

## Lesson 1. What happened to dinosaurs?

In this lesson we provide pupils with insight about the climate changes that have happened in history. In order to make the process of learning about climate changes more interesting for pupils, in this lesson we tell about the ancient animals – dinosaurs, which became extinct most likely because of a rapid climate crisis. Pupils will get an idea of the climatic conditions favourable and non-favourable for life.

### **Lesson duration:**

depending on the duration of discussions, eco workshop and additional activities, the lesson takes 60-100 minutes.

### **Before the lesson:**

get familiar with the methodological recommendations for the lesson and prepare the materials to successfully plan and conduct the lesson for your pupils.

### **Materials necessary for the eco workshop:**

toilet paper rolls (about 60 rolls for one skeletal model; 180 are required for three models). The more rolls, the better the activity will turn out. Also pasta in the shape of rolls can be used.

### **Terms:**

*Palaeontologist* – a person who researches ancient organisms, for example, dinosaurs.

*Fossil* – remains of ancient animals or plants, imprints, such as fossilized dinosaur bones, eggs.

*Meteorite* – a piece of rock that has crashed into Earth from space.

### **Handouts (for printing):**

- 1) A worksheet for pupils to strengthen the new terms and to find out more about dinosaurs. It can be completed in class or at home. Dinosaur encyclopedias or internet resources about dinosaurs can be used to complete the tasks on the worksheet.
- 2) A handout – samples of dinosaur skeletons that will be needed in the eco workshop.

## The lesson

At the beginning of the lesson pupils must be introduced to the behavioural rules, emphasizing that they should listen carefully because the board does not repeat information several times. Tablets can also be used for the interactive tasks. In the lesson you will need to cooperate, express your opinion and be able to catch what others say.

For younger pupils or pupils who find it challenging to stay focused on work for longer periods of time, dynamic breaks can be included between tasks.



Tablets can also be used for the interactive tasks.

### 1. Different species of dinosaurs.

In the discussion we invite pupils to share what they know about dinosaurs. In the interactive part pupils will be able to find out about five dinosaurs. Pupils will possibly recognize only the popular dinosaur Diplodocus, as the rest are rare dinosaurs. During the discussion the teacher can compare dinosaurs with other animals familiar to pupils that are similar in size.

### 3. “Kāpēc dinozauri izmira?”

The task offers 4 versions of the extinction of dinosaurs. The teacher can organize **group work** by dividing pupils into groups by 4 and allowing them to discuss each theory, or a **collective discussion** can be organized. By doing the task, pupils develop critical thinking. After the discussion pupils listen to those explanations about the extinction of dinosaurs put forward by scientists.

#### Additional activity.

The teacher can do a demonstration by throwing a ball into flour or ash, so that children can clearly see how a dust cloud rose into the air after the meteorite fell to Earth.

### 5. What happened next?

A timeline of 5 periods is offered, the first stage being the time of dinosaurs and the fifth – nowadays. By arranging the timeline,

### 2. The extinction of dinosaurs.

Pupils listen to audio information about the life of dinosaurs, their disappearance from Earth and about animals that managed to survive until nowadays.

### 4. The influence of weather conditions.

Pupils have to express their opinions on the weather changes if the Sun were covered by thick dust clouds. How would that affect plants and animals?

#### Additional activity.

Pupils can be asked the questions: If the dust clouds covered the light and warmth of the sun for a long time, how would that affect the life of humans?

### 6. How were dinosaurs found?

Pupils exchange opinions on how people could find out about dinosaurs. The pupils' skills to

pupils apply the knowledge acquired in the lesson, develop critical thinking skills.

### 7. The formation of fossils.

By doing the interactive task, pupils acquire information on how people found out about dinosaurs. After pupils have arranged images in the correct order, they listen to information and discover the new words – fossils and palaeontologist. This task develops the pupils' critical thinking, pupils themselves figure out the order in which the events should be arranged and then listen to the information.

### 9. Quiz – What have you learned so far?

Pupils have the chance to test the knowledge they have acquired in the lesson with the help of the interactive test. The test can be taken together or individually on tablets.

#### Additional activity.

In order to strengthen the knowledge of the terms learned in the lesson, students can be offered to complete task 3 in the worksheet - match the explanation with the appropriate word.

express their opinion and listen to the opinions of other classmates are trained.

#### Additional activity.

The following questions can be asked to pupils: Where nowadays can you acquire information about dinosaurs, pictures of them? What professionals can provide this kind of information?

### 8. Be a palaeontologist!

Pupils can act as palaeontologists by assembling a dinosaur skeleton from individual parts. The task offers 3 levels of difficulty.

#### Additional activity.

Worksheet. In order to strengthen the newly acquired knowledge, pupils can be offered to complete task 1 (draw the dinosaurs, by drawing an outline around the skeleton) and task 2 (write down the names of the dinosaurs, using a dinosaur encyclopedia) in **the worksheet**. Pupils can do the tasks individually, as most of the lesson takes place face to face (for all pupils together and simultaneously).

### 10. Eco workshop.

At the beginning of the eco workshop the teacher should explain how important the principle of environmental conservation is the reuse of materials, therefore we will build skeletons using toilet paper rolls instead of, for example, rolled up white paper sheets. In the eco workshop pupils are offered to make skeletons of three different dinosaurs from toilet paper rolls. Pupils will need to divide into groups and divide roles within the group. The distribution of roles is especially important if pupils do not have experience working in groups and if there are many pupils in the group. The number of groups depends on the amount of raw materials. If pasta is used to build the skeleton, pupils can work in pairs.

### 11. The closest relative of dinosaurs.

At the end of the lesson we offer a “bridge” task to the 2nd lesson, where you learn about the dinosaur’s relative of today – the sand lizard.

### At the end of the lesson.

Ask pupils:

What did you like the most? What new did you learn? What will you tell your parents? What else would you like to know?

### Before the **Eco workshop** it is necessary to prepare:

- 1) to obtain the materials for building the skeletons – toilet paper rolls (the more, the better; at least 180 pieces) and/or pasta.
- 2) to plan the place where the skeletons will be built. Building from paper rolls requires free space in the classroom or school hallway.
- 3) to prepare printouts of skeletal models; this is especially important if the construction takes place outside the classroom (e.g., a school hallway).

Some groups can make the skeletons from paper rolls and some from pasta, and then change with materials.

The created skeletons can be photographed.

Pupils will like this activity if the teacher prepares the necessary materials in the required quantity, helps pupils divide into small groups and supports them in group work.

#### **Additional activity #1**

Pupils can create their own made-up dinosaur skeletons. This activity is preferable if there is not enough building material for all groups and the skeletons are built with fewer rolls than shown in the example. This activity develops creative thinking, spatial awareness and group cooperation.

#### **Additional activity #2**

create dinosaur models, for example, from plasticine or cardboard and toilet paper rolls (ideas in photos).

#### **Additional activity #3**

In order for the students to continue discussing dinosaurs and the topics covered in the lesson, the teacher can ask them to complete task 4 (circle the traits that help animals endure the period of cold and cross out the traits that interfere with enduring the cold), task 5 (find the hidden words and think of a sentence from the words found and write it down) and task 6 (find out what a Diplodocus eats by arranging the letters in the correct order) in the worksheet. If there is not enough time for any of the tasks in class, pupils can do them at home.

## Images from the lesson process

