

How to measure the strength of the wind?

1	Overall aims: <ul style="list-style-type: none"> • Improving the ability to formulate conclusions based on empirical observations • Enriching the vocabulary with concepts related to nature • Shaping construction skills • Developing social competences
2	Vocabulary - keywords wind, wind energy, wind farm, anemometer
3	Sustainable abilities developed <ul style="list-style-type: none"> • Anticipatory thinking • System thinking • Solving problems skills
4	Pillars of sustainability included <ul style="list-style-type: none"> • socio-cultural • economical
5	STEAM domains S, E, A, M



6

Teaching methodologies/activity outline

1. "What is wind energy?" - educational movie
 - How strong is the wind?
 - How to measure the strength of the wind?
 - What is an anemometer?
 - What are the types of winds?
 - What do we use the wind for?
 - How did people use the wind?
2. "How to build a simple anemometer?" - the teacher explains to the children that the anemometer is an instrument used to measure the speed of the wind. There are different types of anemometers, for example rotary anemometers which have a rotating element (e.g. a windmill) or tilting anemometers in which the wind deflects a rectangular plate. Children in groups perform a cup wind gauge. The teacher explains to the children that thanks to this device, we can measure the speed of the wind in different weather conditions.

Instruction:

- cut two strips 5 x 45 cm from a cardboard. In the center of each strip, make an incision approximately halfway through its height;
- insert one strip into the other so that they form a cross;
- cut off the top of the cups (so that they are shallower), stick the bottom part on each end of the paper cross. Pierce the pin through the center of the cross and then stick it into the pencil eraser;
- put the pencil in the bottle. The wind gauge is now ready.
- Put the anemometer outside. Watch the turning of the paper cross. If the cross does not rotate despite the noticeable wind, a larger hole should be made in the center of the cross. The cups catch the force of the wind and turn under its influence. The wind speed is higher the more times per minute the cross turns

3. "Measure the strength of the wind" - children will use a constructed anemometer to measure the strength of the wind on a few selected days. Then they will compare their results from individual days to observe how the strength of the wind has changed. The results of the measurements will be used for discussion: are there any conditions for the use of wind energy in the place where you live? The teacher presents a map of wind energy zones in their country.



Additional activity:

"Wind chimes" - making the instrument.

- paint the stick and keys according to your own idea and let them dry,
- tie 25 cm pieces of string to the keys, tie the other end to a stick at intervals of approx. 5 cm;
- cut the string twice as long as the stick, tie its ends at both ends of the stick. And now you can hang outside and watch the force of the wind move them.



7

Expected learning outcomes

The child will be able to:

- develop scientific thinking;
- explain how energy is obtained from wind;
- explain what renewable energy means;
- describe how a wind farm works and what is needed to build a wind turbine;
- indicate how and where wind energy is used in Poland;
- know how to measure the strength of the wind and how to use various devices for this;
- improve construction skills;
- work in a team.



8	Assessment <p>Summary in a circle - technique of unfinished sentences:</p> <ul style="list-style-type: none"> • Today I found out ... • The most enjoyable was... • The difficulty was ...
9	Equipment and materials to be used in learning unit (tools, ingredients etc) <p>scissors, square card, drawing pin, wooden pencil or stick, colored marker, ruler, strong cardboard, 4 paper or plastic cups, long pin, pencil with an eraser, narrow-necked bottle, strong glue, plasticine, scissors, paints, stick or 30-40 cm strip, 8-12 old unnecessary keys, acrylic paints, thin string (e.g. twine, twine) or twine, wool, fishing line.</p>
10	Kind of setting - lab, kitchen, outdoor etc. <p>preschool garden, classroom</p>
11	References - source: <ul style="list-style-type: none"> • https://wklasie.uniwersytetdzieci.pl/scenariusz/jak-silny-jest-wiatr/zobacz • https://www.youtube.com/watch?v=W7N5MtYs6F4 • https://giving.innerchildfun.com/2013/04/recycled-crafts-for-kids-diy-key-wind-chime.html

