

Predicting Weather

Subject: 7th Grade Science
Topic/Lesson: Predicting Weather

Standard:

Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth's atmosphere, weather, and climate, and the effects of the atmosphere on humans.

Clarifying Objectives: Predict weather conditions and patterns based on information obtained from

- Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity, and air pressure).
- Weather maps, satellites, and radar.
- Cloud shapes and types and associated elevation.

Materials:

Power Point on Population Dynamics (Population Dynamics: The Great Debate), samples of literature and informational text, multi-media sources

Essential Terminology: cirrus, stratus, cumulus, nimbus, anemometer, psychrometer, wind vane, thermometer, radar, satellite, weather balloon, meteorologist, warm front, cold front, occluded front, stationary front, barometer, mercury barometer, aneroid barometer, altitude, condensation, air pressure, humidity, precipitation

This will likely take 3-5 days for students to complete all stations unless students are on a block (90 minute) schedule.

Procedures/Co-Teaching Approaches Anticipatory Set/ Building Background Knowledge	Teaming	Students are given a word sort (the essential terminology words listed above) when they enter the room. Directions are on whiteboard/ Smart Board to sort and group the words in any way that they think makes sense (open sort) Pair students so that there is one person in the group capable of reading at least 50% of the words. Have students share out with the class how they sorted their words. Accept all answers as this is an open sort and a brainstorming activity.
	Alternative Teaching	Based on a pre-assessment, divide the class into two groups. Group A – understand 90% or more of the essential terminology. Group B - needs pre-teaching to build

	Teaming	<p>background knowledge on the terminology.</p> <p>Group A – Will review concepts from a previous unit of study with one teacher.</p> <p>Group B – Will learn about the words through discussion and visual examples.</p> <p>There may be classes where the entire class needs to have pre-teaching to build background knowledge about the Essential Terminology. If so, divide class in half and use Parallel approach to do this.</p> <p>As a whole class, use modified/cloze notes to have students complete a tri-fold sheet of the Essential Terminology. The columns include term, brief description, visual representation created by student. The majority of the description is already on the sheet allowing all students to participate in class discussion and creating their visual representations as opposed to rote note taking.</p>
<p>Procedures/Co-Teaching Approaches</p> <p>Practice/Application</p>	<p>Stations</p> <p>Heterogeneously grouped</p>	<p>Stations topics are listed below including skills students will learn and apply in each station. Each check represents a learning goal/ target.</p> <ol style="list-style-type: none"> 1. Clouds and Associated Weather (Independent Station – First, students will answer and discuss cloud probe – see “what clouds are made of” article. Second, students will create cloud booklets, see handout. Early finishers will read head in the clouds): <ul style="list-style-type: none"> ✓ I can describe the shape and associated weather of the 3 main cloud types. ✓ I know what nimbus means and the type of associated weather. ✓ I can explain how clouds are formed. 2. Basic Weather Instruments (Independent Station. Students are given a list of weather instruments to research using various sources including internet and text. They create a guide showing the tool and what it is used for. They choose the format. Offer options such as paper guide, magazine style, Power Point, video, etc.): <ul style="list-style-type: none"> ✓ I can identify the instruments and units used to measure wind speed and direction, temperature, relative humidity, and precipitation. 3. Weather Technology (Teacher led station. Teacher will use the two weather mapping articles along with the Smartboard or computer to show students

		<p>examples of weather maps using National Weather Service website and other resources. Each student will explain a particular weather map they choose from a text or online)</p> <ul style="list-style-type: none"> ✓ I can interpret symbols on a weather map to explain current weather conditions. ✓ I can describe the data generated by radar, satellites, weather balloons, and automated weather stations used to make weather predictions. ✓ I know the weather instruments used in automated weather stations. <p>4. Predicting Weather (Teacher led station. Students will explore various weather maps using the internet or printed materials. They will then create a “weather report” similar to what you see on the news)</p> <ul style="list-style-type: none"> ✓ I can predict future weather based on a current weather map. ✓ I can predict future weather based on the interaction of air masses, pressure systems, and fronts.
<p>Procedures/Co-Teaching Approaches</p> <p>Closure/ Wrap-up</p>	<p>Teaming</p>	<p>After all stations are completed, students will share out their booklets along with verbal and written summaries of each station.</p>
<p>Assessment – Station work. Rubrics should be given to students at each station so that expectations are clear and you are able to assess student understanding of concept along with effort and group participation.</p> <p>A teacher-made assessment including multiple choice and short answer should also be given at the very end. Students scoring below proficiency should be afforded re-teaching opportunities using alternative approach while students who have mastered the learning targets participate in an alternative activity.</p>		
<p>Specially designed instruction/accommodations for students with disabilities or other special needs:</p> <ul style="list-style-type: none"> -Small group instruction (SDI—student need to explicit instruction on key concepts; repeated across units throughout the school year) -Modified/Cloze note taking trifold sheet; fully completed for some students; provide pictures for those struggling to create own drawing (Acc) -Audio versions of articles for stations or peer buddies (Acc) -multiple types of options offered for students to demonstrate mastery (Acc) 		

Potential IEP goals

After reading, viewing, or hearing a weather report, student will make an inference as to what appropriate clothing is needed, with 85% accuracy.