

Hazard Literacy Center

Hazard Literacy Education Program

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The Cry of the Parched Earth: Asymmetric Disaster



1. Program Overview

This program is a role-play–based climate justice education program that uses the 2022–2023 drought crisis at Juam Dam in the Gwangju–Jeonnam region of South Korea as a real-world case study, exploring how drought produces asymmetric harm depending on social and economic conditions. Learners come to understand how meteorological drought progresses into agricultural, hydrological, and socioeconomic drought, and take on the perspectives of various stakeholders—farmers, factory operators, local government officials, and small business owners—to write a "drought diary." Students then take part in a mock public hearing in which they represent these different positions, experiencing firsthand the procedural and distributive justice dilemmas surrounding the allocation of water resources. This program aims to help students understand drought not merely as a natural disaster, but as a climate/disaster justice issue involving social inequality and rights violations, and to build critical thinking skills for seeking fair solutions amid competing interests.

Grade Level	Middle and high school students	Instructional Methods	Lecture, role-play, mock debate
Learning Environment	Classroom	Duration	Total 90 minutes (1 session)
Required Materials	Activity sheets, writing tools		

2. Learning Objectives (Hazard Literacy Framework)

① Be able to explain the drought transition process (meteorological → agricultural → hydrological → socioeconomic drought) and how the Juam Dam crisis unfolded.
② Be able to analyze the asymmetry of drought damage from the perspectives of various stakeholders, and evaluate the dilemmas of water resource allocation from the standpoint of procedural and distributive justice.

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				O	O

3. Key Concepts

- The mechanism of drought transition
- Asymmetry and vulnerability in disasters
- Climate justice, and procedural and distributive justice
- The Juam Dam water allocation dilemma

4. Program Sequence

Stage	Contents
Introduction (10 min)	-Watch news coverage of the 2022–2023 Juam Dam water storage crisis -Share initial impressions of how drought affected daily life and industry
Lecture (15 min)	-Watch news coverage of the 2022–2023 Juam Dam water storage crisis -Share initial impressions of how drought affected daily life and industry
Activity 1 (20 min)	-Write a role-based drought diary -From the perspective of an assigned role (farmer, factory manager, local government official, small business owner), record a day in that person's life, i ncluding the psychological and economic toll and sense of frustration caused by water shortage
Activity 2 (30 min)	-Mock public hearing on Juam Dam water allocation -Role-play debate on which sector should be given priority in the allocation of Juam Dam's limited remaining water resources
Wrap-up (15 min)	-Summarize the demands of each position and provide feedback from the perspective of procedural/distributive justice -Overall discussion of the asymmetry of disaster impacts, and preview of the next session

5. Theoretical Background and Activity Design for Disaster Education

Drought is not simply a temporary meteorological event involving a lack of rainfall; it is a complex, cascading hazard in which risk spreads throughout an entire social and economic system over time. To accurately understand the risks posed by drought, it is essential to grasp the mechanism of "drought transition"—the process by which drought emerges and spreads. This transition generally unfolds in four stages: 1. Meteorological Drought, the primary stage in which a region's precipitation falls below its normal level. 2. Agricultural Drought, in which prolonged meteorological drought depletes soil moisture, directly damaging crop growth. 3. Hydrological Drought, in which the shortage of precipitation leads to falling water levels in rivers, lakes, reservoirs (dams), and groundwater, reducing the amount of usable water resources. 4. Socioeconomic Drought, the final stage in which the shortage of water resources fails to meet human society's water demands, erupting into social and economic harm and conflict—including declining agricultural productivity, factory shutdowns, water rationing, and disputes over water allocation between regions and industries.

The Juam Dam crisis in South Korea's southern region in 2022–2023 is a representative case that clearly illustrates this transition mechanism. Prolonged, region-wide precipitation shortages (meteorological drought) led to soil desiccation (agricultural drought), which then intensified into hydrological drought as the storage rate of Juam Dam—the key water source for Gwangju and South Jeolla Province—fell below 20%. This ultimately transitioned into large-scale socioeconomic drought, triggering a crisis over industrial water supply cutoffs at the Yeosu–Gwangyang national industrial complex, water shortages for farms, and concerns over water rationing in the city of Gwangju, causing serious conflict throughout the region. A particularly important aspect of this transition process is the "asymmetrical vulnerability" of disaster impacts. Even when the same stage of hydrological drought is reached, the scale of harm individuals experience—and the degree to which their survival is threatened—can differ dramatically depending on social and economic conditions. Compared to large corporations or urban areas with capital and alternative infrastructure, farmers, small business owners, and vulnerable populations—who have lower access to water and a higher dependence on natural conditions—bear a far more disproportionate share of drought's impact.

This program is designed to help students develop a deep emotional and rational understanding of this drought transition mechanism and its asymmetry. Through writing a role-based diary, students vividly experience—from a victim's perspective—the moment drought transitions from a weather phenomenon into a life crisis (socioeconomic drought). Through the mock public hearing role-play, students are guided to critically explore the distributive justice dilemma of "who should receive limited water first?" and the procedural justice question of "are the voices of vulnerable groups being reflected in this decision-making process?“

In addition to the process by which drought transitions from simply "no rain" (meteorological drought) through falling dam water levels (hydrological drought) into the breakdown of daily life and the economy (socioeconomic drought), instructors should guide students to clearly recognize this progression. When facilitating the role-play, instructors should ensure that discussion does not devolve into selfish arguments from any single position, but instead guide students to fairly represent the survival-based rationale and social value behind each persona. The concepts of "procedural justice" (fairness of the decision-making process) and "distributive justice" (fairness of resource allocation) should be explained using simple, age-appropriate examples for middle and high school students—such as comparing industrial water use versus agricultural water use versus household water use.

6. Instructional Considerations

Instructors should guide students to clearly recognize that drought does not end with simply "no rain" (meteorological drought), but progresses through falling dam water levels (hydrological drought) to the collapse of daily life and the economy (socioeconomic drought). During the role-play, instructors should ensure that no single position dominates the discussion with self-interested arguments, and should instead guide students to fairly represent the survival-related rationale and social values behind each persona. The concepts of "procedural justice" (fairness of the decision-making process) and "distributive justice" (fairness of resource allocation) should be explained at a level appropriate for middle and high school students, using accessible examples (e.g., industrial water use vs. agricultural water use vs. household water use).

7. References

- KBC News. (2023, March 22). Worst drought on record… “Realizing the importance of water” [Video]. YouTube. YouTube video
- K-water. (n.d.). National Drought Information Portal. National Drought Information Portal
- MBC News. (2023, May 6). “A very welcome rain”… Gwangju and Jeonnam’s drought worries are over [Video]. YouTube. YouTube video

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Topic	Drought Damage and Its Asymmetry
What will you learn?	① Be able to explain the drought transition process (meteorological→agricultural→hydrological→socioeconomic drought) and how the Juam Dam crisis unfolded. ② Be able to analyze the asymmetry of drought damage from various stakeholders' perspectives, and evaluate the dilemmas of water resource allocation from a procedural and distributive justice standpoint.

1 Writing a Juam Dam Drought Role Diary

- Check the role card you have been given. Imagine it is the winter of 2022, Juam Dam's storage rate has fallen below 20%, and "socioeconomic drought" has fully set in. Write a diary entry describing your day in this situation. Think about the greatest crisis you are currently facing as a result of the drought transition.

2 Mock Public Hearing on Juam Dam Water Allocation

Write down and discuss the reasons why you believe your group should receive priority allocation of Juam Dam's remaining water, as well as any conditions under which you would be willing to compromise for the sake of mutual coexistence with others.

1. From your group's position, what are the most urgent reasons for receiving water? (Consider: right to survival / economic hardship / public interest)

2. When you heard other stakeholders' positions, what reasons did you find hardest to refuse?

3. If you were to establish a "fair standard for water allocation" that everyone could accept, what principle should be the most important?