CZYSTA MOC ENERGII

Grade **6**
Time **45 min.**

LESSON TOPIC

What does the wind bring?

OBJECTIVES IN LINE WITH THE SCHOOL CURRICULUM:

Geography:

- Learning about selected landscapes of Poland and the world, their main features and elements.
- Identifying regularities in the spatial diversity of natural environmental conditions and human life and various activities

Teaching aids: objects needed to construct your own wind turbine model (see work sheet for list)

CONTENT IN LINE WITH THE CURRICULUM:

Physics:

- Distinguishing different forms of energy into which electricity is converted; identifying the sources and uses of electricity;

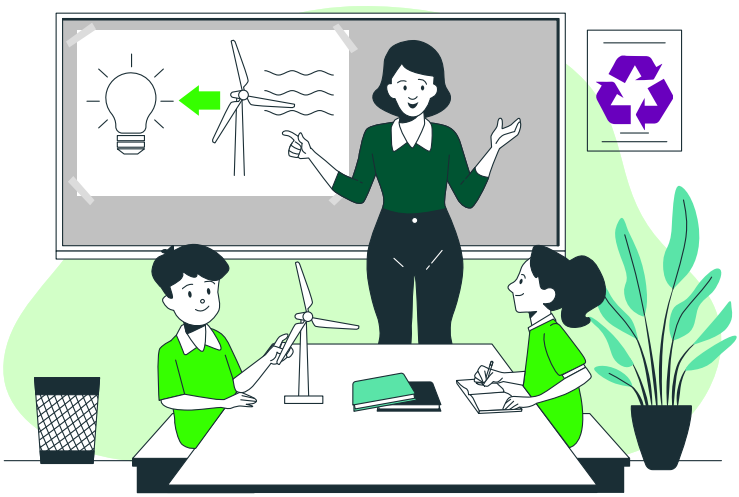
Geography:

- Identifying positive and negative changes in landscapes resulting from human activity;

Lesson plan

INTRODUCTION:

- Present the topic of the lesson to students.
- Hand out the worksheets.



COURSE OF THE LESSON:

- Discuss sources of energy production
- Distribute worksheets
- Discuss the construction of a wind turbine

1. Ask students what energy sources they know. **Divide them into renewable and non-renewable sources.**
2. Inform the students that they will be making a model of a wind turbine during this lesson. Distribute to them the materials needed to make it.
3. Ask the children to make a model turbine according to the instructions. The instructions for making the turbine can be found on the students' worksheets. Pictures can be found in the multimedia presentation.

   Link to presentation
4. Test the turbines made by the students together with them. **Discuss the task with the students. Define the term energy load. Together, consider what other devices could represent energy load.**
5. If there is enough time, you can use the multimedia presentation with a gallery of photographs showing windmills and today's wind turbines, which you will find on the last slide of the presentation.
6. Alternatively, you could offer the children a virtual trip to the museum and look at landscapes with windmills.

SUMMARY

- Sum up the lesson.
- Highlight what students should remember.

WORKSHEET

What does the wind bring?

EXPERIMENT 1

Build a model of a wind turbine.

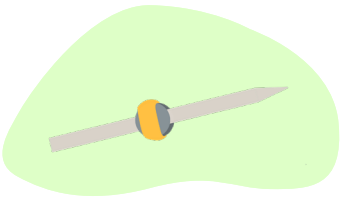
You will need:

1. 2 small neodymium magnets
2. plastic container
3. thin copper winding wire
4. skewer sticks
5. insulation tape
6. red diode
7. Play-Doh
8. polystyrene
9. cardboard
10. 2 small coins
11. hair dryer
12. extension cord

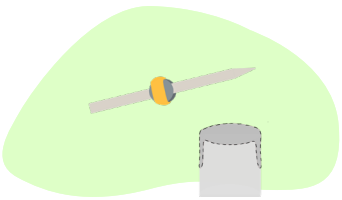
Building the model:

Making the generator:

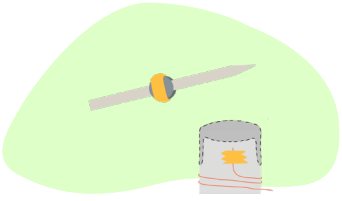
1. Attach two neodymium magnets to the skewer stick using insulating tape. They should be about halfway down the stick.



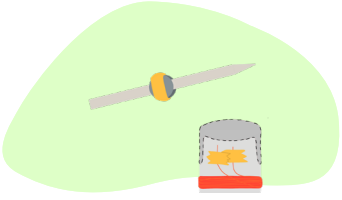
2. Make two notches in the plastic container (opposite each other) in which to place the stick so that the magnets are inside the plastic container and can rotate freely inside. .



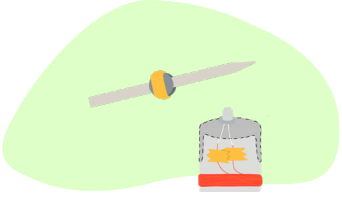
3. Attach the thin winding wire with insulating tape slightly below the notches in the plastic container. Leave the end of the wire loose so that you have free access to it.



4. Then wind the wire tightly around the container. The wire should be wound 200-250 times.



5. When there is enough of it, tape the wire with insulating tape to the container. Cut it behind the tape, leaving a few centimetres of wire.



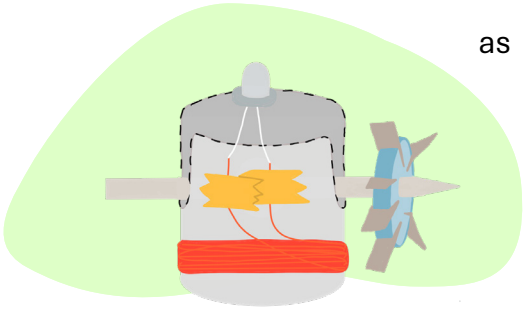
WORKSHEET

What does the wind bring?

EXPERIMENT 1

Making turbine propeller:

1. Cut a disc out of polystyrene and make cuts in it, as shown in the drawing.



2. Cut the turbine blades from cardboard and place them in the notches.

Assembly:

1. Attach the propeller to the stick using Play-Doh.

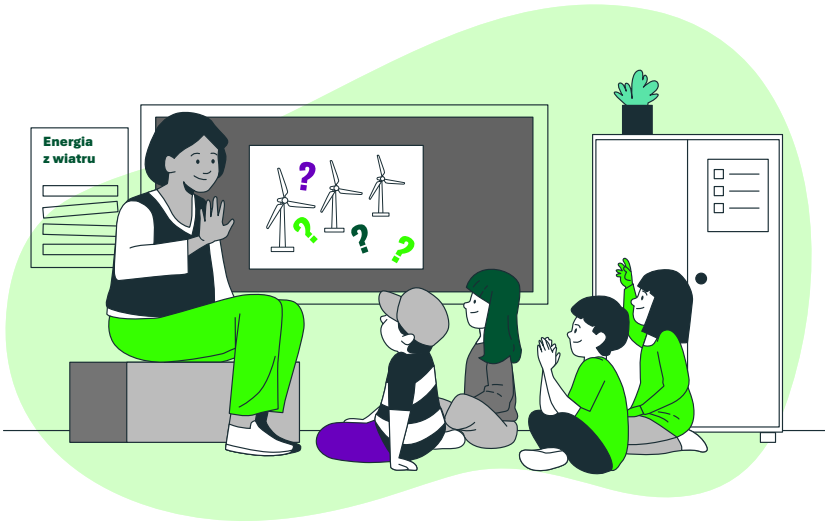
2. If the propeller is too heavy and outweighs the turbine model too much, attach a ball of Play-Doh to the other end of the stick to weigh down the turbine.

Testing the turbine:

1. Plug your hairdryer into a socket, switch it on and direct the airflow onto the turbine model. **Observe the LED while doing so.**

APPENDIX 1

What does the wind bring?



TASK 1

Consider how the immediate surroundings of the wind turbine could look like. Sketch out your design.