



## GEAR (Global and Environmental Awareness and Responsibility) – a Toolkit for Inclusive Environmental Education

Project Element: Earth

Age: 6th graders

### THE CHANGING EARTH

6th graders have been working the whole term on the **Planet Earth**.

The unit focuses on some processes that change Earth's surface slowly, over a long period of time, or abruptly. In order for students to develop an understanding that the surface is constantly changing, they take part in a variety of guided inquiries geared towards scaffolding this understanding. Students explore the structure of the Earth and internal and external factors that cause changes to it. These processes include earthquakes, volcanoes, landslides, plate tectonics (the Theory of the Continental Drift), faults and folds, water and wind.

Here will appear just 3 easy to carry out experiences they have done in class.

### INTERNAL STRUCTURE OF EARTH

Students learn about the internal structure of Earth through different types of resources: text book, videos from the internet .... and did all sort of activities.

- They organized the information they got in graphic organizers:



**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



- They built a model:



**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



## THEORY OF THE CONTINENTAL DRIFT

Movement of the Continents: process called "Plate Tectonics"



The land that is moving is the Earth's surface (LITHOSPHERE). The lithosphere moves in big chunks of land called tectonic plates. Some of these plates are huge and cover entire continents.

But, **why do Tectonic Plates move?**. We cannot look inside the Earth so it is difficult to make hypothesis.

Students, in collaborative groups, carried out a hands on activity, following the scientific method, to help them develop an understanding of the process taking place.

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**

## GUIDELINES FOR TEAMWORK

1. Listen to each other and share your ideas:
  - Everyone has something to say.
  - Respect all the ideas of your teammates
2. Reach to agreements:
  - having different ideas enriches us.
  - Ready to listen to your teammate ideas, even if they are contrary to ours. After examining all the ideas we will decide if they are suitable.
  - We will not always agree. In such cases we will notice that we do not agree with respect. without harming anyone. We can use these type of sentences:
    - I'm sorry. I don't agree with you, but ....
    - Maybe you're right, but ....
    - I think that's a good idea. what if we add ....?
    - Perhaps it is better .....
  - We have to be open and supportive and we have to admit that others' ideas can be better.



**Process:**

Put 1 litre of cold water and some cork stoppers in a saucepan or in a beaker. What's the temperature of the water? And what happens?  
 Heat the water to 60 degrees. What happens?  
 Increase the temperature of the water. What's the temperature? What happens?  
 Increase the temperature of the water. What's the temperature? What happens?

*Observe and register:*

TEMPERATURA	KORTKORTAREN EGGERA	
	SELDI	MUGIMENDUAN

*Make an inference (interpret the data):*

---

*Bearing in mind the subject under study, formulate a hypothesis:*

---

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



Watch the documentary and answer the questions:

1. What is the main purpose of the documentary?

2. How do the scientists in the documentary describe the impact of climate change on the environment?

3. What are the main causes of climate change according to the documentary?

4. How can we reduce our carbon footprint according to the documentary?



<https://vimeo.com/149230352>

Bearing in mind the information given in the documentary and your answers: would you change or maintain your hypothesis?



**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**

# HOW ARE MOUNTAINS FORMED?

## RESEARCH

### MATERIALS AND TOOLS

- 6 CLOTHS.
- A TABLE.
- A PHONE OR A CAMERA.



### STEPS TO FOLLOW

- Place the cloths one on top of the other on the table.
- put your hands on each side of the cloths and slowly push inwards.

### OBSERVATION AND DATA RECORDING

- Take pictures of every step.

### MAKE AN INFERENCE (INTERPRET THE DATA)

1. Zure ustez, zen hiru zatetan dute bata bestearen gainean (jardake koloretan barneki)?

Lur-barruko material solidoak osatzen dituzten geruzak.

Itxaropen (lidoak osatzen dituzten geruzak).

Atmosferaen gasak osatzen dituzten geruzak.

Zuzena

Atxeratu erantzuna

Gertatu dena

3

Sarekeran

2. Zein adieraz nahi da bi erakusten dituztenak bi alibotatik indere eginez eta tolestuz eta beretik gertatzen?

Mendiak geruzak tolestuz sortzen dira.

Mendiak asko jan ozen eraldotzen diren gorritzen dira.

Zuzena

Atxeratu erantzuna

Gertatu dena

3

Sarekeran

### FORMULATE A HYPOTHESIS

Zuzena

Atxeratu erantzuna

Gertatu dena

3

Sarekeran

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



**WATCH THE DOCUMENTARY AND ANSWER THE QUESTIONS:**

- **Orain, nipotatu mantendu ala aldatu behar duzun ikusku duna.**
- **Irakasleak, mentatzen nola eragiten diren azalzen da.**
- **Zein da lehenengo erreta berria (jari behar duzun jehoteko, nekun leku honetara galdereak).**
- **Irakasle hori eta gero, azalduzu galderei eta osatu koadrilo 2. zutabea.**
- **Ondoren, adostu erantzunak (barkaberrin, eta, beharrezkoa bada, egin zuzenketak).**



(An english version:

<https://www.youtube.com/watch?v=ioqGcV1rS1g&feature=youtu.be> )

Galdereiak	Ikusitako informazioaren jentziak	Ikusitako informazioaren adierazpenak
Zer irudikatzen dute baleak?	<input type="text"/>	<input type="text"/>
Zer adierazten du horietako balea bakoitzak?	<input type="text"/>	<input type="text"/>
Zerdat urte behar dira geruza bat osatzeko?	<input type="text"/>	<input type="text"/>

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



Bearing in mind the information given in the documentary and your answers: would you change or maintain your hypothesis?

### 3 HIPOTESIEN BALIOSPENA

✎ ✉

Ereutzura gertatu   Ariketa berabiatu   Geratzen dira   Salakerak

d) Estabaldatu taidean formulatutako hipotesiak mantendu ala aldatu behar dituzuen.

✎ ✉



Ereutzura gertatu   Ariketa berabiatu   Geratzen dira   Salakerak

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



## HOW IS SAND FORMED?

Water and wind currents cause erosion.

RESEARCH	
<b>MATERIALS AND TOOLS</b>	
<ul style="list-style-type: none"><li>-Pebbles.</li><li>-Sandstone.</li><li>-Chalk.</li><li>-Pieces of iron.</li><li>- A tupper</li><li>-Chronometer</li><li>-Scale</li></ul>	
<b>STEPS TO FOLLOW</b>	
<ul style="list-style-type: none"><li>-Make 2 groups with the materials. Place one group of materials inside the tupper. Shake the tupper softly for 3 minutes. What happened? Describe what's happening with the different materials. Weigh the amount of sand and register the data.</li><li>-Shake the tupper softly for 5 more minutes and repeat the process.</li><li>-Take the second group of materials and repeat the experiment but now shake it really hard. Record the data.</li></ul>	



**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**



OBSERVATION AND DATA REGISTER			
		MAKTATEA (g)	KONPOSIZIOA
Astinaldi ahula	3 min		-Hareharia: -Hartintzarrek: -Klorona: -Burdina:
Astinaldi ahula	5 min		-Hareharia: -Hartintzarrek: -Klorona: -Burdina:
Astinaldi indartsua	3 min		-Hareharia: -Hartintzarrek: -Klorona: -Burdina:
Astinaldi indartsua	5 min		-Hareharia: -Hartintzarrek: -Klorona: -Burdina:

**MAKE AN INFERENCE**

Zer gertatzen da material bakotzarekin? Osatu esaldi hauek:

a) Klorona eta hareharia   /  /  puskatzen dira.

b) Hartintzarrek  /  dira, eta  /  /  / .

c) Burdina  /  da, eta  /  /  / .

d) Astinaldi  /  eta  /  denean,  /  sortzen da.

Zuzenki    Azaldu berrikiatu    Gertatzen dira        Saiakerak

**FORMULATE A HYPOTHESIS**

Ez dago gertatzen     Azaldu berrikiatu    Gertatzen dira     Saiakerak

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**

## Read the text and answer the questions

**HAIZEAREN ETA UR-KORRONTEEN HIGADURA**

Haizearen eta ur-korronteen eraginez, harkaitzek talka egiten dute elkarren kontra; ondorioz, harni-puskak sortzen dira, eta puska horiek elkarren artean talka eginez, puska bikiagotan banatzen dira. Azkenean, puskak hain dira bikiak, ezen harea edo hautsa bihurtzen baitira. Fenomeno hori higadura deitzen zaio.

Kostaldara iristen diren elatuen eraginez, harkaitzak atengabe egiten dute talka elkarren artean. Olatu bakiar batek es du harea asko sortzen, baina bata bestearen atzetik, atengabe, sortzen direnez, harea kantitate handiak sortzen dira azkenean. Emari handiko ibaitan ere harkaitzek talka egiten dute elkarren artean, eta harea sortzen da.

www.zanola.net (moldatua) Esperimentuak

b) Irakurri esaldi hauek, eta eslerazi ados zeuden ala ez.

Olatu batek harea asko sortzen du.  
 Ados nago  Ez nago ados

Haizearen eta ur-korronteen eraginez, harkaitzek talka egiten dute elkarren artean.  
 Ados nago  Ez nago ados

Bata bestearen ondoren atengabe sortzen diren olatuak harea bihurtzen dituzte arrnoka-puskak.  
 Ados nago  Ez nago ados

Emari handiko ibaiak harea sortzen dute.  
 Ados nago  Ez nago ados

Harea harkaitz-partikulen metaketaren ondorioz sortzen da.  
 Ados nago  Ez nago ados

Zuzendu

Ariketa berriagoa

Geratzen dira



1

Salakerak

Bearing in mind the information given in the documentary and your answers:  
would you change or maintain your hypothesis?

3

### HIPOTESIEN BALIOESPENA

Erantzuna gorde

Ariketa berriagoa

Geratzen dira

1

Salakerak

**BELGIUM, FINLAND,GREECE,ITALY,SPAIN AND TURKEY**

## ARE YOU CHANGING PLANET EARTH?

Students have been working about:

- Effects of human activity on the planet.
- Overuse of the resources on Earth.
- Problems and possible solutions.

Watch the video: <https://www.youtube.com/watch?v=DaFRheiGED0>



**BELGIUM, FINLAND, GREECE, ITALY, SPAIN AND TURKEY**