

# BIG BANG 2.0

Knowledge of the Natural, Social and Cultural Environment.  
5<sup>th</sup> year of Primary Education.

## 14. CHANGES OVER TIME STUDENT'S GUIDE



EUSKO JAURLARITZA



GOBIERNO VASCO

HEZKUNTZA, UNIBERTSITATE  
ETA IKERKETA SAILA

DEPARTAMENTO DE EDUCACION  
UNIVERSIDADES E INVESTIGACION

eskola2.0

## TABLE OF CONTENTS

<b>14. CHANGES OVER TIME</b> .....	3
<b>CONTENTS</b> .....	3
<b>BASIC COMPETENCES</b> .....	3
<b>OBJECTIVES (Obj.)</b> .....	3
<b>ASSESSMENT</b> .....	4
<b>CHECK OUT</b> .....	5
I1. Interactive multimedia application. ....	5
From ancient times to today. How to change the world?.....	5
I2 Interactive multimedia application. ....	5
Answer the questions. Adaptation to change. ....	5
I3. Interactive application.....	5
What will happen?.....	5
<b>EXPLORE</b> .....	7
E 1. Interactive multimedia map. ....	7
Atlas of evolution.....	7
E 2. Interactive multimedia application.....	7
Where do they come from? .....	7
<b>PARTICIPATE</b> .....	8
P1. Mini story.....	8
Mini story.....	8
P2. Video. ....	8
Portraying the evolution of a species through a video. ....	8
<b>WHAT HAVE WE LEARNED?</b> .....	10
Q1. Interactive multimedia application. ....	10
Atlas of evolution.....	10
Q2. Interactive multimedia application.....	10
From ancient times until today.....	10
<b>GLOSSARY</b> .....	12
<b>IMAGES USED UNDER CREATIVE COMMONS LICENSE</b> .....	13



## 14.CHANGES OVER TIME

### CONTENTS

Developments, changes over time, objects, society, people, species, planet Earth (pangaea, the world today, process of change). Adaptation to change. Living beings Human evolution. *Homo sapiens, Australopithecus afarensis, Neanderthal.*

### BASIC COMPETENCES

1. Linguistic communication competence ( I3, P)
2. Mathematical competence
3. Knowledge and interaction with the physical world (I1, I2, I3, E, P ,Q)
4. Information processing and digital competence (I1, I3, E1, E2, P)
5. Social and civic competence (I1, E3, P)
6. Cultural awareness and expression (P)
7. Learning to learn (I1, I2, I3, E, P)
8. Sense of initiative and entrepreneurship (I1, E3, P)

### OBJECTIVES (Obj.)

1. Describing the factors that have influenced some of the historical events and major social changes for humans.
2. Understanding and being able to define the concept of evolution.
3. Knowing how the world was created, identifying the images of the original supercontinent, Pangea, and their evolution until forming the appearance it has today.
4. Valuing effort and personal work, showing an active and responsible attitude in every task, making constructive self-criticism and trusting their capacities.
5. Collecting information from various sources to analyze situations and problems.
6. Having a favorable disposition toward group work, showing a cooperative and responsible attitude, accepting the ideas and contributions of others with respect and tolerance in dialogues and debates.
7. Using various sources: Historical, geographical, artistic, etc. Producing reports and other works with historical content. Appreciating the clarity and order in communication.



## ASSESSMENT

1. They define correctly the concept of evolution.
2. They give examples of the evolution in civilizations, species, places, etc.
3. They distinguish hominid species and their characteristics.
4. They know where these species were geographically located.
5. They differentiate species with the same ancestry, and identify the main similarities and differences between them.
6. They are able to place in the timeline the evolution of some species, objects, places, etc.
7. They explain orally and in writing how changes in the environment (both those produced by natural processes and by human activity) affect the environment and the evolution of species.
8. They recognize and value the changes in life and the environment thanks to the improvement of communications and the presence of technologies.
9. They are aware of the necessary balance between the benefits of communications for the development of human life, and the respect they must show to the environment.
10. They give examples of the evolution of everyday life forms (housing, social organization, transportation) in societies throughout history: Primitive societies, classical antiquity, and so on.
11. They find on the Internet tradition, stories, beliefs and lifestyles of the Basque and Spanish society in the past.
12. They look for the necessary information to develop their research, using the technological means from their environment.
13. They share with the group all the research process, explaining in a clear and organized way its results and consequences, using the most appropriate mean.
14. They try to obtain relevant information from different sources and set out hypotheses, systematizing them.
15. They collect and select data from various sources (direct, books, Internet...) on specific habitats and animals, with a specific objective.
16. They express orderly and clearly the process they have followed and the results and conclusions they have reached, in a given work plan.

Assessment rubrics. In the 'Participate' section, there is an assessment rubric for each proposed activity. **Mini story. Video.**



## ACTIVITIES

### CHECK OUT

<b>I1. Interactive multimedia application.</b>	<b>From ancient times to today. How to change the world?</b>
<b>Objective</b>	1,7
<b>Basic competences</b>	2, 3, 5, 7
<b>Assessment criteria</b>	1, 10, 13
<b>Methodology</b>	Working in pairs. They will have to put in order a series of images according to the time when the events they represent have been produced (from the oldest to the newest). Supporting material is available to complete the exercise.
<b>Timing</b>	15' working in class.
<b>I2 Interactive multimedia application.</b>	<b>Answer the questions. Adaptation to change.</b>
<b>Objective</b>	1, 3
<b>Basic competences</b>	1, 3, 7, 8
<b>Assessment criteria</b>	1, 2, 13
<b>Methodology</b>	Working in pairs. A series of question related to the evolution of some species will be displayed on the screen, and the student will have to select the correct answer from three possible options.  When the students finish the exercise, they will have to answer a series of questions related to this topic and write the justification of their answer.
<b>Timing</b>	10' working in class.
<b>I3. Interactive application</b>	<b>What will happen?</b>
<b>Objective</b>	2, 3, 4, 7, 8
<b>Basic competences</b>	1, 3, 5, 7
<b>Assessment criteria</b>	2, 7, 13



<b>Methodology</b>	<p>Working in groups of 3. This is an exercise of reflection and search for information on the Internet. The aim of the exercise is that the students explain the changes that have occurred in the areas represented by the two images on the screen (a fire and Pangea).</p> <p>They will have to describe the situations they believe have caused that, explain what has happened with the living beings in that place, etc.</p> <p>Finally, they will discuss the reflections of each group.</p>
<b>Timing</b>	10' working in class.



## EXPLORE

E 1. Interactive multimedia map.	<b>Atlas of evolution.</b>
Objective	5, 6, 7, 8
Basic competences	1, 3, 4, 7, 8
Assessment criteria	3, 4, 5, 12, 13, 15, 16
Methodology	<p>Working in groups of 3. Over the world map available in the application, the students will have to identify the geographical area in which different species of hominids lived. For this, the students must first search for information online, and then place a marker on the corresponding country.</p> <p>Once they have placed all the markers, the students will have to fill in a sheet in which they identify the main physical and social characteristics of the different species.</p> <p>On this site, both teachers and students will find information about each of these species.</p> <p><a href="http://www.portalciencia.net/antroevo.html">http://www.portalciencia.net/antroevo.html</a></p>
Timing	30' working in class.

E 2. Interactive multimedia application.	<b>Where do they come from?</b>
Objective	1, 3, 6, 8
Basic competences	1, 3, 4, 8
Assessment criteria	1, 14
Methodology	Individual work. The students will have to observe the images of various pairs of living beings and list the characteristics they have in common. The students must justify whether they come from the same ancestor or not.
Timing	20' working at home and 10' working in class.



## PARTICIPATE

<b>P1. Mini story.</b>	<b>Mini story.</b>
<b>Objectives</b>	1, 3, 6, 7, 8
<b>Basic competences</b>	1, 3, 4, 5, 7, 8
<b>Assessment criteria</b>	1, 2
<b>Methodology</b>	<p>Working in groups of 5. The student must use 'Tag Galaxy' to find words and images related to the concept of evolution and create their own story, that is, the history that for them represents the concept of evolution. They will have to document it through a digital book, combining texts and images.</p> <p>This activity involves the previous search for information on the Internet, the organization of the documents by topic, the search for Creative Commons licensed images and the elaboration of descriptive texts.</p>
<b>Timing</b>	2 hours working at home; 1 hour working in class (presentation of the work). 1 hour for the publication of the works in the blog or website of the class.

<b>P2. Video.</b>	<b>Portraying the evolution of a species through a video.</b>
<b>Objectives</b>	1, 3, 6, 7, 8
<b>Basic competences</b>	1, 3, 4, 7, 8
<b>Assessment criteria</b>	1, 2, 4, 8, 9, 10, 13, 14, 15, 16
<b>Methodology</b>	<p>Working in groups of 5. The students will select a living being, a place, etc., observe their development and represent it using any of these digital tools: Videos, photos, digital books, etc.</p> <p>So that the students become familiar with new technologies, they could record a video and then share it with their peers on the Internet. The recording of a video involves the previous study of the topic they are going to present, as well the search for information related to it.</p>



	<p>Additionally, this activity involves the writing of a structured script in which the topic should be presented in an attractive way. On the other hand, it encourages teamwork at the time of writing the script and selecting the characters that will participate in the video.</p> <p>In addition, the students develop their acting skills and their creativity when they have to stage and characterize the different characters.</p>
<b>Timing</b>	1 hour working at home; 1 hour working in class (presentation of the work). Publication of the works in the blog or website of the class.



## WHAT HAVE WE LEARNED?

<b>Q1. Interactive multimedia application.</b>	<b>Atlas of evolution.</b>
<b>Objectives</b>	2, 5, 6, 7, 8
<b>Competences</b>	1, 3, 4, 6, 8
<b>Assessment criteria</b>	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
<b>Methodology</b>	<p>In teams of 3. The aim is that the students answer to a series of questions, justifying their answer and placing over the world map the place the question refers to.</p> <p>The questions are varied, and refer to historical places where different tools have been found and where ancient civilizations and/or already extinct species lived.</p> <p>There are links to the Internet, and some help texts to complete the exercise.</p>
<b>Timing</b>	5' working at home or in class.
<b>Q2. Interactive multimedia application</b>	<b>From ancient times until today.</b>
<b>Objectives</b>	1, 2, 3
<b>Competences</b>	1, 3, 5, 8
<b>Assessment criteria</b>	1, 2, 7, 8, 9, 10, 13
<b>Methodology</b>	<p>Individual work. This exercise is the same the students have had to carry out in the 'KEEP INFORMED' section. This time they will have to do it without help.</p> <p>Once they finish it, the students will have to write and save in their computer a definition of what they understand as evolution.</p> <p>When they have finished, they will compare their two works and answer the following question: What is the difference between my two works? Have I learned anything about evolution?</p>



Timing	5' working at home or in class.



## GLOSSARY

1. **Adaptation.** The fact by which living beings fit the conditions of their environment.
2. **Hamlet.** Small town with few inhabitants.
3. **Environment.** Set of conditions surrounding living beings or things; air or atmosphere.
4. **Ancestor.** Ancestor or species from which they originally came from.
5. **Deforestation.** Remove or destroy the trees and plants of land by natural causes or by human action.
6. **Continental drift.** Movement of continental masses with respect to the others.
7. **Drastic.** Which acts quickly and violently.
8. **Species.** A group of things that are similar for having one or more characteristics in common.
9. **Evolution.** Change or gradual transformation of one thing or living being.
10. **Gene.** DNA sequence arranged in a fixed order on the chromosomes, which determines the appearance of hereditary traits in living things.
11. **Unknown.** Something that is unknown and about which information is sought.
12. **Industrialization.** Development process of industrial activity and its geographic expansion as a result of technological advances, the expansion of markets and an the increasing division of work.
13. **Inhospitable.** Place which does not offer security, uncomfortable, unwelcome.
14. **Pangea.** Name given to the supercontinent that existed during the Mesozoic period, before the continents separated.
15. **Moth.** Common name for various species of night butterflies.
16. **Reproduce.** The production of living beings from offsprings of the same species.

**IMAGES USED UNDER *CREATIVE COMMONS* LICENSE****CHECK OUT****A1**

1. Picture 1. Stone wheel  
<http://www.flickr.com/photos/emeryjl/513686851/sizes/z/in/photostream/>  
Author: por hoyasmeg
2. Picture 2. Wooden wheel  
Wooden wheel  
CIMAS (Innovación y Medio Ambiente)  
No copyright
3. Picture 3. Rubber wheel  
Una rueda de caucho  
CIMAS  
No copyright
4. Picture 4. Wooden wagon  
Horse carriage  
[http://es.wikipedia.org/wiki/Archivo:Portugese\\_carriage.jpg](http://es.wikipedia.org/wiki/Archivo:Portugese_carriage.jpg)  
Author: cytech
5. Picture 5. Old car  
An old car  
[http://commons.wikimedia.org/wiki/File:1928\\_Model\\_A\\_Ford.jpg](http://commons.wikimedia.org/wiki/File:1928_Model_A_Ford.jpg)  
Author: Richard Smith
6. Picture 6.  
maserati3
7. Picture 7. Pangea  
<http://www.scotese.com/newpage12.htm>  
Reference:  
Scotese, C.R., 2002, <http://www.scotese.com>, (PALEOMAP website).
8. Picture 8. The continents begin to break apart  
<http://www.scotese.com/late1.htm>  
Reference:



Scotese, C.R., 2002, <http://www.scotese.com>, (PALEOMAP website).

9. Picture 9. The world today

<http://www.scotese.com/newpage9.htm>

Reference:

Scotese, C.R., 2002, <http://www.scotese.com>, (PALEOMAP website).

10. Picture 10. A sparsely populated village

Bilbao in1575

<http://es.wikipedia.org/wiki/Archivo:Bilbao1575.jpg>

11. Picture 11. A major city

Bilbao in1857

[http://es.wikipedia.org/wiki/Archivo:Billbo\\_Coello\\_1857.jpg](http://es.wikipedia.org/wiki/Archivo:Billbo_Coello_1857.jpg)

12. Picture 12. A big city

Bilbao today

[http://es.wikipedia.org/wiki/Archivo:Bilbao\\_Spain.jpg](http://es.wikipedia.org/wiki/Archivo:Bilbao_Spain.jpg)

13. Picture 13. Baby

A baby

No copyright

14. Picture 14. A child

A child

No copyright

15. Picture 15. An adult

An adult

No copyright

## A2

1. Picture 1. Giraffe

Giraffe

<http://es.wikipedia.org/wiki/Archivo:Giraffen.jpg>

John Walker.

2. Picture 2. A horse's neck

A horse

<http://es.wikipedia.org/wiki/Archivo:Hairz.jpg>

Author: Javier Prazak



3. Picture 3. Upper extremity of a chimpanzee  
<http://www.flickr.com/photos/mdpettitt/455608611/sizes/l/in/photostream/>  
 Author: or Martin Pettitt
4. Picture 4. Upper extremity of a dog  
 Upper extremity of a dog  
 No copyright
5. Picture 5. Upper extremity of a human being  
 Upper extremity of a human being  
 No copyright
6. Picture 6. Dark moth  
[http://commons.wikimedia.org/wiki/File:McGeorge\\_Snout\\_Moth.JPG](http://commons.wikimedia.org/wiki/File:McGeorge_Snout_Moth.JPG)  
 Ivan tortuga
7. Picture 7. Light moth  
[http://commons.wikimedia.org/wiki/File:Moth\\_on\\_Sunflower.jpg](http://commons.wikimedia.org/wiki/File:Moth_on_Sunflower.jpg)  
 Author: Clinton & Charles robertson

### A3

1. PICTURE 1. Forest fire  
 Forest fire  
<http://es.wikipedia.org/wiki/Archivo:Forestfire2.jpg>
2. PICTURE 2. Pangea  
<http://commons.wikimedia.org/wiki/File:Pangea.gif>

### EXPLORE

#### A2

1. Picture 1 Bat  
 Los murciélagos  
<http://www.flickr.com/photos/davidw/1435363027/sizes/z/in/photostream/>  
 Author: por longhorndave
2. Picture 2 Vulture  
 Vultures  
[http://commons.wikimedia.org/wiki/File:Vulture\\_Griffon.jpg](http://commons.wikimedia.org/wiki/File:Vulture_Griffon.jpg)



I, the copyright holder of this work, hereby release it into the public domain. This applies worldwide

3. Picture 3 Chimpanzee

<http://www.flickr.com/photos/gvillena/2787497524/sizes/z/in/photostream/>

Author: Gabriel Villena

4. Picture 4 Human being

Human being

No copyright

5. Picture 5 Shark

Sharks

[http://es.wikipedia.org/wiki/Archivo:Carcharodon\\_carcharias.jpg](http://es.wikipedia.org/wiki/Archivo:Carcharodon_carcharias.jpg)

No copyright worldwide

6. Picture 6 Dolphin

Dolphins

<http://upload.wikimedia.org/wikipedia/commons/1/19/PacificWhiteSidedDolphine.jpg>

## WHAT HAVE WE LEARNED?

### A2

1. Picture 1. Stone wheel (The same as in KEEP INFORMED-A1)

<http://www.flickr.com/photos/emeryjl/513686851/sizes/z/in/photostream/>

Author: por hoyasmeg

2. Picture 2. Wooden wheel

A wooden wheel

No copyright