

About the activity

Title: Learning About Volcanoes

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Brief Description: This is an introductory activity about volcanoes. Students learn about their main features, their creation and the effects of volcanic eruptions to humans.

Subject Domains: Environmental Education, Geography And Earth Science

Keywords: volcanoes, tectonic plates, citizen protection, natural disasters, natural phenomena

Age Range: 11-1213-1415-16

Didactical Hours: 3-4 didactical hours

Links to activity: This activity uses the Go-lab platform – [Learning About Volcanoes](#)

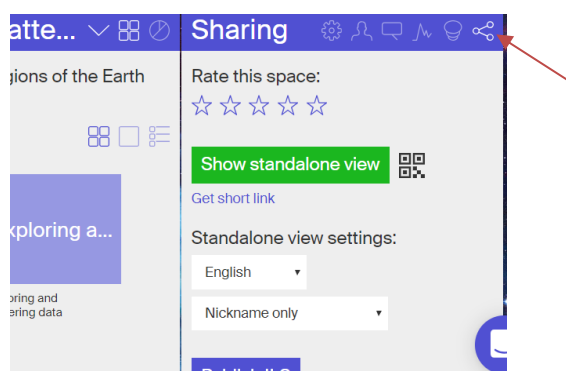
This activity was developed using the Go-Lab platform (www.golabz.eu). This platform allows you to directly present an Inquiry activity to your students where, using a digital device, they can independently follow all the steps and answer to questions in real-time, experience online labs and simulators and keep a record of all the interactions and work. Using this platform, you will have access to a “backstage” page where you can track the work done by your students in the platform.

To use these ILS spaces follow the steps bellow:

1. Create an account on graasp.eu (if you don't have one already)
2. Access the activity: Through the link in the language you want (above)
3. Click on “duplicate space” – the platform will then create a copy of the activity which will be yours, so you can edit it and adapt it in any way you want. Only you will be able to see it.

After having created your copy of the activities, you can enter each of them and get the link to share with your students by doing the following:

1. Enter the Inquiry Space you have just copied
2. Click on the “share” option as illustrated by the arrow in the picture below



3. Click on “standalone view” – this will be the link to share with your students.
4. Finally, share the link of the lesson(s) with your students.

By following the steps above you will be able to edit anything you want regarding the activity, which means that it will be up to you which parts to include and/or exclude. You can edit anything you want to better serve your purposes. Good luck!

Additional support for using the Go-Lab platform: <http://support.golabz.eu/>

This activity uses the PLATON's Inquiry Cycle, organized as a set of seven interconnected phases. You can access the complete set of inquiry components in the form of flip cards, or choose to see the content of each one separately on the PLATON website.

Big Ideas of Science



Heat and Thermodynamics > Forms, conservation of energy and energy transfer > Energy

Volcanoes and volcanic eruptions produce massive amounts of energy in the form of heat. It is the natural way of Earth's energy to escape from the core to the surface of the planet.

Gravitation and its effects < Types of interactions < Fundamental Forces

Volcanoes have magma chambers filled with lava. New lava filling a magma chamber beneath a volcano makes a clock located above that volcano tick more slowly than a clock that is located further away according to General relativity. Thus, atomic clocks can help scientists predict large scale volcanic activity.

Weak nuclear interaction and its effects > Types of interactions > Forces

The heat that activates volcanoes on the surface of the Earth comes from radioactive activity taking place at the core of the planet.

Structure and properties of organic/inorganic molecules > Structure and properties of matter > Particles

Volcanic eruptions bring to the surface of the Earth an abundance of elements and compounds. Some of them are fundamental for forming life at earlier eras on the planet. Other can be deadly and cause poisoning within minutes.

Earth and other planets > Earth and the solar system > Universe

Many other planets and moons of our solar system have volcanoes. Other planets and moons (like Io) have volcanoes as well. In many cases these volcanoes are multiple times bigger than Earthly volcanoes.

Evidence of common ancestry and diversity > Biodiversity > Evolution

Volcanoes seem to have played a key role at the formation of life. Volcanoes brought to the surface of the Earth organic compounds and elements that are fundamental for the formation

of life while they also produced massive amounts of heat in concentrated spots which is also necessary for life to form. Additionally, massive volcanic eruptions in the past have contributed in the heating up of the planet and the formation of the atmosphere as we know it.

Internal structure, tectonic plates and large-scale system interactions > Earth's materials and structure > Earth

Volcanoes and volcanic eruptions shape the surface of the Earth throughout the ages. They can even form new lands. Throughout the history of the Earth, new lands have emerged thanks to volcanic activity. Volcanic islands like Azores are an example.

Weather and climate > Earth's Climate > Earth

Volcanic eruptions cause short-term climate changes and contribute to natural climate variability. Major eruptions alter the Earth's radiative balance because volcanic aerosol clouds absorb terrestrial radiation and scatter a significant amount of the incoming solar radiation, an effect known as "radiative forcing" that can last from two to three years following a volcanic eruption.

Additional Hands-on activity

You can do one additional hands-on activity to help your students understand the physics behind the impact of meteorites. You can even make this your introductory activity to the project.

Take a large pan and fill it with white powder sugar or flour so you can make a thick layer. On top add a thinner layer of cocoa. Alternatively, you can use different materials, like sand for example, but make sure that your layers are thick and that your top layer is a different colour so that students can tell how material from the inner layer come to the surface after an impact. You can add more layers if you want. The pan represents the planet and the surface the meteorites impact on. Give your students plasteline and ask them to make meteorites. They can make different shapes and sizes. Then ask your students to throw the meteorites on the surface and see what happens. Encourage them to throw the meteorites with different angles and with different velocities. Ask them to write down their observations and investigate what roles does the meteorite's shape, size, speed and angle of entry play on the crater created.