

Lesson Planner – Measuring the Weather

By using a range of instruments, I can measure and record the weather and can discuss how weather affects my life.

SOC 1-12a

Benchmark – Uses instruments to measure and record at least two different weather elements, for example, temperature, rainfall or wind direction

I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments or units. **MNU 1-11a**

Optional Flipped Learning

<https://www.metoffice.gov.uk/weather/learn-about/met-office-for-schools/other-content/other-resources/how-to-measure-the-weather>

Use the videos and information contained here to start discussions about how weather is measured and which types of weather pupils would want to investigate in their school grounds.

Why is it important to know what the weather is doing/the weather patterns? What impact does this have on our everyday life? What impact does this have on our life as a society (climate change/increase in extreme weather etc)

In school Learning

In the classroom

Make your own mini notebook using the video instructions on this page:

<https://blogs.glowscotland.org.uk/ea/learningoutdoorsupportteam/make-a-mini-notebook/>

You will need:

- an A4 sheet of paper
- a pair of scissors
- a flat, hard surface to work on
- pens and pencils to decorate and write in it

Use this notebook (and make others) to track and record the weather each day for a week/two weeks/month

You can separate the notebook how you please to record the types of weather that you and your class choose.

Outside – optional activities based on which weather you choose to measure

Instructions for all measuring devices can be found here:

<https://blogs.glowscotland.org.uk/ea/public/learningoutdoorsupportteam/uploads/sites/11891/2020/08/13094825/Weather-kit.pdf>

OR in the attached learning grid

Activity 1 – Make a rain gauge

You will need – Clean clear plastic bottle

Strong tape / paperclips

Water

Ruler (marked in mm)

Instructions

1. Cut the bottle in two (one quarter at the top and three quarters at the bottom)
2. Upturn the neck and place it inside the rest of the bottle.
3. Use sticky tape or paperclips to fix the two pieces together, but not too tightly as you will need to take them apart to empty out the rainwater (see step 7).
4. Pour in water to form a base level. This will prevent the accuracy of the readings being affected by The rounded bottom of the bottle.

5. Use sticky tape to fasten a ruler to the side of the gauge. The zero of the scale should be next to the base level of water.
6. Place the gauge outside in the open, away from buildings and trees. Bricks or logs can be placed around the bottle to prevent it from blowing over. Record the results each day.
7. After each reading, pour out the rainwater that has collected. You will need to take the rain gauge apart to let the water out. Now return the water to the base level ready for the next day.

Activity 2 – Make a wind vane

You will need:

- Thin cardboard / card (A4 size)
- Pencil and markers
- Scissors
- Glue or sticky tape
- Pen cap
- Garden wire (50cm) / wire coat hanger
- Paper plate
- Drawing pins
- Compass
- Optional:
 - Drinking straw
 - Plasticine (Place around base of the wire to add support)

Instructions

1. Draw an outline of an arrow on the cardboard / card (around 25cm long). Draw a picture of your choice to place at the end of the arrow.
2. Cut out the arrow and shape out. Draw around the arrow and cut another one out.
3. Glue the 2 arrows together and leave a small opening in the middle.
4. Glue or tape the pen cap into the opening. Attach the picture at the end of the arrow.
5. Label the paper plate with the compass directions. Choose an area of open ground away from buildings and trees.
6. Coil one end of the wire around a fence post leaving 10cm of wire pointing up in a straight line. Cut the drinking straw 1cm shorter than the wire and place over the wire to add support. Make a small hole in the middle of the paper plate with a pencil and place the plate on top of the wire. Use a compass to find North and arrange the plate in the correct position. Secure the plate with drawing pins. Place the pen top and arrow on top of the wire. Record the direction the wind is blowing FROM.

Activity 3 – Make a wind sock

You will need:

- Empty plastic bottle (2 litre) - cleaned and without label
- Plastic bag
- Scissors
- Hole punch
- String (10cm)
- Compass to work out direction

Instructions

1. Cut the top and bottom off the bottle. Trim with scissors to make sure there are no sharp edges.
2. Use the hole punch or scissors to punch two holes at opposite sides. On the bottom end of the plastic bottle punch sixteen holes all the way round.
3. Cut out sixteen 2 cm wide strips from the plastic bag.
4. Thread a plastic strip through each hole and tie securely leaving one end dangling down.
5. Thread the string through and tie at each side.
6. Hold the wind sock in the direction of the wind or hang on a tree/post and observe.

Make the measuring devices of your choice and use it each day to record the weather. Talk to the pupils about any patterns that they see emerging, or changes. Use this to stimulate discussion about the effect that weather has on their lives. This could also be a starting point for a discussion about climate and climate change.

Complete follow up activities if required.

Out of School Learning

At home

At night, watch the weather forecast for the next day on the television or on YouTube. Make a note of what the weather has to be like throughout the day – temperature, rain, sun, cloud etc. If you would like, you can access more detailed weather forecasts on the Met Office website for your area. These will tell you the wind speed, feels like temperature and likelihood of rain for your area.

Compare the forecast to what the weather has actually ended up like. Is it the same? Is it different? Why do you think this is?

Use videos on the Met Office Learn YouTube channel to find out more.

Learning at School Outdoors

<p><u>Experience and Outcomes</u></p> <p>By using a range of instruments, I can measure and record the weather and can discuss how weather affects my life. SOC 1-12a</p> <p>Benchmark - Uses instruments to measure and record at least two different weather elements, for example, temperature, rainfall and wind direction</p> <p>I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units. MNU 1-11a</p> <p><u>Learning Outcome</u></p> <p>To measure and record at least two different types of weather using different instruments.</p> <p>To accurately take measurements using the appropriate instruments and units.</p> <p>To record the weather over a specified period of time.</p>	<p><u>Resources</u></p> <p>* These activities are optional and can be chosen depending on which type of weather your class wish to track. Further information can be found by using the OPAL DIY Weather Kit PDF in the attached planner.</p> <p><u>Activity 1 – Making a rain gauge</u></p> <p>Clean clear plastic bottle Strong tape / paperclips Water Ruler (marked in mm)</p> <p><u>Activity 2 – Making a wind vane</u></p> <p>Thin cardboard / card (A4 size) Pencil and markers Scissors Glue or sticky tape Pen cap Garden wire (50cm) / wire coat hanger Paper plate Drawing pins Compass Optional: Drinking straw Plasticine (Place around base of the wire to add support)</p> <p><u>Activity 3 – Making a wind sock</u></p> <p>Empty plastic bottle (2 litre) - cleaned and without label Plastic bag Scissors Hole punch String (10cm) Compass to work out direction</p>
<p><u>Activity</u></p> <p>Make your chosen weather measuring instruments suitable for your class and setting. Have discussions about how the class think that they will work, why they will work etc.</p> <p>Place your measuring devices outside and check them each day, measure and make notes in pupil notebooks. Check each day to see if there are any patterns emerging or if pupils notice anything. Pupils could place their measure devices in different areas of the school grounds to see if they have differing results – why might this be?</p> <p>Link to home learning – watching the forecast – what is the same, what is different?</p>	<p><u>Assessment</u></p> <p>Written evidence in pupil note books Observation and discussion of pupils measuring on a daily basis</p> <p>Follow Up Activity/Homework</p> <ul style="list-style-type: none"> • Discussions on the impact of the weather on us – our daily lives and life in the longer term. Begin looking at climate change, flooding, extreme weather etc • Met office Forecasting lesson - https://www.metoffice.gov.uk/weather/learn-about/met-office-for-schools/themes-for-7-11/forecasting-and-prediction • Writing instructions on making measuring devices and recording the weather • Creating graphs of the data collected • Checking their results with weather forecasts (ie, predicted wind speed in the forecast) • Building dens – focus on sheltering from the different types of weather, looking at wind direction; where would be best sheltered from the wind?

WEATHER LESSON – FURTHER TEACHER NOTES

Teacher notes and useful resources for all lessons in the sequence

Useful Links:

Learning Outdoors Support Team Website: <https://blogs.glowscotland.org.uk/ea/learningoutdoorssupportteam/>

DIY Weather Kits – OPAL Resource:

<https://blogs.glowscotland.org.uk/ea/public/learningoutdoorssupportteam/uploads/sites/11891/2020/08/13094825/Weather-kit.pdf>

How to make weather instruments:

<https://www.wikihow.com/Make-Weather-Instruments#Making-a-Barometer>

Met Office – Learn about Weather YouTube page: <https://www.youtube.com/channel/UCylCbuzRsB92Gc1I8ru6VIg>

Understanding the weather; information for teachers PowerPoint:

<https://blogs.glowscotland.org.uk/ea/public/learningoutdoorssupportteam/uploads/sites/11891/2020/05/18114837/The-Weather.pptx>

Met Office Weather YouTube page: <https://www.youtube.com/user/TheMetOffice>

Met Office Resources for Schools: <https://www.metoffice.gov.uk/weather/learn-about/met-office-for-schools>

Nose up high in the sky resource:

<https://blogs.glowscotland.org.uk/ea/public/learningoutdoorssupportteam/uploads/sites/11891/2020/08/13105533/Nose-up-high-in-the-sky-STEM3.pdf>