CLIMATE DETECTIVES 2021 – 2022

ECO TAJNIACY
Zespół Szkolno-Przedszkolny

RESEARCH QUESTION

What kind of weather changes the quality of air in Jelenia Góra Valley?

SUMMARY OF PROJECT

The air pollution in Poland is a huge problem. More than half of European polluted cities are in our country. It's because of wrong heating, traffic and industry. Phenomenon, which causes a smog is a heat inversion. It blocks vertical circulation of air and stops cold air close to the ground with all of the air pollution. Smog has a bad influence on environment. It causes acid rains, soil pollution, photosynthesis disturbance, weakness of animal's bones but most of all it influences on us – people. Air pollution causes illnesses of respiratory system f.e. allergy, asthma, pneumonia, lungs or larynx cancer. There are about 45 000 premature deaths in Poland causes by the air pollution. That's why we decided to do research work in this topic in our locality. We bought the dust particles meter, which measure coarse dust particles (PM 2,5) and fine particles (PM 10). We got the money from parents. We took the permission from mayor to install the meter on the school building. We install the "Kanarek" app at our mobile phones. Thanks to this we had all the time access to current measurements. At the same time we were observing and taking notes of weather. Every day at 10:00 o'clock we wrote down the temperature, air pressure, wind and air humidity (we checked them in wireless weather station and meteorological websites). Besides we were observing students feelings about quality of air (transparency and smell).



Figure 1: Logo of popular app ("Kanarek"), which monitors air quality in Poland.

MAIN RESULTS

During our observation and taking notes (form 1th of March till 13th of April 2022) weather was changing a lot: air pressure from 995 till 1042 hPa, wind 1-29km/h, temperature 1-13 degrees and humidity 31-98%.
Conclusions:
1.There is much more risk of higher air pollution if the air pressure is high (more than 1020 hPa).
2.The risk of air pollution is lower if the wind is stronger (this correlation is bigger in the case of coarse dust particles).
3.Temperature and humidity have got less influence on the air pollution than air pressure and wind.
4.If you take twenty-four-hour air observation (from "Kanarek" app), you can notice that higher air pollution is in the morning (7:00-9:00 AM) corelated to brining kids to kindergarten and school and in the afternoon corelated with activating local burning furnaces.
5.There is probably much more air pollution at the height of 2 meters (where people exist) than at the height of 4 meters (where the meter is hung).
6.Subjective student's feelings about smell and transparency of the air are not correlated with the air measurements but have a big educational influence on kids.



Figure 2: The risk of air pollution is lower if the wind is stronger.

ACTIONS TO HELP LESSEN TO THE PROBLEM



Figure 3: The Day Without a Car.

Now we are going to publish our results in the school website and in the local newspaper. We want to present our project at the school project's festival in June. We will make a proposal to our School Student Council to organize The Day Without a Car. We are going to give a good example of treating environment (we will star going to school by foot, by bicycle or by bus). We will make an appeal to the school management to organize more bike racks close in the school area with a good view in the monitoring system. Besides we will stop complaining when it's windy, because now we know it's good for us – it causes less air pollution in our locality.