



The Vocabulary of Hazards

Setting the Stage

Vocabulary that experts use can often become overwhelming and cause confusion, even for the experts themselves! This lesson builds students' understanding and familiarity with the difference between the terms *preparedness*, *mitigation*, and *resilience*. Understanding of the difference between these terms will be essential for students to develop their own resilience ideas and engage in conversation with local experts and stakeholders in the Resilience Expo.



Community experts discuss the Colorado Resiliency Framework.
(Colorado Resiliency Office, Department of Local Affairs)

Lesson Overview

Students will access prior knowledge to understand the three terms (preparedness, mitigation, resilience), then use that knowledge to categorize different community actions.

- **Activity 1 – Engage (10 minutes) Alien Invasion Warm-Up Activity**
In small groups, students will create cartoons to illustrate preparedness, mitigation, and resilience in response to an alien invasion of their town or neighborhood.
- **Activity 2 – Explore (15 minutes) Vocabulary Game**
In the same small groups, students will categorize different actions into the appropriate terminology while playing a vocabulary game.
- **Activity 3 – Explain (5 minutes) Vocabulary Review**
As a class, review the meaning of each term.
- **Activity 4 – Elaborate & Evaluate (10 minutes) Brainstorm**
Students will individually create ideas of how to apply the concepts in their own community.



Instructional Overview	
Grade Level	Middle/High School
Instructional Time	40 minutes
Standards Alignment	NGSS: MS-ESS3-2 , HS-ESS3-1 CDE: Hyperlink standards: MS3.ESS.GLE9 , HS3.ESS.GLE9
Anchoring Phenomenon	<ul style="list-style-type: none"> The effects of natural hazards (flood, wildfire, and/or drought) on a community.
Driving Question	<ul style="list-style-type: none"> What are the different ways communities prepare for and respond to hazards? What can communities do to plan for hazards?
Learning Goals	<ul style="list-style-type: none"> Students will understand the meaning of preparedness, mitigation, and resilience, and be able to distinguish between the terms.
Materials	<ul style="list-style-type: none"> <input type="checkbox"/> Blank paper or white boards. Enough for class divided into groups of 2-3. <input type="checkbox"/> Markers/colored pencils. <input type="checkbox"/> Sets of the HEART Force Venn Diagram on 11" x 17" paper and Action Cards. Enough for the class divided into groups of 2-3. <input type="checkbox"/> Copies of <i>Vocabulary of Hazards Exit Ticket</i> for each student
Material Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Make copies of the HEART Force Venn Diagram (on 11" x 17" paper) and cut out action cards. Laminate them if you plan on reusing them.
Vocabulary	<p><u>Preparedness</u> is to have plans in place for communities to respond when a disaster or emergency happens in order to protect lives and community assets (coresiliency.com), i.e. ready to respond.</p> <p><u>Mitigation</u> uses planning tools and strategies to reduce a community's risk to natural and man-made hazards (coresiliency.com), i.e. reduce risk.</p> <p><u>Resilience</u> is the capacity of community members and organizations such as schools, businesses, or hospitals to maintain essential functions before, during, and after a hazard strikes, i.e. the ability for a community to bounce back.</p>



Activity 1 (Engage)

Alien Invasion Warm Up Activity (10 minutes)

What are the different ways communities prepare for and respond to hazards?

Create small groups of students (2-3) for the activity. Tell students that an alien invasion is currently occurring in their neighborhood. Several spaceships of extraterrestrial beings have landed, and they are currently invading homes, businesses, and soon, the school. So far, the aliens have been nonviolent but are demanding food and candy from everyone they meet. The aliens walk on two feet, and normal rules of physics apply to them. That is all the information currently available regarding the invasion.

- Ask each group of students to fold their paper into 6 sections (by folding “hot-dog”/length in half, and folding “hamburger” into thirds).
- On the top of each third, have students write preparedness, mitigation, and resilience. Their paper should look like this:

Preparedness	Mitigation	Resilience

- In the top box have students write down words they associate with each term, and ideas for what each term might mean.
- In the bottom boxes, ask students to illustrate a one panel cartoon illustrating an action to illustrate how the concept could be applied to the alien invasion. For example, an action for preparedness would be to buy large amounts of candy to appease the aliens.



- After students have completed their comics, ask them to “window shop” by leaving their papers on their desk, standing up and looking at other students’ ideas.
- When students have finished, develop a class definition for each term and write them on the board. *Note: Students will soon see definitions of each term on the Venn diagram. Use this exercise as an opportunity to solidify students’ initial ideas.*

Activity 2 (Explore)

Develop Conceptual Understanding (15 minutes)

Have students continue to work in their small groups of 2-3. Hand out the Venn Diagram and a set of action cards (wildfire, flood, or drought). Review the given definition of each term on the Venn diagram for preparedness, mitigation and resilience. Compare the given definition to the class definition just created.

Vocabulary of Hazards

Place the action into the area of the Venn Diagram where you think it fits best. For example, if you think the action best increases preparedness and resilience, place it in the space where the preparedness and resilience circles overlap.

Actions to Increase Preparedness
Ready to Respond

Mitigation Actions
Reduce Risk

Actions to Build Resilience
Bounce Back

Place cards you are unsure of here.

Flood Action Cards
(cut out cards)

A community buys two truckloads of sand to be used to make sandbags in case of flooding. **D**

The town council creates open space and parks along the river that runs through town. **A**

A county creates a hazard relief fund to support community members in need in the case of the occurrence of a hazard. **G**

A community builds an additional road (a relief route) to have an additional entrance/exit point into town. **B**

A town moves the main road through town out of a floodplain to a more elevated area. **E**

The county creates infrastructure design standards for roadways and bridges to withstand major flooding events. **H**

A family makes a go-kit in case of evacuation due to flood. **F**

The school redesigns parking lots and playgrounds to direct water away from the building in case of flooding. **I**

A neighborhood throws a block party to build relationships and to get to know each other better. **C**

- Ask students to place action cards into the appropriate space in the venn diagram for the concept(s) they think it illustrates best.
- After students have completed matching the action cards, discuss each action as a class and decide which concept it illustrates best.

These materials were developed by CIRES Education & Outreach at CU Boulder.
<https://cires.colorado.edu/outreach/projects/HEARTForce>

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Activity 3 (Explain)

Review Terminology (5 minutes)

As a class, discuss whether the class definitions created in Activity 1 are still appropriate. Update the definitions of each term on the board as necessary and create a poster with definitions of each term to place in the classroom for the remainder of the unit.

Activity 4 (Elaborate & Evaluate)

Brainstorm (10 minutes)

What can communities do to plan for hazards?

Narrow in on the hazard your class is focusing on (e.g. flood, wildfire, drought or extreme heat). Explain that students will be developing ideas for increasing community resilience for the given hazard in the next unit. Ask students to individually brainstorm three actions in each category (preparedness, mitigation and resilience) that their town could implement. Collect the list as an exit ticket to evaluate whether students are able to distinguish between terms.

