Lesson Plan: More Than a Mudslide

Topic: How social, cultural, and economic factors influence the effects of geomorphic hazards.

Student: Heidi, age 13 (Homeschool)

Estimated Time: 2 - 2.5 hours

Materials Needed

- A shoebox or other small cardboard box
- Various craft supplies (e.g., construction paper, clay, paint, markers, small pebbles, popsicle sticks, cotton balls, glue, scissors)
- Tablet or computer with internet access for research
- Notebook and pen/pencil

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1. Learning Objectives

By the end of this lesson, Heidi will be able to:

- **Define** a geomorphic hazard and identify three examples.
- **Analyze** a real-world case study of a geomorphic hazard.
- **Explain** at least three specific social, cultural, or economic factors that made the hazard's impact better or worse.
- **Create** a unique project (a "Split Scene" Diorama) to visually represent the connection between a physical event and its human consequences.

2. Warm-Up: "Disaster Dash" (5-10 minutes)

Goal: To get Heidi thinking about how resources and choices impact survival during a hazard.

Activity: Present Heidi with a quick scenario. "Imagine a major earthquake has just been forecast for our area, expected to hit in one hour. You can only grab five items from the house before we have to move to a safer, open space. What five items do you choose and why?"

Discussion Questions:

- Why did you choose those items?
- What if we didn't have access to a car to leave? How would your choices change?
- What if we didn't have money to buy supplies like bottled water or batteries beforehand?

Teacher's Note: This quick exercise immediately introduces the idea that a hazard isn't just about the shaking ground—it's about people's ability to prepare and respond, which is tied to their situation (their "socio-economic factors").

3. The Big Idea: It's a Human Story (15 minutes)

Goal: To clearly define the core concepts of the lesson using a comparative example.

Direct Instruction & Discussion:

1. **Define Geomorphic Hazard:** Explain that this is a fancy term for a disaster caused by the Earth's natural processes. Ask Heidi to brainstorm examples (earthquakes, landslides, volcanic eruptions, tsunamis, avalanches, etc.).
2. **Introduce the Core Question:** "If the exact same 7.0 magnitude earthquake hit two different cities, would the outcome be the same? Why or why not?"
3. **Compare and Contrast:** Use the example of the 2010 Haiti Earthquake vs. the 2011 Christchurch, New Zealand Earthquake.
    - **Haiti (Poorer Nation):** Lower building quality standards, less government organization for disaster response, limited medical resources, poverty. This led to a catastrophic loss of life and a very slow recovery.
    - **Christchurch (Wealthier Nation):** Strict building codes, well-funded and organized emergency services, public awareness campaigns, strong economy for rebuilding. While still devastating, the impact on human life and the speed of recovery were vastly different.
4. **Define Key Factors:** Explain that the differences are due to:
    - **Economic Factors:** Wealth, poverty, quality of infrastructure (roads, hospitals, power grids).
    - **Social Factors:** How well a community is organized, level of education, access to information, government stability and trust.
    - **Cultural Factors:** How people view hazards (e.g., as a part of life vs. a rare event), community traditions of helping one another, language barriers.

4. Main Activity: The "Split Scene" Diorama & News Report (90 minutes)

Goal: To apply the concepts creatively through research and a hands-on project.

Part A: The Mission Briefing & Research (30 mins)

Your Mission: "Heidi, you are a field journalist sent to cover a major geomorphic event. Your editor doesn't just want to see the damage; she wants to understand the *human story*. Your job is to create a 3D 'Split Scene' report that shows both the physical event and the human factors that shaped the disaster."

Step 1: Choose Your Case Study. Heidi can pick one of the following:

- **The 2010 Haiti Earthquake:** A story of extreme vulnerability.
- **The 2011 Tōhoku Earthquake & Tsunami (Japan):** A story of extreme hazard vs. extreme preparedness.
- **The 2004 Indian Ocean Tsunami (affecting Indonesia, Thailand, etc.):** A story of lack of warning systems and international impact.

Step 2: Research. Using a tablet or computer, Heidi should research her chosen event. Guide her with these questions:

- **The Hazard:** What happened physically? (e.g., What was the magnitude? How high were the waves? What areas were affected?)
- **The Impact:** What was the immediate damage? (e.g., buildings destroyed, lives lost).
- **The Human Factors:**
  - **Economic:** Were the buildings in the area well-built or poorly constructed? Was it a wealthy or poor region? What was the condition of roads and hospitals?
  - **Social/Cultural:** Was there an official warning system? Did people know what to do? How did the government respond? How did communities help each other?

Part B: The Creation (60 mins)

Step 1: Build the Diorama. Using the shoebox and craft supplies, Heidi will create her "Split Scene."

- Place a cardboard divider in the middle of the shoebox.
- **Side 1: The Physical Hazard.** This side is a purely physical model of the event. (e.g., cracked earth made of clay, a big wave from blue paper, a landslide of small pebbles).
- **Side 2: The Human Story.** This side shows the *consequences* as shaped by the human factors she researched. (e.g., For Haiti, it might show collapsed, simple buildings and people in makeshift tents. For Japan, it might show a damaged but still-standing earthquake-resistant building and an organized evacuation route sign).

Step 2: Write the News Report. While building, or after, Heidi should write a script for a 1-2 minute "on-the-scene" news report. The script must explain both sides of her diorama, explicitly connecting the physical event on one side to the socio-economic situation shown on the other. She should be prepared to present it.

5. Presentation & Reflection: "Live from the Scene" (15 minutes)

Goal: To assess understanding and consolidate learning through articulation.

Activity: Heidi presents her "Split Scene" diorama and delivers her news report as if she were a journalist on TV.

Debriefing Questions after her report:

- That was a fantastic report. What was the most surprising or interesting factor you discovered in your research?
- If you were in charge of that country, what is the first thing you would do to reduce the impact of a future disaster, based on what you learned?
- Why is it important for rescue workers and aid organizations (like the Red Cross) to understand a country's culture and economy before they go to help?

6. Assessment

Heidi's understanding will be assessed based on:

- **The Diorama:** Does it creatively and accurately distinguish between the physical hazard and the human consequences?
- **The News Report:** Can she clearly articulate the link between the hazard and at least three

socio-economic factors?
- **The Discussion:** Her answers to the reflection questions will reveal the depth of her critical thinking on the topic.

7. Extension Activity (Optional)

Challenge: "The Resilience Blueprint."

On a new sheet of paper, ask Heidi to create a "Resilience Blueprint" for the community in her diorama. She should design a plan with 3-5 concrete ideas to help them be safer next time. The key is that these ideas must address the specific social or economic problems she identified (e.g., "start a program to teach builders earthquake-safe techniques," "create a community-run text message warning system," or "fundraise for a better-stocked local clinic"). This pushes her from analysis to problem-solving.