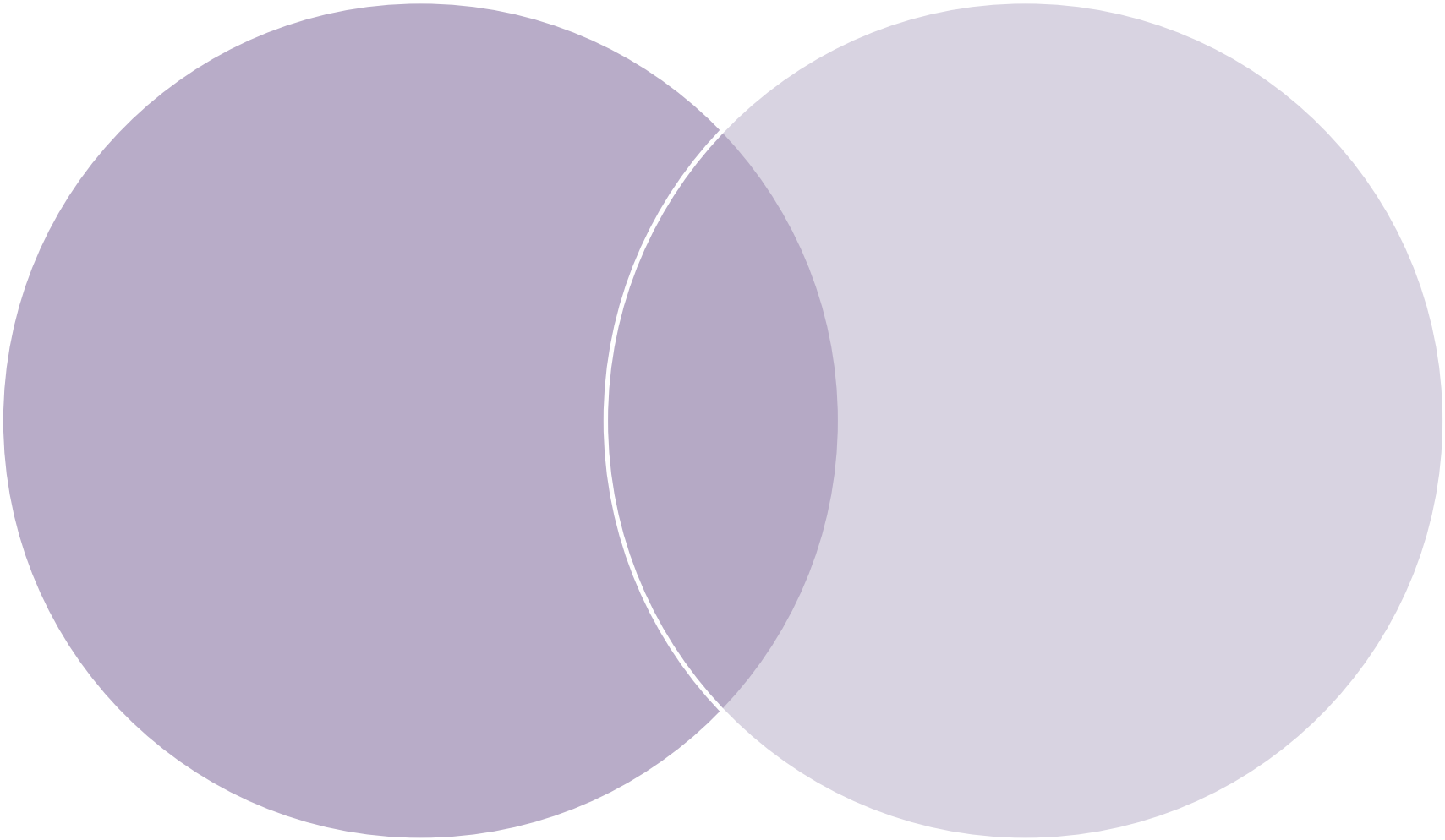
BLM2: Researching the Response by Aid/Relief Agencies to Natural Events

Student Names:_____
Natural Event: _____ Location: _____

In the chart below, organize your research into the following categories. You may not be able to find all the information, but these questions will help guide your inquiry.

AGENCY NAME:
Total amount raised (from donors):
Total amount sent (from donors and Canadian Government/CIDA):
Where did it go? (locations or specific project names)
Were there other agencies involved?
To whom did the money go? (i.e., was there a specific group of people such as children, women, entrepreneurs)
For how long did people receive aid?
What form did the aid take (e.g., food, material items like clothing or tents) when it reached the people?

BLM3: Venn Diagram



Investigating the Effects of Natural Events Lesson 1

Curriculum Expectations

Social Studies, History and Geography (Revised 2013), Grade 7

Patterns in Physical Geography

Overall Expectations	Specific Expectations
A2. Inquiry: use the geographic inquiry process to investigate the impact of natural events and/or human activities that change the physical environment, exploring the impact from a geographic perspective (FOCUS ON: *Geographic Perspective)*	**A2.1** formulate questions to guide investigations into the impact of natural events and/or human activities that change the physical environment *(e.g., the social, political, economic, and environmental impact of natural events such as earthquakes, volcanic eruptions, drought, floods, hurricanes, typhoons, or tsunamis; the economic and environmental impact of industrial pollution on a river system; the social, economic, and environmental impact of agricultural practices; the social, political, economic, and environmental impact of land-reclamation projects; the political, economic, and environmental impact of transportation systems)*, ensuring that their questions reflect a geographic perspective ***Sample questions:*** "What impact did this earthquake have on this city? How did it affect the people, their homes, schools, and businesses? What political impact did the disaster have on the city, and on the country in which it is situated? Was the economic impact felt only within the city, or was its reach regional, national, or global? In what was did the damage caused by the earthquake affect the natural environment?" **A2.2** gather and organize data and information from a variety of sources and using various technologies on the impact of natural events and/or human activities that change the physical environment, ensuring that their sources provide more than one perspective

Investigating Responses to Natural Events Lesson 2

Curriculum Expectations

Social Studies, History and Geography (Revised 2013), Grade 7

Patterns in Physical Geography

Overall Expectations	Specific Expectations
A2. Inquiry: use the geographic inquiry process to investigate the impact of natural events and/or human activities that change the physical environment, exploring the impact from a geographic perspective (FOCUS ON: *Geographic Perspective)*	**A2.1** formulate questions to guide investigations into the impact of natural events and/or human activities that change the physical environment *(e.g., the social, political, economic, and environmental impact of natural events such as earthquakes, volcanic eruptions, drought, floods, hurricanes, typhoons, or tsunamis; the economic and environmental impact of industrial pollution on a river system; the social, economic, and environmental impact of agricultural practices; the social, political, economic, and environmental impact of land-reclamation projects; the political, economic, and environmental impact of transportation systems)*, ensuring that their questions reflect a geographic perspective ***Sample questions:*** "What impact did this earthquake have on this city? How did it affect the people, their homes, schools, and businesses? What political impact did the disaster have on the city, and on the country in which it is situated? Was the economic impact felt only within the city, or was its reach regional, national, or global? In what was did the damage caused by the earthquake affect the natural environment?" **A2.2** gather and organize data and information from a variety of sources and using various technologies on the impact of natural events and/or human activities that change the physical environment, ensuring that their sources provide more than one perspective **A2.4** interpret and analyse data and information relevant to their investigations, using various tools and spatial technologies *(e.g., analyse photographs and thematic maps to determine the impact of invasive species in Australia; interpret graphs, charts, and/or diagrams in order to extract data on changes in agricultural production and population patterns as a result of long-term drought in Africa; interpret information from GIS to determine potential population shifts in Response to rising sea levels)* ***Sample questions:*** "Why might it be helpful to use a decision-making template when you are analysing various perspectives on your topic?" "What type of information can you extract from this GIS map? Does it support the information from your other sources?" "What do these photographs tell you about the size and flow of this river? What are the main differences between the earlier and later photos? What are the social and economic implications of what you see in these photos?" **A2.5** evaluate evidence and draw conclusions about the impact of natural events and/or human activities that change the physical environment **A2.6** communicate the results of their inquiry, using appropriate vocabulary and formats appropriate for a specific audience