

STEM in

LESSON PLAN

Mini erupting volcano

In this activity pupils will learn about volcanic eruptions and their effects on nature and people. They will create a simple volcano model using basic materials such as baking soda, vinegar, food coloring and modeling clay.

**Recommended
age for this
game**

6-9 years

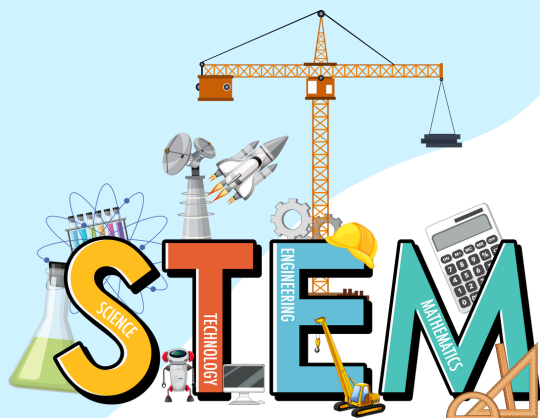
**45-60
min**

Duration



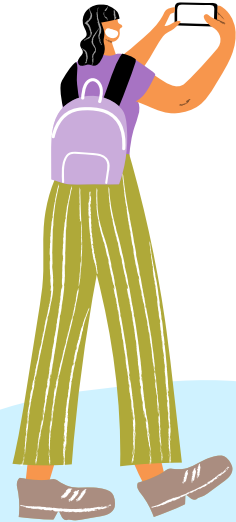
**Learning
Objectives:**

- Pupils will understand the process of volcanic eruptions and its effects on animals and humans.
- Pupils will create their own practical model of a volcano and calculate the time of eruption, recording its eruption.



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Materials and tools needed:

- baking soda;
- vinegar;
- food coloring;
- modeling clay or aluminum foil;
- plastic bottle (if you want stability, but it is not necessary);
- a tray, plate or container in which the experiment will be performed;
- mobile phone or tablet (for data recording).

Guidance for Teachers

Activity description

In this activity pupils will create a volcano using modeling clay, baking soda, vinegar and food coloring to understand how it erupts. Pupils will be able to calculate how long it takes to erupt and compare their results with their friends. They will record their eruption on video and upload it to the Padlet online platform. This activity is designed to encourage pupils' curiosity, experimentation, and application of STEM concepts using physical and digital tools.

STEM in

Guidance for Teachers



Preparation

- Gather materials (the amount depends on the number of pupils and whether they will work individually, in pairs or in groups): baking soda, vinegar, food coloring and plastic bottle. Ask the children to bring modeling clay.
- Prepare a presentation about a volcanic eruption (see the video in references).
- Prepare worksheets (see Annex 2 and Annex 3) and clear instructions on how to perform the experiment, take care of safety and make sure every child has the right tools.

Implementation steps

- Briefly describe and illustrate visual material about volcanoes. What they are and what their eruptions look like, what damage they can do. You can name the most famous volcanoes, for example: Vesuvius, in Italy, etc.
- Divide pupils into pairs or groups (according to their learning ability), assign responsibilities to each, and let them experience success.
- Introduce the workflow, that first the pupils will have to construct a model of the volcano, then perform and record the experiment (will add baking soda first, then mix vinegar with food coloring and prepare to pour into your crater) and finally place the recorded material on the Padlet platform (see references)
- After finishing the work, prepare for the presentation of your volcano model, self-evaluation of how well the pupils did.





Technology integration

Let pupils use a digital tool like mobile phone or a tablet computer so that they record the time of the volcanic eruption and the experiment themselves. Teach children how to use the Padlet online platform ([see references](#)). Discuss any differences between the real-world and digital circuit results.

Follow-up and reflection

Interactive Quiz. Create an interactive quiz (e.g., Kahoot, Baamboozle, or similar) to test pupils understanding of the volcanic eruption STEM lesson. Questions could cover topics such as what volcanoes are, the types of volcanoes and related subjects ([see Annex 1](#)).

Assessment. Review pupils' worksheets to evaluate their understanding of volcanic processes and their reflective answers about what they've learned during the lesson.

Discussion. Ask pupils to share the challenges they faced while conducting the volcanic eruption experiment and how they overcame those challenges.



Pupils Activities

Activity description	Expected outcome	Technology integration
Understand. Theory and videos	Pupils will understand how volcanoes work and will be able to create a functional volcano model.	Smart board, Canva program or other interactive tools for depicting volcanic eruptions
Group project: volcano model	Pupils will apply their knowledge to design a functional volcano model.	Use a mobile phone or tablet for recording experiment and sharing (e.g., Padlet platform).
Interactive Quiz about volcanoes	Pupils will reinforce their learning through assessment and feedback.	Use an interactive quiz platform like Kahoot or Baamboozle for knowledge testing and instant feedback.
Volcanoes eruptions experiment	Pupils will learn how to observe and analyze a volcano eruption and assess the duration.	Use timer tools and video recording technologies to accurately observe eruption duration.
Pupils presentations	Pupils will understand how to properly conduct an experiment and present their results.	Use video recording and editing tools to capture and share their experiment (e.g., YouTube, Padlet).



Reflective questions for pupils

- What did you learn about volcanoes today that surprised you?
- How could you apply what you learned about volcanic eruptions to a real-world situation?
- What challenges did you face while working with the materials or technology when creating the volcano model? How did you solve these challenges?
- If you were to repeat this experiment, what changes would you make to improve the results or make the experiment more interesting?
- What factors do you think most influenced the duration and intensity of your volcano models eruption?



Differentiation ideas

- Encourage advanced pupils to research different types of volcanic eruptions (e.g., effusive vs. explosive) and their causes, then present their findings to the class.
- Challenge them to create a more complex volcano model, perhaps simulating multiple eruption types or including detailed geological layers.
- Encourage them to create a multimedia presentation, incorporating video, animation, or interactive elements to explain their findings.

For pupils with special needs:

- Provide step-by-step instructions with visual aids or simplified language to help them follow the experiment more easily.
- Offer additional hands-on support or assign a peer buddy to guide them through the experiment.
- Allow for repeated practice or breaking the experiment into smaller, manageable steps with frequent check-ins to ensure understanding.



- Provide clear instructions.
- Demonstrate how to build a volcano before pupils begin.
- Promote teamwork among pupils.
- Walk around the classroom regularly to offer support.
- Acknowledge each pupil's success.

Additional materials and references

[Video for kids: Volcano](#)

[How to make a clay volcano](#)

[Volcanoes: resources for teachers](#)

[Erupting volcano experiment](#)

[How to use padlet](#)



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ANNEX 1

Questions for the quiz

1. This is a volcano that may erupt at any time.

- a) Dormant volcano
- b) Active volcano (Correct)**
- c) Extinct volcano
- d) Basic volcano

2. True or false? Volcanoes only exist on land.

- a) True
- b) False (Correct)**

3. What is the tallest volcano in the world?

- a) Mauna Kea, U.S. (Correct)**
- b) Tambora, Indonesia
- c) Etna, Italy
- d) Nikko-Shirane, Japan

4. Where does the word “volcano” come from?

- a) Star Trek
- b) Volume
- c) The god Vulcan (Correct)**
- d) From starlight

5. What kind of energy do volcanoes produce?

- a) Wind energy
- b) Solar energy
- c) Wave energy
- d) Geothermal energy (Correct)**



[Quiz link](#)

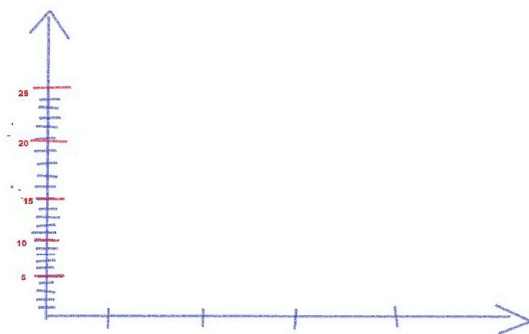
ANNEX 2

Experiment worksheet

Experiment worksheet

Row no.	Vulcanoes	Eruption path (cm)

DIAGRAM



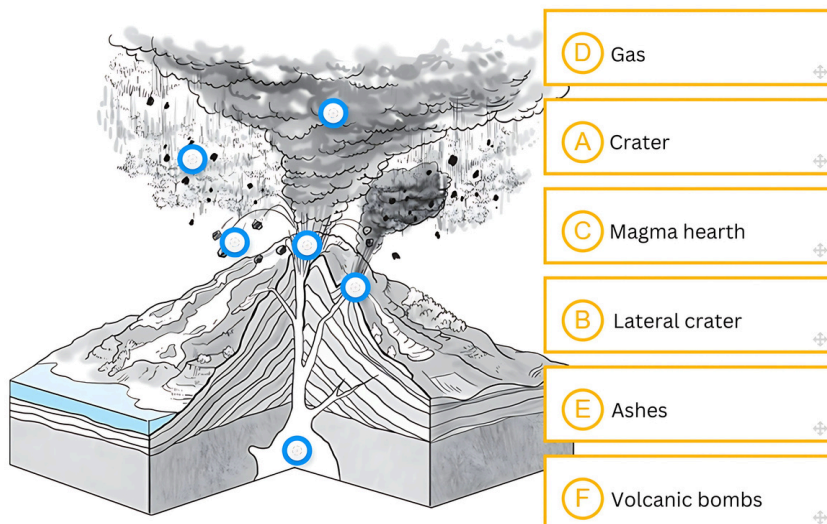
ANNEX 3

Worksheet

GROUP WORKSHEET

Names of group members:.....

1. In the section diagram of the volcano, write the letters that correspond to the structure of the volcano.



2. Write in the table what benefits or harm volcanoes can cause:

BENEFIT (+)	DAMAGE (-)