

Extreme weather events in the news

Educational Activity with the Use of ICT Tools and Augmented Reality (AR)

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The content is based on the Traditional Educational Material (TEM)

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IN A NUTSHEL



Overview

In this activity, students explore the connection between climate change and extreme weather events using advanced ICT applications, Augmented Reality (AR) and Gamification Tools. Through digital content and hands on activities, they will gain insight into how events like hurricanes, floods, heatwaves, and wildfires disrupt ecosystems, economies, and societies.



9+ years old



By the end of this activity, students will be able to:

- Explain the concept of "extreme weather events."
- Describe the connection between climate change and extreme weather events.
- Identify some real-world impacts of such events on ecosystems, economies and communities.
- Develop research and information-gathering skills, as well as synthetic skills.



Language studies, Geology/Earth Sciences, Science, STEM, AR/ICT



3 class hours (classroom setting)

4 hours (outdoor setting)



Teacher Preparation:

Prepare ICT tools (PC/ tablet, projector, Wi-Fi, interactive board, AR apps)

Set up the classroom for group work

Familiarize yourself with the ICT software, including datasheets and links

Print the live poster in color and high resolution

Test one QR code and marker in advance to check if everything loads

Review all materials and worksheets

Prepare guiding questions and feedback prompts



Teaching Methods

Inquiry-Based Learning (Students explore concepts through questioning, experimentation, and data analysis).

Visual learning (Students use of diagrams, AR visuals, simulations, and posters to support understanding)

Collaborative Learning

Technology enhanced learning (ICT tools, AR apps, Spreadsheets, and online sources)



Materials / equipment

PC/laptop, Video projector/screen, Wi-Fi, Interactive board

Smartphone/tablet, AR app

Poster with image markers and QR codes

Worksheet and Pens

STEP BY STEP

Extreme weather events in the news

Part A: Learning Activities in the Classroom Setting

1st Phase: Activation / Prior Knowledge Investigation

Activity goal: Students will explore recent headlines about extreme weather events (e.g., hurricanes, floods, wildfires, heatwaves, and cyclones), discuss their causes and impacts, and reflect on how communities respond and adapt.

Setting: Classroom (In-Class)

Estimated duration: 15 minutes

Mode of Student Work: Individual thinking and whole-class work

Instructions for the teacher:

Use a **projector or interactive whiteboard** to display the following headlines presenting extreme weather events:

- <https://theconversation.com/greeces-record-rainfall-and-flash-floods-are-part-of-a-trend-across-the-mediterranean-the-weather-is-becoming-more-dangerous-213164>
- <https://greenly.earth/en-us/blog/ecology-news/medicanes-the-dangerous-storms-in-the-mediterranean>
- <https://www.climatecentral.org/climate-shift-index-alert/climate-shift-index-alert-mediterranean-june-2024>
- <https://www.pressreader.com/usa/the-guardian-usa/20240916/281526526441411>
- https://www.theguardian.com/environment/2023/jul/26/northern-hemisphere-heatwaves-mediterranean-fires-croatia-portugal?_hsenc=p2ANqtz--OCjzVPGMeBunEBCYO8BxEV2GGucHMCP2toRt5xWQQ3-EblzzEwZcDqUpY4zgMlpxFwhjd
- <https://www.aljazeera.com/news/2023/7/26/soaring-mediterranean-temperatures-bring-death-and-destruction>

Ask students to fill out the **Worksheet 1** by recording key information about the event, including the type of event (e.g., flood, wildfire), its location, and its impacts (e.g., damage, evacuations).

Each group presents their headline and findings to the class. Encourage students to:

- Compare different types of events.
- Discuss patterns (e.g., more wildfires in certain regions).
- Reflect on how climate change might be influencing these events*.

*Teachers can use the Toolkit table to organize the relative information

2nd Phase: Exploration

Activity goal: To introduce students to the concept of extreme weather events and help them identify examples and key characteristics.

Setting: Classroom (In-Class)

Estimated duration: 30 minutes

Mode of Student Work: Students work in groups to complete the task collaboratively, whole-class discussion

Instructions for the teacher:

Encourage students to actively participate by contributing vocabulary related to extreme weather events and their impacts.

Divide them into two groups:

- Invite each student of the first group to say one word describing an extreme weather event (e.g., hurricane, flood, and drought).
- Invite each student of the second group to say one word describing its impact (e.g., destruction, evacuation, rescue, damage).

Create the following class word cloud using word art: (1) Types of Events, and (2) Impacts and Responses

Instructions for using Word Art (<https://wordart.com/>):

Go to [www.wordart.com](https://wordart.com/)

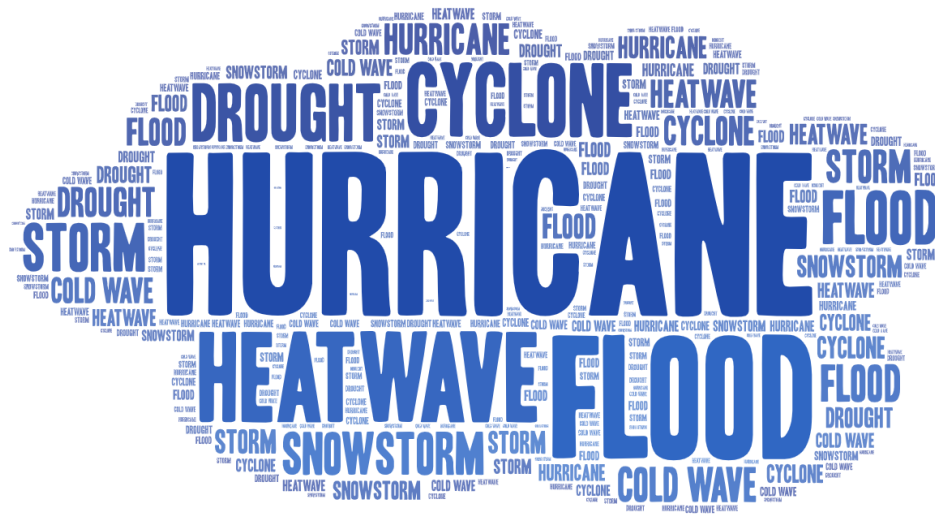
Click **“Create Now”**

In the **“Words”** tab, type or paste the words collected from your class discussion.

Choose a shape (e.g., cloud, globe, storm icon), font, and color theme that fit the topic of extreme weather.

Click **“Visualize”** to generate your word cloud.

When satisfied, click **“Download”** or **“Share”** to display it in class



Ask students to look each our word cloud and the WMO definition of “extreme weather events” — “weather that is rare at a particular place and time of year with unusual characteristics in terms of magnitude, location, timing or extent” — which of the words we identified best illustrate these ideas?

Invite students to add more examples of extreme weather events: Flood, drought, hurricane, cyclones, snow storms, heat waves or cold waves, storms, etc.

Ask students to fill out the [Worksheet 2](#) to support them in developing language awareness and conceptual understanding related to extreme weather events. The worksheet helps students to:

- Identify and record key terms connected to the topic (e.g., flood, drought, and storm).
- Understand each term’s meaning, usage, and context.
- Connect words with visual or real-world examples, enhancing comprehension.
- Strengthen cross-linguistic connections by comparing terms across languages (e.g., English, Greek, Italian, French).

The TEM material explains that:

Write on the board the key terms they mention, leading to the concept of "extreme weather events". Help the students provide a clear definition of the term. The World Meteorological Organisation defines extreme weather events as: “Weather that is rare at a particular place and time of year with unusual characteristics in terms of magnitude, location, timing or extent. Research indicates all the risks from these extreme weather events will escalate the more the planet warms” (<https://wmo.int/topics/extreme-weather>).

3rd Phase: Concept Introduction / Explanation

Activity goal: Students explore different types of extreme weather events and understand how climate change can intensify their frequency and impact.

Setting: Classroom (In-Class)

Estimated duration: 25 minutes

Mode of Student Work: Students work in groups to complete the task collaboratively, whole-class discussion

Instructions for the teacher:

Give each student group a [Poster](#) that includes four (4) marker images with QR codes.

Each QR code links to an AR object representing a different mode of extreme weather events intensified by climate change.

Ask students to scan the QR codes on:

Marker Image 1

Marker Image 2

Marker Image 3

Marker Image 4

Distribute [Worksheet 3](#).

Students, after viewing Blippar clips respond to the following questions:

1. What do I see? (Observation – Describing the image)
 - What is happening in the image?
 - What kind of weather or natural event can you identify?
 - What do you notice about the environment (water, buildings, streets, people, e.tc.)?
 - How do the people seem to react? What emotions do you see?
2. What is changing? (Analysis – Noticing transformation or effects)
 - What has changed in this place because of the extreme weather event?
 - How might the extreme weather event affect daily life (homes, schools, transport, jobs)?
 - What signs of damage or adaptation can you identify?
 - Can you imagine what this area looked like before the extreme weather event?
3. Why do I think this is happening? (Interpretation – Making sense of causes and connections)
 - What could be the causes of this extreme weather event?
 - How might climate change or local geography contribute to it?
 - Do you think this has happened before in Italy or other Mediterranean countries?
 - What actions could help prevent or reduce the impact of such floods in the future?
4. Connecting to our context (Reflection – Linking to students' lives)
 - Have similar events happened in your country or region?
 - How do communities prepare or respond to flooding where you live?
 - What can we learn from this image about resilience and cooperation?

Finally, encourage students to share observations in their groups and clarify the following questions:

- *How do extreme events affect ecosystems, economies, and communities differently?*
- *What does this tell us about the need for climate adaptation and resilience planning?*

Bring the class together to share key findings.

The TEM material explains that:

Students undertake online research in articles, videos, or reliable websites to gather information on three events of the type they are assigned, having occurred in the Mediterranean. Each group creates a report including the “name” of the event, when and where it happened and an explanation of how the event connects to climate change.

After each group presentation, have a brief discussion about the common themes and how climate change ties into each event. Provide examples, highlighting the relationship between rising global temperatures and the frequency or intensity of these events.

Examples of resources:

- Warmer oceans fuel stronger hurricanes (Explainer: How hotter oceans can fuel more intense Atlantic hurricanes - Carbon Brief, Study: Ocean warming has intensified recent hurricanes | Climate Central, Bing Videos).
- Hotter climates lead to longer droughts and more intense heat waves (How climate change worsens heatwaves, droughts, wildfires and floods, How climate change drives hotter, more frequent heat waves | Grist, <https://www.nasa.gov/centers-and-facilities/goddard/warming-makes-droughts-extreme-wet-events-more-frequent-intense/>
- Higher temperatures dry out forests, increasing the risk of wildfires (Wildfires and climate change: What's the connection? » Yale Climate Connections, Climate change increases the risk of wildfires confirms new review | Science Daily)».

4th Phase: Analyze experimental data (Application/Elaboration)

Activity goal: Students will examine images showing the aftermath of extreme weather events and collaboratively reflect on how these events affect humans and animals

Setting: Classroom (In-Class)

Estimated duration: 20 minutes

Mode of Student Work: Students work in small groups to complete the task collaboratively

Whole-Class Discussion

Instructions for the teacher:

Create a Padlet with sections for each type of extreme weather event (e.g., Floods, Wildfires, Heatwaves, and Droughts). On Padlet, they will:

- Upload the image (if not already posted).
- Describe what they see in the image.
- Brainstorm and post how humans and animals (domestic or wild) might be affected.
- Use bullet points or short paragraphs.

Ask students to comment on at least one other post, adding ideas or asking questions

Encourage them to share observations in their groups and clarify the following questions:

- *Why do you think these events are becoming more frequent or intense?*
- *What recovery strategies are being used.*

Instructions for using Padlet:

- Open a web browser and go to <https://www.padlet.com>.
- Log in or create a free account using Google, Microsoft, or email.
- Click the “+ Make a Padlet” button.
- Choose a layout
- Adjust Privacy Settings to Secret: Only people with the link can access.
- Click the “+” button to add a post.
- Participants can add posts, reply to each other, or leave reactions.
- Click the “Share” button to copy the link, generate a QR code, or email.
- You can also export your Padlet as a PDF, image, or spreadsheet

In the Toolkit, several additional internet sources from Greece, Italy, France, and Cyprus related to extreme weather events are presented. These resources can be used to support student tasks, spark classroom discussions, or serve as material for further reading and exploration.

5nd Phase: Exploring and Reflecting Data

Activity goal: Students apply the concepts learned during previous activities to design and build their own digital AR elements using Blippar.

Setting: Classroom (In-Class)

Estimated duration: 45 minutes

Mode of Student Work: Students work in small groups to complete the task collaboratively

Whole-Class Discussion

Instructions for the teacher:

Explain students they will create their own interactive Blippar AR experience.

They will integrate text, images, videos, or other multimedia elements to communicate a concept related to extreme weather events

Encourage students' creativity and relevance to their own lives or community.

Ask each group to design a poster background that will serve as the AR marker.

Guide groups to present their Blippar creations to the class.

Facilitate a whole class discussion:

- What message does each AR experience convey?
- How effectively does it communicate the concept?
- What improvements or additions could enhance the experience?

To enhance the pedagogical value of this activity, accompany it with a guided reflection after each group presentation by asking students to complete the Table in [Worksheet 4](#).

After each group's presentation, invite a short class discussion or personal reflection using questions such as:

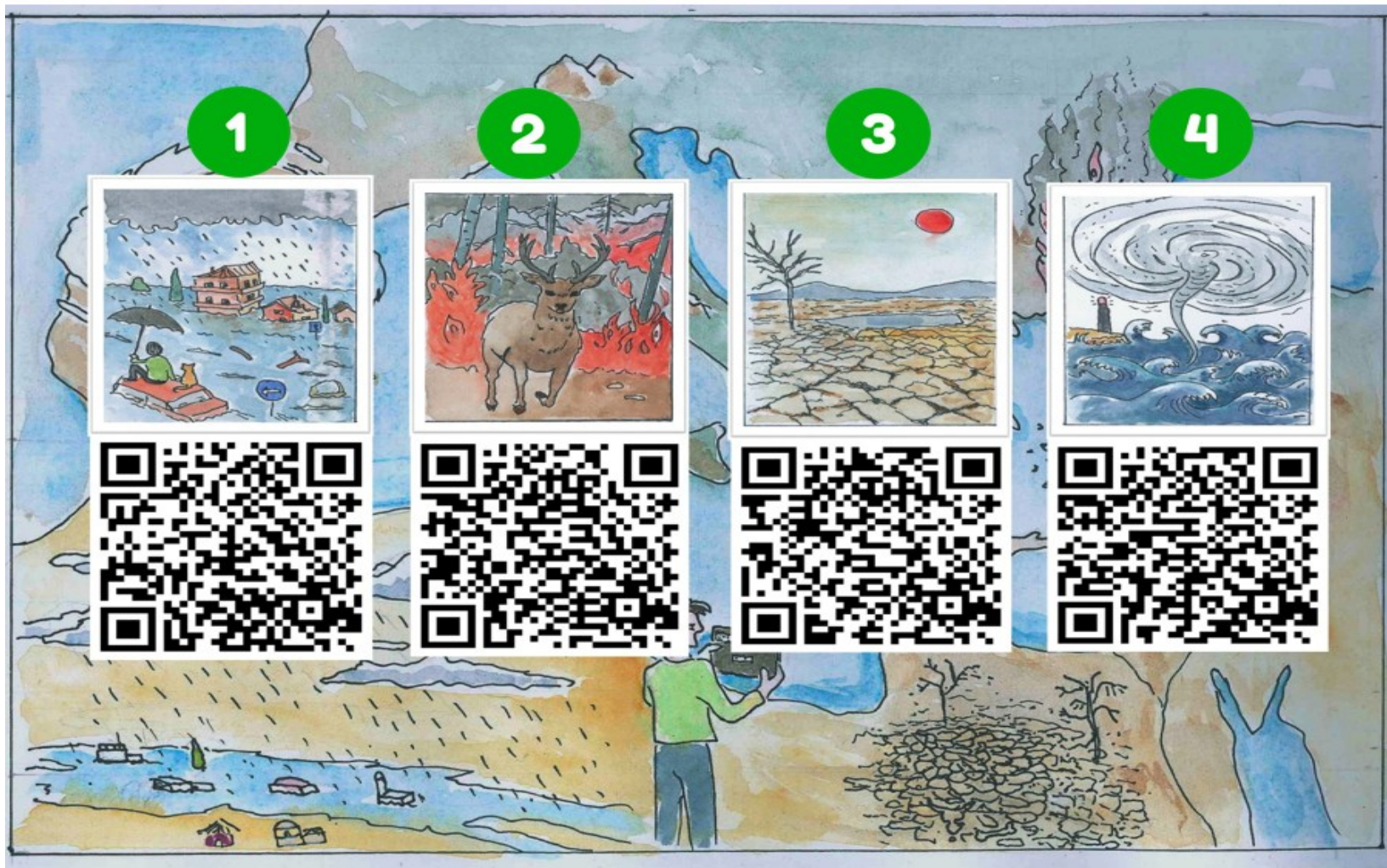
For the presenting group:

- What did we learn while creating our AR experience?
- What challenges did we face and how did we solve them?
- What would we change or improve if we could do this project again?
- How does our AR experience help others understand extreme weather events or climate change?

For the whole-class:

- What message did this group communicate most clearly?
- Which AR feature or idea did you find most creative or powerful?
- How does this project relate to climate change issues in our own community or country?

Poster



Worksheet 1

Group Name: _____



After exploring, the graph write down your answers to the following questions:

1. Fill out a short worksheet with:

Event type (e.g., flood, wildfire)	Location	Impact (e.g., damage, evacuations)
1.		
2.		
3.		
4.		
5.		
6.		

Worksheet 2

Group Name: _____



After identifying the type of phenomenon, found synonyms and related words, and wrote a brief description in your own:

Word	Type of Phenomenon	Synonyms / Related Words	Brief description (in students' own language)
Flood			
Wild Fires			
Heatwave			
Storm			

Worksheet 3

Group Name: _____



For each type of extreme weather event listed below, check the observed impacts:

Environmental/Ecosystem Impacts:	Floods	Wildfires	Heatwaves	Storm
Loss of biodiversity	☐	☐	☐	☐
Deforestation	☐	☐	☐	☐
Soil degradation	☐	☐	☐	☐
Water pollution	☐	☐	☐	☐

Economic Impacts	Floods	Wildfires	Heatwaves	Storm
Damage to infrastructure	☐	☐	☐	☐
Damage to agriculture	☐	☐	☐	☐
Damage to livelihoods	☐	☐	☐	☐
Damage to local industries	☐	☐	☐	☐

Social and Community Impacts	Floods	Wildfires	Heatwaves	Storm
Displacement	☐	☐	☐	☐
Health risks	☐	☐	☐	☐
Effects on education	☐	☐	☐	☐
Effects on well-being	☐	☐	☐	☐

Worksheet 4

Group Name: _____



Complete the table for peer assessment after each presentation

Evaluation Criteria	Description	Rating (1 Low to 5 High)				
Clarity of Message	The AR element communicates a clear, focused message about an extreme weather event.	1	2	3	4	5
Relevance to Climate Change	The content connects meaningfully to climate change causes, effects, or local experiences.	1	2	3	4	5
Creativity and Innovation	The group uses visuals to engage the viewer.	1	2	3	4	5
Collaboration	The group worked cooperatively and shared tasks effectively.	1	2	3	4	5
Technical Integration	The Blippar AR functions properly and integrates multimedia elements coherently.	1	2	3	4	5

Annex



Source: <https://www.rte.ie/news/2023/0518/1384372-climate-italy-weather/>



Source: <https://www.pulseheadlines.com/drought-eastern-mediterranean-worst-drought-recorded/19279/>



Source: <https://www.bbc.com/news/world-europe-59075043>



Source: <https://www.theguardian.com/world/2023/sep/15/what-are-medicanes-the-supercharged-mediterranean-storms-that-could-become-more-frequent>

Part B: Outdoor Learning Activities

ACTION BOUND: Extreme weather effects



Bound: Extreme weather effects



Get the Actionbound app for free in the Apple App Store or at the Google Play Store

Scan the QR code with the Actionbound app



Extreme weather effects



Scan this QR code with the Actionbound app to start the Bound

The white area surrounding the QR codes should remain so that they can be scanned reliably, Just cut along the dashed lines.

QR code tasks



Find an object that symbolizes dr...

Your are amazing Agents! Now, I ...



Physical & Augmented Reality for Climate Change Education



Co-funded by
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1st Experimental
Primary School of Pyrgos
Wonder is the seed of knowledge



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