INFOSHEET GOOD PRACTICE

Title/Theme:

The Weather forecast

Grade

1st grade	☐	4th grade	☐	Not grade specific	☐
2nd grade	☐	5th grade	☒	Staff	☐
3rd grade	☐	6th grade	☐		

Subject areas

Mathematics	☒	History	☐
Language	☒	Study of the environment	☒
2nd Foreign language	☐	Geography	☐
Arts education	☐	Natural Sciences	☒
Physical education	☐	Civics Education	☐
ICT	☒	Religious Education	☐
Social studies	☐	other	☐

Resource Types

worksheets	☒
Lesson plans	☒
video	☐
WebQuest	☐
PDF	☒
PPT	☒
sources	☐

Focus on

Outdoor learning activity	☒
Community-based learning	☒
Cross curricular	☒
21st C. skills	☒

What teaching strategies do you advice?

Project based learning with clear instruction for every task.

The children can work in pairs or small groups.

You have to make sure the children understand the subject knowledge of a step before moving to the next step!

Co-funded by the Erasmus+ Programme of the European Union

THE WEATHER FORECAST

By Joyce Versweyvel

CONTENT

WHAT DO I TEACH

HOW DO I TEACH

WHAT DO I TEACH?

1 THEME

The weather

1.1 Driving question:

How can I investigate the weather, collect data and turn my findings into an accurate weather forecast?

2 LEARNING GOALS

The children will be able to produce rudimentary weather forecasts based on self-collected data and knowledge of weather vocabulary.

At the end of this project, students will be able to…

- use adjectives (comparative and superlative adjectives) correctly in their weather report;
- write and present a weather report applying the weather terms;
- identify, explain and use differing weather symbols;
- plan and implement investigative procedures;
- select and use appropriate instruments and technology to measure temperature/precipitation/wind/air pressure in real-world situations;
- collect, analyse and interpret data;
- use technology tools to process data and report results.

3 CONTEXT OF THE CHILDREN

3.1 What do the children bring to the project?

The children see or hear a weather forecast every day and use it for different purposes. They might use it to plan their activities, hobbies … They could also use it to get dressed warm enough during cold winter days.

There are a few children that have problems with the language skills needed for this project.

3.2 What prior knowledge and skills do the children have?

- Knowledge about the weather:
  - In the second grade, our children learn about the weather. They take temperatures and learn about the clouds.
  - In the third grade the children visit the sea and learn about the wind.

- In the fourth grade they learn what time of year is the best time to grow strawberries and they look at the weather as a defining element in growing fruits and vegetables.

So the children have learned a lot of elements already. Therefor we start with a repetition of these elements and use their prior knowledge on the subject to build new knowledge.

- Knowledge of the use of ICT:
  - The children are used to work with Chromebook in the classroom. They are all familiar with the programs we will use for this project.

4 CONTEXT OF THE SCHOOL

- Extreme weather events such as heat waves and large storms become more frequent and more intense. The floods of last summer are an example of this. During the schoolyear we see a lot of different sorts of weather: it can snow in April and it can be hot in December. This offers great opportunities to monitor the weather of a longer period of time.
- https://www.climatechangepost.com/belgium/climate-change/
- It's a 4 week project but if necessary, we can extend the project by one week.
- I have considered every learner: children that experience difficulties with mathematics/language/ICT will get more guided instruction and more opportunities to assess their work under supervision of a teacher.
- In our school, outdoor education is very important to gain learning skills. Using the outdoors is part of our learning routine and offers great opportunities for discovering nature.

5 21st C. SKILLS

With this project, children get a lot of opportunities to develop their critical thinking-, communication- and technology skills as they generate questions, identify patterns and apply knowledge to gain information and solve problems in the real world using technology.

HOW DO I TEACH?

6 DELIVERY

6.1 Activating prior knowledge: (At the start of the project.)

prompting questions:

- What are you wearing today?
- Why did you decide to wear this?
  (What you wear often depends on what the weather is going to be like.)
- How do you know in the morning what the weather is going to be like?
  (You can check the forecast through your phone, your tablet, the radio, television, or the paper.)

The best way to determine the weather is to step outside and to see what it's doing.

- What is the weather like today? Is this typical of this time of year?
- Does the weather change here with the seasons or is it similar the entire year?
- If today is atypical, what is the normal type of weather you would expect for this time of year?

Back inside, you could watch a weather forecast in the paper, online or listen to the forecast on the radio.

How do meteorologists predict the weather? What tools are used?

When you look at a weather map, what do all the symbols mean?

(Once the project has started, we start off every lesson with a quick question about the previous day's work to see what and how much they remember.)

6.2 Subject content

- To predict the weather for a particular day, meteorologists first take a look at what weather occurred in the past 24 hours in a particular area, as well as what's happening right now. Most local weather is determined by location or the geographic conditions of the area.

  For example, we know that the weather in Vorselaar can be very different from the weather in the mountains in the Ardennes or in Nieuwpoort at Sea.

  This general knowledge may provide a foundation for predicting the weather in a particular region, however, meteorologists require much more detailed information to predict the local weather on a daily basis.
- Weather is all about collecting data. The atmosphere is chaotic and complex, but by having lots of data about the past we can recognize patterns and use them to predict the future.
- Changes in weather are important to human life, as it governs our daily activities and brings moisture to nourish agriculture. For example, it's important to know whether you need to

protect your house from heavy rains or your lawn from dry temperatures that can cause brush fires. More serious weather, like tornados and hurricanes, can cause severe damage to people and properties.

- What is the primary cause of different types of weather? Most simply put, the cause is air masses and how air masses interact with each other.

  There are two main types:

  - hot air masses, which are large areas of hot air moving in the same direction,
  - cold air masses, which are areas of cold air moving together in the same direction.

  A front is where two or more air masses meet.

  A **cold front** occurs when cold air pushes under a mass of warm air. Since the warm air is lighter, it is pushed up above the cold air. The rising warm air cools and condenses, sometimes causing rainstorms and mild temperatures.

  A **warm front** occurs when a warm air mass moves over a cold air mass. The rising warm air condenses as it rises in elevation, creating clouds and light rain or snow.

- **Key vocabulary:**
  - meteorologists: scientists who study the atmosphere and weather to make predictions
  - weather: the atmospheric condition in a particular place for a short period
  - Temperature: measure of how warm or cold the air is
  - Humidity: measures how much moisture is present in the atmosphere
  - air pressure: the amount of air molecules packed into an area (High pressure areas bring calm, cool, sunny weather whereas low pressure areas bring warm weather, rain, and clouds.
  - Wind: is the movement of air through the atmosphere.
  - precipitation: is any form of water falling from the clouds such as snow and rain.
  - weather pattern: When the weather maintains consistency for a period of time
  - weather report: a systematic statement of the existing and usually the predicted meteorological conditions over a particular area
  - Weather station: a station for taking, recording, and reporting meteorological observations
  - weather balloons: float up into the atmosphere and get an idea of what's going on up there
  - weather satellites: see what's going on in the atmosphere from above.
  - rain gauges: indicate how much precipitation has fallen
  - Thermometer: instrument used to indicate the temperature
  - Barometer: instrument to measure air pressure. Atmospheric pressure can indicate weather changes.
  - Wind vane: instrument to measure the speed and direction of the wind
  - weather maps: maps that show what the weather will be like

- prediction: what meteorologists do when they state what the weather will most likely be
- cold front: mass of cold air that replaces a warm air mass (When cold air is replacing warm air, it's called a cold front. This causes temperatures to drop, and tends to lead to heavy thunderstorms.)
- warm front: mass of warm air that replaces a cold air mass (When warm air is replacing cold air, it's called a warm front. This causes temperature and humidity to rise.)
- High Pressure System: means clear, nice weather will be around
- Low pressure system: means precipitation and wind will be around
- forecasting tools: meteorologists have a lot of forecasting tools such as satellites, radar, and surface maps at their disposal.
- Air mass: An air mass is a large area of air with the same characteristics (with uniform temperatures and air pressure).

6.3 ACTIONS

WEEK 1:

- During science, the children discuss what a meteorologist does and how the weather is forecasted on television: They think about what would be needed to set up a television area for forecasting the weather in the classroom. They work in small groups to come up with the best way to record their own weather forecast at the end of the week.
- They learn how to use a thermometer, a rain gauge and a wind gauge. They examine how these instruments work and how they can make these tools themselves.
- The children learn how to use a data spreadsheet (excel – google spreadsheet) in the ICT lessons. They make up a spreadsheet to help them collect data. In the spreadsheet they will have to add data on a daily basis.
- During literature, the children read a text about the weather (close reading). They look up all the new words and answer questions about the weather.

WEEK2:

- The children continue to learn more about the weather during science. They work in groups to build tools like a wind gauge and a rain gauge.
- The children practice the use of comparative and superlative adjectives (using the new vocabulary about the weather) during literature.
- The children work with spreadsheet in ICT and they learn how to use formulas to calculate the average temperature using fictive numbers.
- The children talk to local firefighters, farmers, construction builders to find out why the weather forecast is important to them.

WEEK 3:

- During science, the children have to go outside every day and take current weather measurements. They add the data to their spreadsheet. They also set up a television area and make weather maps to use for their weather forecast.
- The children write a weather report using the new vocabulary. They use the data they gathered outside.
- In the ICT lessons they learn how to add various types of charts and graphs to their spreadsheet.

WEEK 4:

- The children finish their report and spreadsheet.
- Mathematics: they learn about the use of three different types of average in maths: the mean, the mode and the median. They use this knowledge in their spreadsheet.
- The children take turns role-playing weather forecasting. They use the sentences/scripts they prepared. The children videotape their weather reports in small groups so they can view their forecast on TV later.

6.4 Outdoor and/or Community-based learning:

- We invite a local meteorologist/hobbyist to visit our school or we go out to the neighbourhood to find someone who can teach us about the weather
- observations – measurements: The children go outside (or in their community) to collect data. They observe the main components to weather: temperature – humidity – wind – precipitation – air pressure.
- We let the children talk to people in the community to find out why the weather is important to them: we talk to a farmer, a firefighter and a construction worker.

6.5 Sources

https://www.youtube.com/watch?v=fdErsR8_NaU

7 REFLECTION

7.1 What opportunities do the children have to reflect?

The children will need to reflect on their work when moving from one task to the next. For instance, they need to do a good job collecting data in order to be able to make a good weather map and rain graph. The teacher provides a few minutes every day and stimulates the children to look at their work. Do you need to do anything else today? Are you satisfied with what you wrote? Did you put in enough effort in your data collection?

7.2 How do I engage in self-reflection?

I systematically observes a few children to see whether or net the children are engaged in the project and whether they are learning what I intended them to learn. This way I can see what parts of the lesson/instruction might be improved or changed or repeated for better learning outcomes. I writes down these reflections after every lesson.

In order to get the children's opinion on lessons and activities, I talk with the children and create a survey at the end of the project. This provides me with a better idea of how the children experienced the overall project.

8 ASSESSMENT

- At the end of every week, the children submit their work so I can provide them with a written feedback on Monday. I also give feedback when observing their work in the classroom and outside while taking measurements of the weather.
- To get insight into what vocabulary terms and facts the children know, we do a quiz using Kahoot (every week).
- To evaluate the learning goals, we do a test at the end of the project.
- My observations (notes) of the children at work provide valuable data.
- The children will demonstrate what they learned by presenting the weather based on their work.

9 NEXT STEPS

The children will use the knowledge they gained in future projects like for instance our 'learning garden' project and a project about the climate.

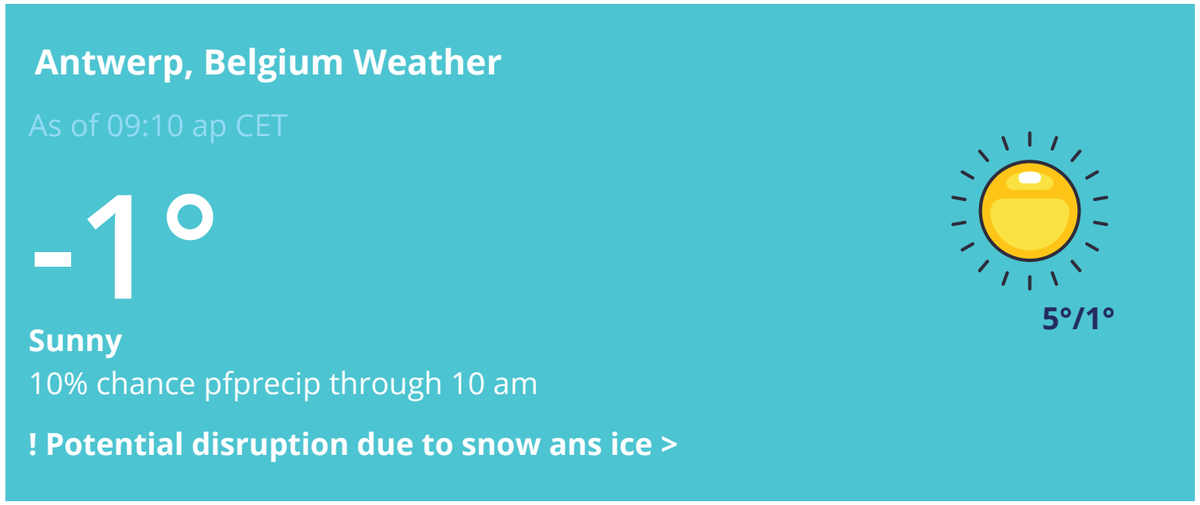
The children will be better prepared when extreme weather events occur.

What new words did you use in your weather report?

- [ ] **Temperature:** measure of how warm or cold the air is
- [ ] **Humidity**: measures how much moisture is present in the atmosphere
- [ ] **Air pressure**: the amount of air molecules packed into an area
- [ ] **Wind**: the movement of air through the atmosphere
- [ ] **Precipitation**: is any form of water falling from the clouds such as snow and rain.
- [ ] **Weather pattern**: When the weather maintains consistency for a period of time
- [ ] **Weather report**: a systematic statement of the existing and the predicted meteorological conditions
- [ ] **Weather station**: a station for taking, recording, and reporting meteorological observations
- [ ] **Rain gauge**: indicates how much precipitation has fallen
- [ ] **Thermometer**: instrument used to indicate the temperature
- [ ] **Barometer**: instrument to measure air pressure
- [ ] **Wind vane:** instrument to measure the speed and direction of the wind
- [ ] **weather map**: map that shows what the weather will be like
- [ ] **cold front**: mass of cold air that replaces a warm air mass
- [ ] **warm front:** mass of warm air that replaces a cold air mass

- [ ] cloudiness
- [ ] dryness
- [ ] humidity
- [ ] sunshine
- [ ] storm
- [ ] hurricane
- [ ] tornado
- [ ] blizzard
- [ ] hail
- [ ] thunder and lightning storm
- [ ] fog
- [ ] heatwave

NOTES



WORKSHEET
observe and record

What do you have to do? (instructions)

This week, before the lessons start and once in the afternoon, you will go outside to observe the weather and to take measurements using the available instruments.
You record what you observed and what you measured on this worksheet.
Be precise and provide detailed information on the weather everyday. Answer every question!
Use as much words that we learned as possible.

If you do this well, you will have no problem analysing the data in your data sheet next week.

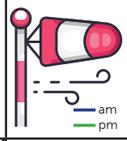
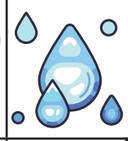
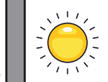
What are your learning goals?

At the end of this week, you will be able to...

- write a weather report applying the weather terms;
- identify, explain and use differing weather symbols;
- plan and implement investigative procedures;
- select and use appropriate instruments to measure in real-world situations;

Windekind
VRIJE LAGERE OEFENSCHOOL

What's the weather like today?

Measure twice a day!													How would you describe the weather today?
MONDAY	°C / °C	N W E S	mm / mm										
TUESDAY	°C / °C	N W E S	mm / mm										
WEDNESDAY	°C / °C	N W E S	mm / mm										
THURSDAY	°C / °C	N W E S	mm / mm										
FRIDAY	°C / °C	N W E S	mm / mm										
SATERDAY	°C / °C	N W E S	mm / mm										
SUNDAY	°C / °C	N W E S	mm / mm										
	calculate the average temperature	Does the wind always blow in the same direction?	How much rain did we get this week?	How many times did we get: 									**Can you predict next weeks weather?**