

Hazard Literacy Center

Hazard Literacy Education Program

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Factory Fires: Root Causes, Real Solutions



1. Program Overview

This program is a disaster-education unit centered on factory-fire cases, exploring factory fires as industrial disasters. Learners identify the causes of a fire through news-article analysis, and then, in the ZEP metaverse space, take on the role of a detective to explore the fire scene and infer its causes. They then engage in a decision-making activity to establish incident response and recurrence-prevention measures. The program is designed to help students understand fire not simply as an accident but as a complex disaster combining structural safety-management failure with social context.

Grade Level	High school grades 1–3	Instructional Methods	Lecture, ZEP exploration, role-play, presentation
Learning Environment	Classroom with smartphone/tablet access (internet required)	Duration	Total 100 minutes (50 min × 2 sessions)
Required Materials	ZEP-capable device (one per student recommended), printed news-article materials, worksheet		

2. Learning Objectives (Hazards Literacy Framework)

① Explain the physical/chemical causes of factory fires (ignition source, combustible materials) and their social causes (lax oversight, inadequate safety training, poor safety management).
② Collect and analyze disaster-scene information through metaverse exploration and infer causes.
③ Propose policy alternatives for incident response and recurrence prevention, and explain their rationale.

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

3. Key Concpets

· The three elements of fire: fuel, oxygen, and an ignition source (the fire triangle)

· Characteristics of lithium-battery fires: thermal runaway, the limits of ordinary fire extinguishers

· Industrial disasters and the Serious Accidents Punishment Act: the legal responsibility of employer

· The vulnerability of dispatched and migrant workers: inadequate safety training, absence of evacuation information

· The multilayered nature of disaster causes: physical causes + management failure + institutional gaps

· Policy tools for preventing recurrence: strengthened oversight, mandatory safety training, upgraded fire-extinguishing equipment standards

4. Program Sequence

Learning Activities	
Introduction	·Introduction: Present a news video or article about a large-scale factory fire ·Prompt: "Is a factory fire simply an accident, or a disaster that could have been prevented?" ·Provide an overview of the fire: date and time, location, extent of damage, etc.
Inquiry1	·News-article analysis activity: read an article related to the cause of the fire ·Classify causes: physical causes / institutional causes / management causes ·Share classification results and teacher supplementary explanation
Inquiry2	·Access the ZEP metaverse: detective mode — explore a virtual factory-fire scene ·Collect clues at the scene (placement of safety equipment, evacuation route signage, fire extinguishers, worker positions, etc.) ·Each group writes a cause-analysis report (via in-ZEP mission format) ·Establish and present an incident-response plan plus three core recurrence-prevention policies ·Evaluate and discuss other groups' policies
Wrap-up	·Reflective discussion — "What did our society learn from this fire?" ·Complete the worksheet

5. Theoretical Background and Activity Design for Disaster Education

Factory fires have recently occurred repeatedly: the fire at an Incheon machinery-manufacturing factory on June 16, 2026; the fire at a Hanwha Aerospace worksite in Daejeon on June 1; the fire at a Daejeon auto-parts manufacturing factory on March 30; and the fire at the Kumho Tire Gwangju plant on September 4, 2025. A variety of causes have been identified, including the absence or malfunction of safety equipment such as sprinklers, insufficient spacing between factories and the accumulation of combustible materials, high-risk work environments, blind spots in fire-safety inspections of small factories, and the omission of safety training for workers. From the perspective of social studies education, these cases are a rich educational resource that can comprehensively address, alongside the physical causes of fire, workers' right to work in a safe environment, corporate safety responsibility, and laws related to industrial-disaster prevention and workplace safety management.

6. Instructional Considerations

- Since this deals with an incident involving real victims, anonymize the company/region name when presenting articles, and have the teacher pre-select any photos/videos provided.
- When addressing the fact that factory workers were among the affected group, set ground rules in advance so that no hate speech or bias is expressed.
- In the role-play activity, encourage students to freely propose creative ideas rather than prioritizing policy feasibility.

7. References

- https://biz.heraldcorp.com/article/10772447?ref=naver
- https://www.khan.co.kr/article/202606161645011
- https://www.donga.com/news/Society/article/all/20260602/134033028/2
- https://www.sisain.co.kr/news/articleView.html?idxno=58000
- https://www.sisain.co.kr/news/articleView.html?idxno=57614
- https://www.gjdream.com/news/articleView.html?idxno=661361
- https://www.imaeil.com/page/view/2024082310381168626

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Topic	
What will we learn?	

① Opening Reflection

Are factory fires simply an accident, or is it a preventable disaster?

② Inquiry: Reading a News Article on a Factory Fire and Analyzing Its Causes

Title of the article our group chose: _____

Overview		
• Location: • Date and time: • Extent of damage:		
Physical Causes	Institutional Causes	Management Causes
1. 2. 3.	1. 2. 3.	1. 2. 3.

◆ The above causes acted ( ) to bring about the factory fire.

4 Inquiry: Finding the Cause of the Factory Fire Through ZEP Exploration

	Clue found	Cause of the factory fire
Clue 1		
Clue 2		
Clue 3		
Clue 4		
Clue 5		
The cause of the fire at ▢▢ Factory		

5 Discussion: Preventing and Responding to Factory Fires

After a factory fire occurs, how can it be handled and responded to effectively, and how can such fires be prevented?