Lesson 3. Natural phenomena: rain, wind, hail, storm, tornado

In this lesson pupils are given an insight into a part of the natural phenomena found in the world: rain, wind, hail, storm and tornado. Vigorous natural phenomena or unusual changes in them are associated with climate change. Pupils will learn more in details about these natural phenomena, as well as about the water cycle in nature. The lesson provides also for practical activities, with pupils depicting and creating natural phenomena and wind related measuring devices.

Lesson duration:

depending on the duration of discussions, eco workshop, experiment and additional activities, the lesson takes 60-120 minutes.

Before the lesson:

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

Materials necessary for the Eco workshops and experiments:

Activity 4: bowl or jar, hot water, ice cubes and plastic food wrap.

Activity 8: 4 paper cups, cardboard, pencil, pin, paper clip, scissors (to make one anemometer).

Activity 9: paper straw, cardboard, scissors, pencil, needle, glue or tape (to make one weather wane); compass will also be useful.

Activity 11: sheets of paper, water, paint (watercolour or gouache), brush, cocktail straw, felt-tipped or gel pens.

Activity 13: transparent container with a lid (jar), water, washing liquid; paint or glitter will also be useful.

Terms:

natural phenomena – *changes in nature that occur without human intervention.*

wind – *natural phenomenon – moving air flow.*

rain – *natural phenomenon, when raindrops fall from clouds.*

hail – *natural phenomenon, when ice grains fall from clouds.*

tornado – *natural phenomenon, when a strong wind creates a vortex.*

storm – *natural phenomenon with a strong increase in wind.*

anemometer – *a device for measuring wind speed.*

weather wane – *a device for determining wind direction.*

Handouts (for printing):

A worksheet for pupils to strengthen the new terms and to learn more about natural phenomena. It can be completed in class or at home (especially the last task).

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. 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. Climate change.

Pupils listen to audio information on how climate change causes unusual changes in natural phenomena and weather.

Additional activity.

You can ask pupils the question: "What unusual weather have you experienced?". The answers would be expected to include, for example, flood, rain in winter or extreme heat in summer, which is followed rapidly by long-term cool weather.

2. Natural phenomena

Pupils listen to audio information about different types of natural phenomena.

Additional activity.

You can ask pupils the question: "Which one of these natural phenomena have you seen?".

3. Water cycle.

Pupils listen to audio information and watch an animation about the principle of water cycle and its importance in nature. Before watching the animation draw pupils' attention to the symbol of the water drop (the symbol is explained in the upper right corner of the animation). In order for pupils to understand more about how rain falls from a cloud, the teacher can do a demonstrations by filling a sponge with water and showing that, when it is completely full with water, the sponge begins to leak or rain occurs.

Additional activity.

To understand more about the water cycle in nature and to have a visual reminder, you can ask pupils to complete task 1 in the worksheet, by depicting the path of a

4. Experiment. Water cycle in a jar.

The experiment to demonstrate the water cycle using everyday objects can be done by diving pupils into small groups. It is necessary to discuss the safety rules when working with hot water in advance. For younger pupils this can be shown as a demonstration for the whole class. The digital learning material also offers a video demonstration as a step-by-step instruction.

To do the experiment, prepare a bowl or a jar, hot water, ice cubes and plastic food wrap in advance.

About 20 minutes are necessary until water drops are clearly visible on the food wrap. While waiting for it, you can continue doing other activities of the lesson. By touching the food wrap, pupils can observe how the drops fall down – it is raining.

water drop in the water circulation path with arrows.

5. Types of natural phenomena.

Pupils touch images, listen to audio information and watch a video about each of the natural phenomena looked at in the lesson.

6. Mix and match.

Invite pupils to test their knowledge by matching the images with the corresponding type of natural phenomenon.

Additional activity.

In order for pupils to remember more about the natural phenomena discussed in the lesson and to have a visual reminder, you can ask them to complete task 2 in the worksheet by connection the given images with the names of the corresponding natural phenomena.

7. Precipitation imitation.

Invite pupils to show their creativity and depict rain of varying intensity by creating sounds with the fingers. The interactive material offers to listen to sounds of real rain so that it is easier to imitate them.

8. Eco workshop. Creating your own anemometer.

Pupils follow the instructions and individually create their own anemometers – devices for wind speed measurement. The digital learning material also offers a video demonstration as a step-by-step instruction.

After that, the teacher and pupils can go outside the school with their created devices and measure the speed of the wind by counting how many times it rotates in a circle in one minute! Wind speed measurement can be done in different places outside the school and you can determine where the wind speed is the highest and where it is the lowest. If it is not possible to go outside, a hair dryer or a strong exhalation can be used to create wind.

For the eco workshop (to create one anemometer) you must prepare 4 paper cups, cardboard, pencil, pin, paper clip, scissors in advance.

9. Eco workshop. Creating your own weather wane.

Pupils follow the instructions and individually create their own weather wane – a device for determining wind direction. The digital material also offers a video demonstration as a step-by-step instruction.

10. What do you know about wind?

Pupils touch the question cards and develop their ability to draw conclusions using argumentation and their own experience. This task will be particularly valuable if pupils have

After that, the teacher and pupils can go outside the school with their created devices and determine the direction of the wind in different places outside the school. Wind direction can be determined by placing the weather wane in the ground, placing a compass next to it and observing the movement of the weather wane. The teacher can help pupils understand which way each cardinal direction is. If it is not possible to go outside, a hair dryer or a strong exhalation can be used to create wind.

For the eco workshop (to create one weather wane) you must prepare a paper straw, cardboard, scissors, a pencil, a needle, glue or tape in advance; a compass will also be useful.

11. Eco workshop.

Invite pupils to create their own work of art with colours and depicting wind or blowing air through a straw. The digital material also offers a video demonstration as a step-by-step instruction. Consider that preparation before the workshop and cleaning up the workspace after it will take additional time.

When the artworks are finished, you can make an exhibition in the classroom or school hallway and take pictures of them.

For the eco workshop you must prepare paper sheets, water, paint (watercolour or gouache), brushes, cocktail straws, felt-tipped or gel pens in advance.

created their own anemometers and measured wind speeds in several places around the school.

Additional activity.

You can ask pupils the questions: "What was the wind direction in different places outside the school?" and "In what situation can measuring wind direction be useful?". The answers could be expected to include examples of windmills, sailing boats, wind tunnels.

12. Quiz "What have you learned so far?"

With the help of the interactive test pupils have the opportunity to test the knowledge they have acquired in the lesson about natural phenomena and different measuring devices. The test can be taken by everyone together or individually – using tablets.

Additional activity.

To repeat and strengthen the terms obtained in the lesson, you can offer pupils to complete task 3 in the worksheet by circling the correct terms for each of the given explanations.

13. Experiment. Principles of natural phenomena.

To observe a tornado safely, without the risk of being in the actual tornado zone, pupils can create it in a jar and watch it over and over again. Pupils can do this experiment individually or in pairs. For younger pupils this can be shown as a demonstration for the whole class. The digital material also offers a video demonstration as a step-by-step instruction. To make the created tornado even more fun and impressive, you can add colour or glitter to the water and washing liquid.

To conduct the experiment you must prepare a transparent container with a lid (jar), water and washing liquid in advance.

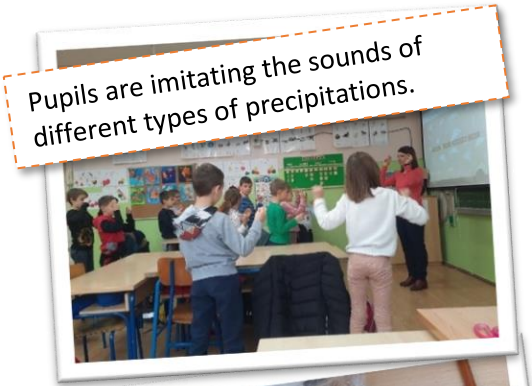
Additional activity

At the end of the lesson or as homework you can ask pupils to complete task 4 in the worksheet by drawing and writing their favourite natural phenomenon.

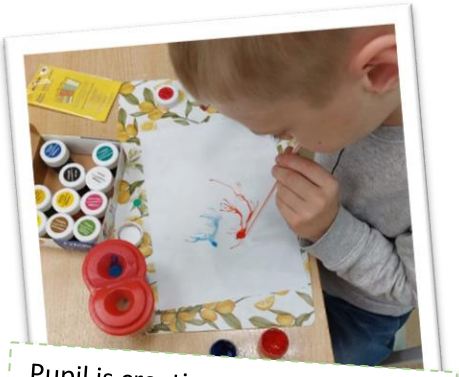
At the end of the lesson ask pupils:

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

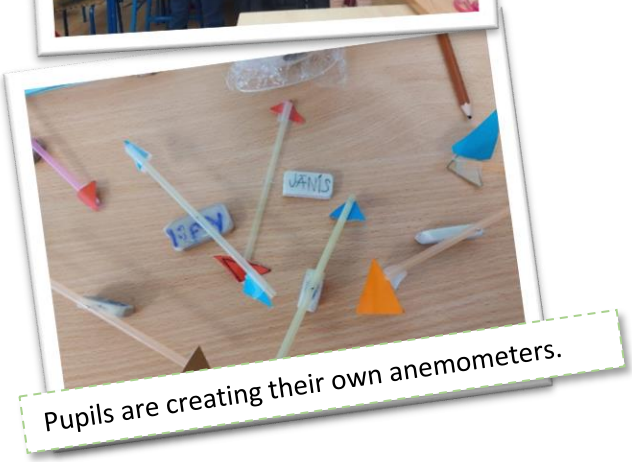
Images from the lesson process



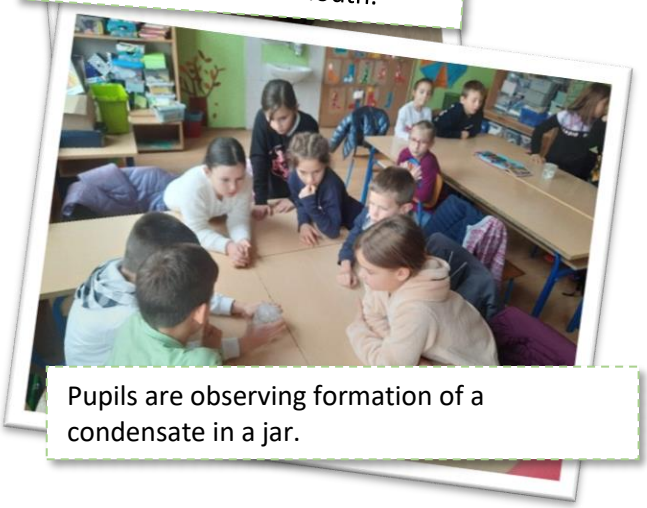
Pupils are imitating the sounds of different types of precipitations.



Pupil is creating art using wind produced by his own mouth.



Pupils are creating their own anemometers.



Pupils are observing formation of a condensate in a jar.