

Hazard Literacy Center

Hazard Literacy Education Program

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Do popular Mountains Face a Higher Risk of Wildfires?



1. Program Overview

This program is a data-based inquiry program designed to help students understand wildfire risk in relation to human activities, particularly as concerns about wildfires increase due to recent climate change and human activities. Students begin with the question, "Do popular Mountains Face a Higher Risk of Wildfires?" They examine recent trends in the number of visitors to national parks and explore and analyze data on wildfire occurrence and causes provided by the Korea Forest Service's National Forest Fire Information System. Through these activities, students investigate where wildfires occur most frequently, what causes them, and how human activities may be related to wildfire occurrence. The program consists of five stages: examining changes in the number of visitors, exploring where wildfires occur, analyzing the causes of wildfires, reviewing an initial idea using data, and learning wildfire prevention and response guidelines. Using tablets or computers, students explore real-world data and compare and analyze wildfire occurrence by region and cause. They also compare their initial idea—"If more people visit mountains, wildfire risk will increase"—with actual data and explain patterns in wildfire occurrence based on evidence. Finally, students review wildfire prevention and response guidelines provided by the Korea Forest Service and learn appropriate actions to take in actual wildfire situations. Rather than simply providing knowledge, this program emphasizes inquiry activities in which students explore real-world data, examine an initial idea, and revise or refine their thinking based on evidence. Through these activities, students develop an understanding of the spatial distribution and major causes of wildfires, critically explore the relationship between human activities and wildfire occurrence, and acquire practical knowledge for wildfire prevention and safe responses.

Grade Level	Upper Elementary or Middle School Students	Instructional Methods	Project activities
Learning Environment	Classroom with Access to Internet	Duration	2 sessions, 90 minutes
Required Materials	Worksheets, an internet-enabled digital device		

2. Learning Objectives (Hazard Literacy Framework)

① Understand that wildfires are disasters caused by a variety of factors, including human activities.
② Compare and analyze wildfire data by region and cause to explore the spatial distribution and major causes of wildfires.
③ Explain patterns in wildfire occurrence based on data analysis and understand wildfire prevention and response guidelines in order to respond safely.

Learning Objectives	Knowledge & Understanding		Reasoning & Skills					Values & Attitudes			Psychology & Emotion			Behavioral & Practical Engagement		
	A1	A2	B1	B2	B3	B4	B5	C1	C2	C3	D1	D2	D3	E1	E2	E3
Objective ①	O	O	O					O								
Objective ②			O	O	O		O								O	
Objective ③		O		O		O			O	O		O		O	O	O

3. Key Concepts

- Factors that cause wildfires
- Human activity and disaster risk
- The spatial distribution of wildfire occurrence
- Analyzing and interpreting wildfire data
- Wildfire prevention and response guidelines

4. Program Sequence

	Activity Sequence
Introduction	• Ask, “Is the number of people visiting mountains in Korea increasing?” • Examine data on the number of visitors to national parks over the past three years. • Think about the question, “If more people visit mountains, will the risk of wildfires also increase?” • Introduce the inquiry question: “Where and why do wildfires occur in Korea?”
Inquiry 1	• Use the National Forest Fire Information System of the Korea Forest Service to explore where wildfires occur. • Compare wildfire occurrence by region and identify patterns in its spatial distribution.
Inquiry 2	• Use the National Forest Fire Information System to analyze the causes of wildfires. • Compare the number of wildfires by cause and identify causes related to human activities.
Inquiry 3	• Combine wildfire data by region and cause to identify major patterns in wildfire occurrence in Korea. • Use the data to reconsider your initial idea about the relationship between the number of mountain visitors and wildfire risk.
Conclusion	• Combine wildfire data by region and cause to identify major patterns in wildfire occurrence in Korea. • Use the data to reconsider your initial idea about the relationship between the number of mountain visitors and wildfire risk.

5. Theoretical Background and Activity Design for Disaster Education

Wildfires need to be understood as disasters closely related not only to meteorological and environmental conditions but also to human activities. In Korea, most wildfires are caused by human carelessness rather than natural factors such as lightning or friction. Causes related to human activities—including accidental fires caused by hikers, waste burning, and the burning of agricultural field boundaries—account for a substantial proportion of wildfire occurrences (Korea Forest Service, 2026). Wildfire occurrence is also closely related to human activities, and different causes have been found to exhibit different spatial clustering patterns (Kwak et al., 2010). Therefore, wildfires should not be understood simply as disasters caused by the natural environment; rather, they should be understood as disasters resulting from the interaction between human activities and the spatial characteristics of different regions

Based on this perspective, this program is designed to help students explore the causes and spatial distribution of wildfires using real-world data. Students first examine recent trends in the number of visitors to national parks, drawing their attention to changes in the number of people using forest areas and encouraging them to form an initial idea about the relationship between forest use and wildfire occurrence. They then directly explore and analyze wildfire data provided by the Korea Forest Service's National Forest Fire Information System. The system provides map-based information on wildfire occurrence as well as statistics on the number of wildfires and areas damaged by region, time period, and cause (Korea Forest Service, 2026).

Students examine wildfire occurrence by region to identify where wildfires occur most frequently and analyze wildfire occurrence by cause to identify major causes. Through this process, students develop an understanding of the spatial distribution and major causes of wildfires and use data to explore the relationship between human activities and wildfire occurrence. These activities are meaningful in that they allow students to explore and interpret real-world data in relation to previous research showing that the spatial distribution of wildfires can vary according to their causes (Kwak et al., 2010).

In particular, the program is designed to provide students with experience in exploring data and comparing their initial ideas with actual evidence in order to review and revise their thinking. Students who initially predict that "if more people visit mountains, wildfire risk will increase" later analyze actual wildfire data to determine whether their predictions are supported by the evidence and explain patterns in wildfire occurrence based on the data. In this way, the program encourages students to move beyond simple causal assumptions about wildfires and develop experience in evaluating and revising their ideas based on real-world evidence.

Finally, students review the wildfire prevention guidelines provided through the Korea Forest Service's National Forest Fire Information System and learn appropriate ways to respond in actual wildfire situations. The system provides wildfire prevention and safety guidelines, as well as information on open hiking trails and restricted areas. This information can be used to connect students' understanding of wildfires with practical safety actions (Korea Forest Service, 2026). Through this process, the program is designed not only to help students understand the causes and spatial characteristics of wildfires but also to develop their ability to make appropriate decisions and take safe actions during a disaster.

6. Instructional Considerations

When teaching this program, avoid presenting wildfires simply as disasters caused by the natural environment. Guide students to understand that various causes related to human activities—such as accidental fires caused by hikers, discarded cigarettes, and the burning of waste and agricultural residues—can contribute to wildfire occurrence. Students should also be guided not to reach overly simple conclusions such as "More visitors mean more wildfires." Instead, encourage them to distinguish between changes in the number of visitors and actual wildfire occurrence data and to review their initial ideas based on evidence.

During the data exploration activities, guide students to directly explore, compare, and analyze wildfire data by region and cause provided by the National Forest Fire Information System. Students should avoid generalizing regions with high numbers of wildfires or particular wildfire causes based on a single factor. Encourage them to interpret the data while considering its scope and characteristics. Care should also be taken to prevent students from identifying a particular region or group of forest users as the cause of wildfires or developing negative perceptions of them. Instead, guide students to interpret the data from the perspective of wildfire prevention and safe forest use.
In the later stages of the activity, use questions such as “Where do wildfires occur most frequently?”, “What causes wildfires?”, and “Does the actual data support what you initially thought?” to encourage students to review and revise their thinking based on evidence. Finally, students should review wildfire prevention and response guidelines provided by the Korea Forest Service and consider what actions they should take in an actual wildfire situation. This helps connect data-based inquiry with practical disaster-response skills.

7. References

- Kwak, H. B., Lee, W. K., Lee, S. Y., Koo, K. S., Lee, M. B., Won, M. S., & Lee, B. D. (2010). Cause-specific Spatial Point Pattern Analysis of Forest Fire in Korea. Journal of Korean Society of Forest Science , 99(3), 259-266.
- Korea Forest Service. (2026). Understanding Wildfires: 2026. https://center.forest.go.kr/kfs/images/data/down/sb_1_03.pdf
- Korea Forest Service. (2026). National Forest Fire Information System. https://fd.forest.go.kr/ffas/

Session 1: Where and Why Do Wildfires Occur?

Topic	Exploring Wildfire Occurrence and Major Causes
What Will We Learn?	① Examine trends in the number of visitors to national parks and express your ideas about wildfire risk. ② Use the National Forest Fire Information System to explore where wildfires occur and what causes them. ③ Analyze wildfire data and explain patterns in wildfire occurrence.

1 Think About It

- Is the number of people visiting mountains in Korea increasing?
- If more people visit mountains, will the risk of wildfires also increase?

2 Exploring the Number of Visitors

- Use KOSIS to find data on the number of visitors to national parks over the past three years and complete the table.

Year	Number of Visitor
2023	
2024	
2025	

2) Create a graph showing the change in the number of visitors

3) How did the number of visitors change from 2023 to 2025?

☐ Increased ☐ Decreased ☐ No significant change

4) Do you think wildfire risk increases as more people visit mountains?

3 Exploring Wildfire Occurrence Using the National Forest Fire Information System

- Look at the map below and explore wildfire occurrence across Korea.



1) Which region had the largest number of wildfires? How many wildfires occurred there?

2) Find and write down all regions where 40 or more wildfires occurred.

3) Look at the regional distribution of wildfires. What patterns do you notice?

Session 2: Analyzing the Causes of Wildfires and Responding Safely

Topic	Exploring Wildfire Occurrence and Major Causes
What Will We Learn?	① Analyze data on the causes of wildfires and explore the relationship between human activities and wildfire occurrence. ② Compare data on the number of visitors with wildfire occurrence data and reconsider your initial idea. ③ Review wildfire prevention and safety guidelines and explain how to respond safely to a wildfire.

1 What Causes Wildfires?

1) Check the "Number of Wildfires by Cause" data in the National Forest Fire Information System. Rank the major causes of wildfires and complete the table below.

Rank	Cause of Wildfire	Number of Cases
1	Other	
2		
3	Unknown Cause	
4		
5	Accidental Fire from Buildings	

2) Classify the causes of wildfires into "Causes Related to Human Activities" and "Other Causes."

Causes Related to Human Activities	Other Causes

2 Think Again

- Think again about the idea you had in Session 1.
- "If more people visit mountains, the risk of wildfires will increase."

1) After examining the actual data, how has your thinking changed?

☐ My idea is similar to what I initially thought.

☐ My idea is different from what I initially thought.

☐ It is difficult to decide based on the data alone.

2) Explain your reasoning using evidence from the data.

3 Preventing Wildfires and Responding Safely

- Review the wildfire prevention guidelines provided by the Korea Forest Service and identify actions that we can take to prevent wildfires.

1) What should we do in our daily lives to prevent wildfires?
Read each action below. Mark O for appropriate actions and X for actions that should be avoided.

Action	O / X
Do not burn garbage or agricultural waste near mountains.	
Enter restricted mountain areas or closed hiking trails.	
Do not carry fire-starting materials or smoke while hiking.	
Cook and camp only in designated areas, and make sure all fires are completely extinguished after use.	
Store garbage and construction materials around your home.	

2) Which wildfire prevention action do you think is the most important? Why?

3) What Should You Do If a Wildfire Occurs?

Q1. You see smoke and flames nearby while hiking. What is the most appropriate action?

☐ Move closer and try to put out the fire yourself.

☐ Alert people nearby and quickly evacuate to a safe place.

☐ Move closer to watch the wildfire.

Q2. A wildfire has occurred and you are told to evacuate. What is the most appropriate action?

☐ Stay at home to pack your belongings.

☐ Check the direction of the wildfire and move toward the mountain.

☐ Follow the evacuation instructions and move away from the direction of the wildfire to a safe place.

Q3. Select all the places you can contact to report a wildfire.

☐ Police: 112

☐ Fire Department: 119

☐ Korea Forest Service Wildfire Control Center: 042-481-4119

4) Based on what you learned today, write one action you can personally take to help prevent wildfires or stay safe.