

The seasons and times of sunrise and sunset

Activity Description

This activity for K4 - K8 pupils aims to help them understand the seasons and their effects on sunrise and sunset times.

Students are divided into four groups representing the seasons and research sunrise and sunset times for a specific date. The results are then displayed and analyzed to observe the variations between seasons and discuss the reasons for these changes.

The activity can also include observing the cardinal points with a compass to show how the position of the sun varies through the seasons. The activity ends with a summary of the conclusions and a discussion on the importance of understanding these variations for agriculture, human activities and ecosystems.

Type of activity

Earth and Life Sciences - Outdoors

Material

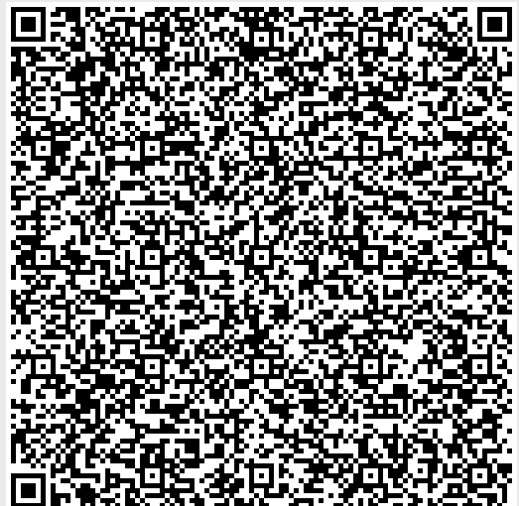
FizziQ Junior on a smartphone or tablet

Features of FizziQ Jr

The Sun-Moon instrument

Compass - Orientation

Experiment notebook (text and photo)



Instructions:

- This activity is best done as part of a sequence about the seasons.
- Explain to students that the seasons are caused by the tilt of the Earth's axis of rotation and its orbit around the sun. To specify that the seasons have an impact on sunrise and sunset times.
- Divide students into four groups, each representing a season (spring, summer, fall, winter). Ask them to choose a date representative of their season (for example, the summer or winter solstice, or the spring or autumn equinox).
- Ask students which FizziQ Junior instrument they could use to find out the time of sunrise and sunset.
- By using this tool, ask them to find the sunrise and sunset times for the date they have chosen. Make sure the students add this information to the experiment notebook.
- ask them to determine the time of sunrise and sunset one week before and one week after the chosen date.
- On a board, create a four-column chart for each season. Ask students to record sunrise and sunset times for their respective seasons.
- Have students observe how sunrise and sunset times vary between seasons. Encourage them to discuss why these variations occur and how they affect the length of day and night.
- Summarize the conclusions drawn from the activity and explain to the students how the seasons influence the length of day and night, as well as the position of the sun in the sky. Emphasize the importance of understanding these variations for agriculture, human activities and ecosystems.
- (Optional) Ask students to observe during the year the direction of the sunset using the FizziQ Junior compass which can be installed on their parent's smartphone or tablet. The pupils can thus notice that the position of the sun also varies during the seasons.

Scientific lighting

The cause of the seasons is related to the tilt of the Earth's axis of rotation and its orbit around the Sun. The Earth's axis is tilted about 23.5 degrees relative to Earth's orbit around the Sun. This tilt causes different hemispheres of the Earth to receive varying amounts of sunlight and heat throughout the year.

When the northern hemisphere is tilted towards the Sun, it receives more light and heat, which causes summer. During this time, the southern hemisphere is tilted away from the Sun, receiving less light and heat, which causes winter. The situation is reversed when the southern hemisphere is tilted towards the Sun. The spring and fall equinoxes mark times when both hemispheres receive equal amounts of light and heat, when the Earth's tilt is not toward or away from the Sun.

The seasons influence sunrise and sunset times. During the summer months, the days are longer because the hemisphere tilts towards the Sun. In the northern hemisphere,

the further north the observer is, the longer the day length. At the latitude of about 66.5 degrees (90 - the inclination), the observer will have a nightless day at the solstice. At the equator the length of the day is the same whatever the seasons. Conversely, during the winter months the days are shorter, with later sunrises and earlier sunsets. The spring and fall equinoxes mark times when day and night are equal in length, about 12 hours each.

Security

Students should be careful when using their tablet outdoors. They shouldn't get distracted, drop the tablet on the floor, or get water on it. Tablets are fragile objects.

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