

RESOURCE LIBRARY | ACTIVITY : 1 HR 40 MINS

# Tourism, Waste, and the Effects of Climate Change on Everest

Students explore how much waste climbing expeditions to Mount Everest produce. Students consider the impact of climate change on waste production and current attempts to address the problem. Students evaluate best practices in preparing for and embarking on Leave No Trace expeditions.

## GRADES

6, 7, 8

## SUBJECTS

*Conservation, English Language Arts, Social Studies, Civics*

## CONTENTS

8 Links, 3 PDFs

## OVERVIEW

Students explore how much waste climbing expeditions to Mount Everest produce. Students consider the impact of climate change on waste production and current attempts to address the problem. Students evaluate best practices in preparing for and embarking on Leave No Trace expeditions.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/tourism-waste-and-effects-climate-change-everest/>

## In collaboration with

# DIRECTIONS

**Mount Everest: What Goes Up Should Come Down Unit Driving Question:** *How can we enjoy and explore unique natural areas while still protecting our environment?*

**The Costs of the Climb Lesson Driving Question:** *What are the impacts of the climb?*

## 1. Use a variety of media to facilitate a discussion about how garbage is dealt with on Everest.

- Show students a piece of trash and ask: *What do we do with trash when we find it in our classroom? What happens to that trash after we put it in a trash can?*
- Ask: *What do you think happens to trash on Everest?*
- Then, as a class, watch [The human impact on Everest](#) from CNN.
- Have students read the article [Tons of Trash Removed from Everest as Cleanup Unearths Bodies](#).
- After reading, ask students: *What confirmed, challenged, or furthered your thinking? What surprised you most?*
- Show students [this photo](#) from a May 8, 2017, Everest cleanup campaign. Ask:
  - *What would encourage and/or prohibit you from participating in something like this?* (Possible student answers: There is a sense of pride in participating in service work, such as a cleanup campaign. The work is physically demanding, and I don't want to hurt myself cleaning up after others.)
  - *Why is it important to tourism that cleanup campaigns like this exist?* (Possible student answers: Tourists, who are important to the economy, are not going to want to visit a natural area if it is completely littered with trash because it takes away from the natural beauty.)
  - *How might cleanup campaigns like this deter mountaineers from packing their own waste out?* (Possible student answers: People may feel that if they are paying for services such as a Sherpa guide, then it is not their responsibility to clean up after themselves.)
  - *Why is it hard for mountain climbers to clean up after themselves?* (Possible student answers: Climbers need to keep their packs light, especially as they get up into higher altitudes.)

## 2. Poll students to determine their current position on the following topics related to waste on Mount Everest.

- Use a digital survey, polling tool, or a simple thumbs up/thumbs down to survey the class on the following questions:
  - *Is it possible for a mountaineer to summit Everest without leaving waste behind?*
  - *Should Sherpas and other mountain guides be responsible for bringing waste down the mountain?*
  - *Is it fair to leave behind the bodies of those who die trying to summit Everest?*
  - *Whose responsibility is it to prevent pollution from organized expeditions?*
- Record the responses so they can be referenced during Step 4.

### **3. Engage students in a jigsaw reading to become experts on an article in order to collaboratively evaluate Mount Everest's problems and to propose solutions.**

- Distribute the *Mount Everest's Problems and Proposed Solutions* worksheet to students. Inform students that ideas collected on this worksheet may benefit them during the creation of their culminating project as the solutions they identify will be a big part of the foundation of the Everest Bill of Rights.
- Assign students to one of the six articles to read and become an expert. As they read, have students record their learning on the *Mount Everest's Problems and Proposed Solutions* worksheet.

1. *Vanity, Pollution, and Death on Mt. Everest*

2. *Maxed Out on Everest*

3. *The Mission to Cleanup Mount Everest*

4. *Environmental Issues on Mount Everest*

5. *Healing the Human Impact on Everest*

6. *Saving Mount Everest Campaign*

- Next, have students form a jigsaw group with students who have read the other five articles. Have students share the main problems and/or solutions discussed in their article with their group and record the rest of the group's findings on their own Mount Everest's Problems and Proposed Solutions worksheet.
- Then have students add new, relevant information to the graphic organizer *Cost of the Climb* worksheet that was started in the *Summitting Everest Today* activity.
  - Possible additions students may have include: cleanup costs to pay Sherpas who are bringing trash down the mountain, extra fees charged for cleanup that are added on

to the mountaineering fees, and emotional costs for the families of those who die on the mountain.

#### **4. Revisit the survey questions from Step 2 to see if students' opinions have changed.**

- *Is it possible for a mountaineer to summit Everest without leaving waste behind?*
- *Should Sherpas and other mountain guides be responsible for bringing waste down the mountain?*
- *Is it fair to leave behind the bodies of those who die trying to summit Everest?*
- *Whose responsibility is it to prevent pollution from organized expeditions?*

#### **5. Connect students to the final project and practice identifying a right.**

- Remind students their final product will be to create an Everest Bil of Rights as a class.
- Share with students one example of a right (for example, you have the right to remain silent). Then ask students to brainstorm in their groups what kinds of rights would be necessary to implement the solution they identified.
- Students write down their right and submit it as an exit ticket.

## Tip

**Step 5:** If students have not yet learned about the concept of rights, pre-teach that vocabulary word prior to this step.

## Modification

**Step 2 and 4:** Additional questions for polling thinking:

- *Is it ethical to have human beings carry at great personal risk loads of trash off the mountain?*
- *Is it ethical to have helicopters do the same?*
- *Is it better to deposit trash in deep crevasses away from camps and the climbing route, sparing the Nepalese and Tibetan support staff the risk of carrying down additional loads?*
- *Often, Sherpa and other Nepalese climbers are following cultural practices by not disturbing deceased climbers on the mountain. Is it ethical to offer them bonus payments to remove the deceased in that case?*

## Tip

**Step 2 and 4:** Use an online survey or polling tool in order to quickly see the results of the survey and to engage students through their personal devices or one-to-one technologies.

## Tip

**Step 2 and 4:** Use colored dots stickers to chart survey responses on chart paper. Ask students to stack their dots one above the other in the Yes or No columns to indicate their response. This will create a visual bar graph. Use one color for their initial opinions and a different color to chart opinions after the reading.

## Tip

**Step 3:** Pre-assign articles to students based on interest, reading level, or student grouping considerations.

## Modification

**Step 4:** Label one side of the room “Yes,” and label the other side “No.” Have students respond by moving to the side of the room that represents their opinion. Record the number of students on each side to the survey count.

## Informal Assessment

**Mount Everest’s Problems and Proposed Solutions:** Students complete the *Problems and Proposed Solutions* by accurately citing problems on Everest and developing reasonable solutions.

**Oral Presentation of Leave No Trace Best Practices:** Students brainstorm and write a draft of a right that relates to the impact of climbers on Everest.

## Extending the Learning

**ELA Extension:** Have students write argumentative essays further defending one of their survey response opinions with additional research, support, and commentary.

- *Is it possible for a mountaineer to summit Everest without leaving waste behind?*

- *Should Sherpas and other mountain guides be responsible for bringing waste down the mountain?*
- *Is it fair to leave behind the bodies of those who die trying to summit Everest?*
- *Whose responsibility is it to prevent pollution from organized expeditions?*
- *Are cleanup expeditions encouraging or discouraging mountaineers to pack out their own trash?*

**Design & Engineering Extension:** After reading one or more of the suggested articles, have students determine what type of pollutant is the most problematic or troublesome for Mount Everest. Have students design and create a mock-up of an invention that might help reduce this pollutant's impact on the mountain. This invention should be lightweight and portable for backpacking mountaineers. Students should write a narrative explaining how it works.

**Local Research Extension:** Have students research, discover, and share how biogas projects may be impacting your local area.

## OBJECTIVES

## Subjects & Disciplines

- Conservation
- English Language Arts
- **Social Studies**
  - Civics

## Learning Objectives

Students will:

- Understand that a large amount of waste, including human waste and dead bodies, is produced by those who climb Mount Everest and some of it never comes down.
- Understand there are some responsibilities that citizens must take on in order to protect Mount Everest from the effects of tourism.

## Teaching Approach

- Project-based learning

# Teaching Methods

- Cooperative learning
- Modeling
- Research

## Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
  - Information, Media, and Technology Skills
    - Information Literacy
  - Learning and Innovation Skills
    - Communication and Collaboration
    - Critical Thinking and Problem Solving
  - Life and Career Skills
    - Initiative and Self-Direction
    - Leadership and Responsibility
- 21st Century Themes
  - Environmental Literacy
- Critical Thinking Skills
  - Analyzing
  - Applying
  - Evaluating
  - Understanding

## National Standards, Principles, and Practices

### COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- CCSS.ELA-LITERACY.RI.6-8.7:

Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

- **Speaking and Listening Standards 6-12:**

Comprehension and Collaboration, SL.8.1.

## THE COLLEGE, CAREER & CIVIC LIFE (C3) FRAMEWORK FOR SOCIAL STUDIES STATE STANDARDS

- **D2.Civ.1.6-8:**

Distinguish the powers and responsibilities of citizens, political parties, interest groups, and the media in a variety of governmental and nongovernmental contexts.

### **Preparation**

### **What You'll Need**

### **MATERIALS YOU PROVIDE**

- Chart paper
- Colored sticker dots

### **REQUIRED TECHNOLOGY**

- Internet Access: Required
- Tech Setup: 1 computer per classroom, 1 computer per learner, Monitor/screen, Projector, Speakers

### **PHYSICAL SPACE**

- Classroom

### **GROUPING**

- Heterogeneous grouping
- Large-group instruction
- Large-group learning
- Small-group instruction
- Small-group learning
- Small-group work

### **ACCESSIBILITY NOTES**



Allow students who may struggle with handwriting to copy and paste relevant parts of their best practices recommendations onto a computer-based document, such as Word or Google Docs.

## **RESOURCES PROVIDED: WEBSITES**

- Leave No Trace: Center for Outdoor Ethics

## **RESOURCES PROVIDED: UNDEFINED**

- CNN: The Human Impact on Everest

## **RESOURCES PROVIDED: HANDOUTS & WORKSHEETS**

- [Cost of the Climb](#)
- [Mount Everest's Problems and Proposed Solutions](#)
- [Mount Everest's Problems and Proposed Solutions Example](#)

## **RESOURCES PROVIDED: ARTICLES & PROFILES**

- Tibet Vista: Environmental Issues on Mt. Everest
- National Geographic: Maxed Out on Everest
- Mount Everest Biogas Project: Healing the Human Impact on Everest
- Our World: Vanity, Pollution and Death on Mt. Everest
- Everest Summiters Association: Saving Mount Everest 2011
- CNN: Tons of trash removed from Everest as cleanup unearths bodies

## BACKGROUND & VOCABULARY

### Background Information

The environment of Mount Everest is heavily impacted by mountaineers. This impact includes increasing waste, both in terms of left-behind objects as well as biological waste. As the number of climbers increases, the need to ensure waste comes off the mountain is becoming a focus for conservationists and mountaineers.

### Prior Knowledge

# Recommended Prior Activities

- [Danger Versus Desire: The Inspirational Power of the Peaks](#)
- [Mountaineering as Exploration, Recreation, and Vocation](#)
- [Summitting Everest Today](#)
- [The Evolution of Climbing Everest](#)
- [The History of Mountaineering and Allure of Conquering Everest](#)

## Vocabulary

Term	Part of Speech	Definition
biogas	<i>noun</i>	fuel produced by bacteria helping to decompose organic material, such as plants and sewage.
climate change	<i>noun</i>	gradual changes in all the interconnected weather elements on our planet.
ecotourism	<i>noun</i>	act and industry of traveling for pleasure with concern for minimal environmental impact.
Mount Everest	<i>noun</i>	highest spot on Earth, approximately 8,850 meters (29,035 feet). Mount Everest is part of the Himalaya and straddles the border of Nepal and China.
tourism	<i>noun</i>	the industry (including food, hotels, and entertainment) of traveling for pleasure.
trace	<i>noun</i>	surviving mark or evidence.

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### For Further Exploration

#### Articles & Profiles

- [World Travel and Tourism Council: Travel and Tourism Economic Impact 2019](#)
- [NPR: Nepal Cracks Down on Messy Everest Climbers](#)

#### Websites

- [Discover Nepal: Everest Region](#)
- [American Biogas Council: Biogas Projects](#)



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