

1st Grade Earth Science Unit

Grade Level: 1st

Unit: Sun & Weather

Time Frame: 1st Marking Period

Unit Essential Questions:

- What weather changes occur from day to day?
- What changes occur in the weather from season to season?
- What are some safety precautions for severe weather?

Big ideas: Patterns & Cycles of Weather & effect of Sunlight on Earth's Surface

Essential Concepts/Skills/

GLCE's

E.ES.E.2 Weather - Weather changes from day to day and over the seasons.

E.ES.01.21 Compare daily changes in the weather related to temperature (cold, hot, warm, cool); cloud cover (cloudy, partly cloudy, foggy); precipitation (rain, snow, hail, freezing rain); wind (breezy, windy, calm).

E.ES.01.22 Describe and compare weather related to the four seasons in terms of temperature, cloud cover, precipitation, and wind.

E.ES.01.23 Describe severe weather characteristics.

E.ES.01.24 Describe precautions that should be taken for human safety during severe weather conditions (thunder and lightning, tornadoes, strong winds, heavy precipitation).

E.ES.E.3 Weather Measurement - Scientists use tools for observing, recording, and predicting weather changes.

E.ES.01.31 Identify the tools that might be used to measure temperature, precipitation, cloud cover, and wind.

E.ES.01.32 Observe and collect data of weather conditions over a period of time.

NGSS:

K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.

K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

PRE-PLANNING CONSIDERATIONS

Misconceptions that need to be addressed:

- Students may think that some objects, like blankets, produce their own heat. They need to be guided to understand that heat is transferred from one object to another. They should engage in activities that lead them to understand that objects can keep things warm by trapping heat.
- Students may think that heat and cold are very different instead of thinking of cold as the absence of heat. They should be shown that heat and cold are at opposite ends of a continuum.
- They may think that some substances cannot heat up. (i.e. air, sugar, flour). They will need to engage in activities that lead to an understanding that all substances heat up, but some do so more easily than others.
- Children have their own theories about why the weather changes. For instance "The same weather goes around the world and we get it when it is our turn."

Vocabulary

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| <ul style="list-style-type: none"> ● weather ● severe weather ● temperature ● observe | <ul style="list-style-type: none"> ● predict ● sunlight ● design ● record |
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Supplies to gather or things that need to be done:

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| <ul style="list-style-type: none"> ● Crayons or colored pencils ● Paper ● Demonstration thermometer (with manual moveable alcohol line) ● Glue ● Hole punch ● Ice cubes (1 tray) ● Outdoor thermometer near classroom ● Picture cards (4cards, 1 for each type of day: hot, warm, cool, cold) ● Red and white yarn (1 spool of each) ● Scissors ● Small cups (4 per child at center) ● Tag board (1 per each thermometer made) ● Temperature graph ● Water ● Alcohol thermometers (1 per group) ● Class chart "Weather Chart" ● Blue construction paper (2 (9 X 12) pieces per child) ● Cotton balls (7 per child) ● Anemometers ● Globe ● Incandescent light bulbs in lamps (several, placed in secure places) ● Pin (1 per group) ● Pinwheel pattern on tag board | <ul style="list-style-type: none"> ● Scissors (1 per group) ● Soda straws or wood dowels (12 cm, per group) ● Map of school with shelter area for severe weather ● Flour ● Glass (drinking) ● Mesh sieve ● Prism ● Rain gauge ● Shallow pan (1" deep) ● Food coloring ● Poster or tag board ● Soda bottles (2 clean 2 liter) ● Tornado tube link (or duct tape) ● Desk lamp (optional) ● Ice cold water ● Styrofoam cups ● Thermometers or temperature strips ● Assorted fabrics ● Tape ● Scissors ● Foam ● Aluminum foil ● Dowels ● Popsicle sticks or tongue depressors |
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Additional Science Learning Cycle Resources

ENGAGE (Choose 1 or 2)

Whole Group

http://www.edheads.org/activities/weather/frame_loader.htm (interactive site on weather)

<http://www.pbslearningmedia.org/resource/ess05.sci.ess.eiu.riseset/observe-sunrise-and-sunset/> (sunrise/sunset video)

EXPLORE (Inquiry) Choose 1 or 2

Part

Link to Daily Lessons

<http://oaklandk12-public.rubiconatlas.org/Atlas/Browse/UnitMap/View/Default?BackLink=159682&UnitID=13368&YearID=2015&CurriculumMapID=69&SourceSiteID=2599>

<http://www.prometheanplanet.com/en-us/Resources/Item/33322/mobys-weather-forecast#.U5rrvZRdUuU> (flipchart for tracking weather patterns each month)

https://www.boreal.com/www.boreal.com/images/kindergarten_temp_probe-_final.pdf (Effect of Sunlight on various surfaces 2-3 days)

<http://sciencenetlinks.com/lessons/the-warmth-of-the-sun/> (Similar to the lesson above 1-2 days)

http://www.teachengineering.org/view_activity.php?url=collection/wpi_/activities/wpi_colors_absorb_heat_better/colors_absorb_heat_better.xml (Heat and different colors 1-2 days)

EXPLAIN (Choose 3-4)

Part

<http://www.prometheanplanet.com/en-us/Resources/Item/41414/what-is-the-weather-today#.U5upb5RdUuU> (seasons, weather tools & terms)

<http://bookbuilder.cast.org/view.php?op=view&book=44591&page=1> (Digital book- The seasons & the Sun)

https://www.youtube.com/watch?v=N_bqZDTBfFE (severe weather video)

https://www.youtube.com/watch?v=_0zKV6j1MDg (seasons song video)

<https://www.youtube.com/watch?v=ORH3ZkE6NWI> (sun video)

<http://www.nssl.noaa.gov/education/students/> (variety of worksheets & informational coloring books on severe weather)

ELABORATE

(Engineering Challenge)

Whole class introduction & then Part

Use tools and materials to **design and build** a structure that will reduce the warming effect of sunlight on an area. Provide students with a wide variety of materials. Tell them that they will need to work in teams to design & create something that can be used to keep a glass of water cold. Feel free to be creative with how you present the engineering challenge (i.e. Shark Tank, Invent a product, fictional situation, etc...)

<http://sciencenetlinks.com/lessons/the-warmth-of-the-sun/> (Just for some extra fun)

EVALUATE

Whole

<http://www.prometheanplanet.com/en-us/Resources/Item/37506/all-about-weather#.U5rsLJR>
[UuU](#) (flipchart with weather quiz)

<http://www.prometheanplanet.com/en-us/Resources/Item/75938/severe-weather#.U5rvypRdL>
[uU](#) (flipchart -severe weather quiz)

<http://www.tlsbooks.com/allkindsofweather.pdf> (weather matching worksheet-easy)

https://www.doe.k12.de.us/infosuites/staff/sci_assess/files/elementary/Weather_Student_Booklet_7-09.pdf (Weather Assessment- Sample- Needs to be modified)

Unit connections across the content areas:

ELA:

SS.ELA-LITERACY.W.1.2

Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

CCSS.ELA-LITERACY.W.1.8

With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

CCSS.ELA-LITERACY.SL.1.1.A

Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).

CCSS.ELA-LITERACY.SL.1.1.B

Build on others' talk in conversations by responding to the comments of others through multiple exchanges.

CCSS.ELA-LITERACY.SL.1.1.C

Ask questions to clear up any confusion about the topics and texts under discussion.