**SCENARIO**

**Terrain Formation in Poland**

T – teacher S – student

T: We've learned about the structure of plant cells. Observations are important in nature. What can we observe?

S: We can observe changes in seasons, weather changes, plants and animals, as well as changes in nature caused by human activity.

T: Yes, every day you discover new phenomena, learn new things.

How do we explore the world?

S: Our senses, such as sight, hearing, smell, taste, and touch, help us to explore different things.

T: You're right, our senses perceive and process stimuli from the outside. Please draw a simple graphic symbol for each sense.

The student draws graphic symbols, for

sight – it will be an "eye",

hearing – an "ear",

taste – "mouth with a tongue",

smell – "nose",

touch – "hand".

Also, remember that some of us perceive the world through these senses. Some have better eyesight, others hearing, and still others learn and explore the world through action.

Did you know that to learn more easily, it's worth adapting the learning method to the sensory preference of our brain in learning and perceiving the world.

You've probably heard that people are divided into auditory, visual, kinesthetic, and sensory learners.

• Auditory learners learn better when they hear something,

• Visual learners learn better when they see something,

• Kinesthetic learners learn better through experience,

• Sensory learners learn better when they feel something.

By the way, visit lessons about learning styles and make studying easier.

T: The topic of today's class is the terrain formation of Poland. Processes shaping the landscape (we can also say terrain formation) occur both inside and outside the Earth.

S: What happens inside the Earth?

T: Internal processes include: orogenic movements, which cause the uplift of mountains; epeirogenic movements, where huge lithospheric plates

are constantly in slow but continuous motion; volcanic phenomena, where lava erupts onto the Earth's surface; plutonic phenomena, where hot magma moves within the Earth's crust – without erupting to the surface; as well as earthquakes.

S: I didn't know that so many different phenomena affect the Earth's surface.

T: There are many more of these phenomena because some of them occur on the Earth's surface. Do you know what these phenomena might be?

S: I think it's wind.

T: Yes, wind erodes rocks and transports sand particles; the sea erodes coastlines, river water deepens and erodes riverbed banks, but also transports large amounts of gravel and sand; glaciers and ice sheets also have similar effects.

These processes create various landforms.

Can you name any landform?

S: It seems to me that it is a mountain or hill and a river valley.

T: Good. In addition to the forms you mentioned, there are also elevations, hills, embankments, basins, depressions, valleys, ravines, basins (depressions). All these forms

we divide into two groups:

convex forms and concave forms.

List the convex forms.

S: These are mountains, hills, elevations, hills, basins, embankments.

T: And concave forms?

S: Concave forms are valleys, basins, depressions, ravines, basins.

GRAPHIC

Convex terrain forms - mountains, hills, elevations, hills, basins, embankments, Concave terrain forms - valleys, basins, depressions, ravines, basins (depressions).

S: In previous classes, I learned about map elements. But how do I draw such a mountain on a map?

T: At home, you can prepare salt dough and a base to make a mountain model.

S: Alright.

T: Remember that a mountain has a gentle slope on one side and a steep slope on the other.

T: Look at the model you made. Mark on the model points at the same height, for example, at a height of 1 cm measured from the base. When we connect all the points at a height of 1 cm, a line is created, which

we call a "contour line". This is a contour line at a height of one centimeter.

Mark a contour line at a height of 2 cm on the model, 3 cm and indicate the highest point, which is the peak of your mountain model, approximately.

Your base is sea level and it is 0 m above sea level. In the field

the absolute height of the mountain is measured from sea level to the summit of the mountain.

S: The absolute height of the mountain is the height measured from sea level to the summit of the elevation.

T: And now you will try to draw your mountain model on a sheet of paper. Prepare paper and a pencil. Can we start?

S: Yes, I'm ready.

T: Draw a contour line resembling the base of your mountain model on the paper and write the height on it as 0 m above sea level – this is sea level.

Inside contour 0 m, draw a contour line at 1 cm and describe it on the drawing. Then, inside the contour line at 1 cm, draw a contour line at 2 cm and describe it on the drawing. If you have more contours on the model drawn every 1 cm, draw them, and finally mark the point that is the summit of your mountain model and write its height.

What can you say about your drawing?

S: I drew lines on the paper with descriptions of their heights and the peak of my model.

T: Yes, a drawing was made depicting a mountain, but on a flat surface.

We read heights from the labeled contour lines. You have created a fragment of a map. Contour lines show on the map how the terrain surface is shaped.

S: My mountain has one gentle slope and the other steep. How to distinguish on the map which slope is gentle?

T: Look at your model. You drew contour lines every one centimeter on it.

How are the contour lines arranged on the gentle slope? And what is their arrangement on the steep slope? What did you notice?

S: On the steep slope, the contour lines are close together, and on the gentle slope, they are spaced apart.

T: You have learned about terrain forms, you can draw contour lines, you have learned about absolute height. There is one more height – relative height, which is measured from the base of the mountain, not from sea level.

S: I'm not sure if I understood correctly.

T: Imagine you are in the mountains and want to climb to the summit. The relative height is the distance from where you stand to the summit of the mountain.

S: That means this height has a lower value than absolute height.

T: Do you know why it is lower?

S: Relative height has a lower value than absolute height because it is calculated from the base of the mountain, not from sea level.

relative and absolute height diagram;

gentle and steep slope diagram;

T: If the values of the contour lines increase towards the center of the drawing, it is an elevation, i.e., a convex terrain form.

When the values of the contour lines decrease towards the center, it is a concave terrain form, for example, a basin or valley.

S: Why are there colors on the map?

T: Shades of green, yellow, and red also inform us about the elevation of the terrain above sea level.

S: What does the green color mean?

T: The color green and its shades are used to indicate lowland areas, i.e., those located at altitudes from 0 m above sea level to 300 m above sea level,

The color yellow and its shades are used to indicate upland areas, located at altitudes from 300 m above sea level to 500 m above sea level,

To indicate mountainous areas rising above 500 m above sea level, we use the color red and its shades.

To make it easier to read a contour map, areas between contour lines are often filled with color. This allows you to see at a glance on the map where the areas are located higher and where lower.

Colors added to a contour map are called hypsometric colors.

Look at the hypsometric map of Poland, which shows the terrain relief.

hypsometric colors on the map of Poland

showing terrain relief.

S: The green color on the map tells us that these are lowland areas, i.e., those located at altitudes from 0 m above sea level to 300 m above sea level,

T: Good, what does the yellow color on this map mean?

S: The yellow color indicates upland areas, located at altitudes from 300 m above sea level to 500 m above sea level,

T: What color indicates mountains?

S: Mountainous areas are represented by the color red, i.e., areas above 500 m above sea level.

T: A larger part of Poland's area is covered by the green color, which represents lowlands – flat or slightly undulating areas. Lowlands occupy

the entire northern and central part of our country. They also include lakelands – areas with a large concentration of lakes. The uplands are even more undulating – they are located southeast of the lowland belt. The entire southern part of our country is occupied by mountains – these are the most strongly undulating areas with altitudes above 500 m above sea level.

S: Our country is interesting in terms of terrain, it has mountains, uplands, and lowlands.

T: Since you know how to read a contour map and a hypsometric map, this skill will be helpful during trips and sightseeing of Poland or other countries. What devices are used for nature observation?

S: Binoculars, a magnifying glass, and with a camera, we can take pictures of interesting phenomena.

T: Can we observe the underwater world?

S: Yes, for example, divers take photos underwater.

T: And for deep-sea exploration, there is a self-propelled submersible called a bathyscaphe.

What is the device used to observe distant objects in space called?

S: I don't know.

T: It's a telescope. And the device used to observe small objects, invisible to the naked eye, is called a microscope.

photo of a bathyscaphe, telescope, and microscope

S: I noticed that there is a place marked with a dark green color on the map. What does it mean?

T: This color marks a depression, i.e., an area located below sea level.

To consolidate knowledge, try to solve the Quiz - attachment.