

LCM Formal Loop

This lesson engages students learning on weather changes and instruments used in a weather station. The student will get a chance to actively participate as scientists in the design of a specific weather instrument, present their methods and conduct an experiment using their instrument.

<p>LCM Lesson Plan: Weather Instruments Unifying Concept: Forms and Functions</p>	<p style="text-align: right;">Name Lara Ajayi Grade level 9</p>	
<p>Standards: Science</p> <ul style="list-style-type: none"> • A1 Develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments. • D1 Apply scientific knowledge and skills to daily issues. • D2 Understand how scientific innovations affect our safety, environment, economy and the society. 		
<p>Mathematics</p> <ul style="list-style-type: none"> • A2 Select and use appropriate systems, units, and tools of measurement. 	<p>Process Skills</p>	<p>Materials</p>
<p>Cultural</p> <ul style="list-style-type: none"> • B4 Identify appropriate forms of technology and anticipate the consequences of their use for improving the quality of the life in their community. 		
<p>Science concept: Using scientific method as a process to understand and predict natural phenomena requiring Instrumentation and Measurement in science.</p>		

<p>Gear- Up</p> <ul style="list-style-type: none"> • Display basic tools for students to discuss uses, unit of measurement, care and handling. Examples: Beakers, Rulers, Graduated cylinder, Troughs, 	<ul style="list-style-type: none"> • Observation • Communication • Measurement 	<p>a glass or beaker with straight sides a ruler (12 inch) tape one foot of clear plastic tubing a stick of chewing gum gum water</p>
<p>Explore:</p> <ul style="list-style-type: none"> • Each student group will design and build their assigned instrument as a 3-D model. • Each group of students will demonstrate and present to the class the basic functioning of their assigned instrument with information provided on the poster board. <p><u>Teacher's Note</u> Barometer, Hygrometer, Thermometer, Weather Vane, Rain Gauge, Doppler Radar</p>	<ul style="list-style-type: none"> • Presentations • Demonstration • Diagram 	<p>a scrap piece of wood or flat styrofoam (about 9 inches long and 4 inches wide) a flat piece of plastic (about 3 inches long and 3 inches wide) thin enough that you can cut 2 small nails 3 long strands of human hair (about 8 inches long) a dime glue tape hammer scissors Rubbing alcohol (do not drink this) Clear, narrow-necked plastic bottle (11-ounce water bottles work well) Food coloring Clear plastic drinking straw Modeling clay</p>

<p>Generalize:</p> <ul style="list-style-type: none"> • Discuss different types of weather pattern observed and List instrument used in monitoring weather. <p>Suggestion Include</p> <ul style="list-style-type: none"> • Will each instrument data reflect a comparative weather readings in the area of study? • How does the information derived from different weather instrument allow for a good weather forecast? • Why can't we analyze the average class data and suggest to about 75% accuracy that our weather station functioning is effective? 	<ul style="list-style-type: none"> • Communication 	<p>Vocabulary</p> <ul style="list-style-type: none"> • air masses • fronts • weather • Winter • Summer • Spring • Fall • Atmosphere • solar radiation • temperature • Isobar • climate • Isotherm • Weather Symbol
<p>Experiment:</p> <ul style="list-style-type: none"> • Each student group will design an experiment using the weather tool. • Each student group hypothesis on what will happen in a weather station when their instrument is used. • Write up a procedure for using the specific instrument to collect data. • Collect and Measure (provide applicable unit) • Graph and infer from data collect on the significance of the instrument in a weather station. 	<ul style="list-style-type: none"> • Hypothesis • Experiment • Graph • Measurement • Communicate • Infer 	
<p>Interpret:</p> <ul style="list-style-type: none"> • During presentation, students will have the opportunity to complete and explain how their instrument is used for weather monitoring. <p>Suggestion questions:</p> <ul style="list-style-type: none"> • What unit is the barometer? How does this relate to other dimension in our classroom? • How can the class display data collated to represent similar information on the weather page in the Newspaper? 	<ul style="list-style-type: none"> • Communicate • Presentation • Note Taking 	

<p>Apply/Assess: The students will engage in the following activity through the lesson.</p> <ul style="list-style-type: none"> • Have the class generate a class weather page for the days monitored and compare data generated to similar reported days in our community. • Do an internet search of an area with similar data to our community. • Display posters on the wall for other students in the building to view. Provide a comment board. • The Weather Instrument Notes will be used during presentations of models and poster by groups. <p>Weather Instrument Model.pdf - Desktop</p> <ul style="list-style-type: none"> • The weather quiz will be giving after explore. <p>Weather Quiz 0607.pdf - Desktop</p> <ul style="list-style-type: none"> • The Weather Crossword Activity is primarily for review of students' learning. • The Weather Study Guide will be used by the students to review before the test. <p>Weather Study Guide 0607.pdf - Desktop</p> <ul style="list-style-type: none"> • The Weather Test will be given at end of the lesson. <p>Weather Test 0607.pdf - Desktop</p>		
<p>Extensions:</p> <ul style="list-style-type: none"> • Moon Log Activity: Each student will observe their weather at specific time and make entries into their science note book daily. 		

Name: _____ P: ____ Date: ____ Weather Instrument Lab Rubric
 Your Final Score _____ / 52

Category	Exceed Expectations points	Proficient points
Title	<ul style="list-style-type: none"> Title captivates and shows clearly intended purpose of instrument. (4 pts) 	<ul style="list-style-type: none"> Title shows clearly intended purpose of instrument. (2pts)
Hypothesis	<ul style="list-style-type: none"> The student stated the hypothesis the proper format. Including a guess and a justification. (4pts) 	<ul style="list-style-type: none"> The student stated the hypothesis by given an idea without including both a guess and a justification. (3pts)
Materials	<ul style="list-style-type: none"> All materials are readily available and completely listed. May have provided a substitute where applicable (5 pts) 	<ul style="list-style-type: none"> Some materials are readily available and list is missing 1-2 items. Did not provided a substitute where applicable (5 pts)
Procedure	<ul style="list-style-type: none"> The student's group stated a comprehensive procedural directions. Used a tab or stepwise description that is reproduceable. Specific to their instrument's use in a weather station. (10 pts) 	<ul style="list-style-type: none"> The student's group stated a summarized procedural directions Missing 1-2 processes on the use of their instrument in a weather station. (7 pts)
Data/ Observation	<ul style="list-style-type: none"> The student's group designed a data table that is clearly understood and reproduceable while allowing for best graphic organization specific to their instrument's use in a weather station. Also, recordings were made as quantitative (units provided) and qualitative observations (20 pts) 	<ul style="list-style-type: none"> The student's group designed a data table that shows only quantitative (some units provided) data on their instrument's use in a weather station. (15 pts)
Inferences	<ul style="list-style-type: none"> The student's group provided graphical interpretations of data generated, clear legends and stated reasonable justification for data obtained during the period. (4pts) 	<ul style="list-style-type: none"> The student's group provided a simple bar graph without legends and explanations graphical representations (2pts)
Conclusion	<ul style="list-style-type: none"> The student's group provided a logical explanation that supported their hypothesis and data obtained or explained a revised hypothesis is necessary. (5 pts) 	<ul style="list-style-type: none"> The student's group provided a fair explanation that does not fully explain hypothesis statement. (3 pts)

Name: Lara Ajayi Lesson Title: Weather Instrument
 Assessed by: Lara Ajayi
 Assessment of LCM Lesson
 Score of 1-4

	Rubric Score	Comments
Standards	4	<ul style="list-style-type: none"> ▪ The standards reflect students' expectations. ▪ Performance is linked to the GLE expectations.
Rubric	3	<ul style="list-style-type: none"> ▪ Students specific task outlined. ▪ Modification or revision allowed based on generated results and students need.
Cultural Relevance	4	<ul style="list-style-type: none"> ▪ Statement clearly stated, applicable to students in this environment.
Gear up	4	<ul style="list-style-type: none"> ▪ Student-centered and involves prior experiences for students to build upon.
Explore	3	<ul style="list-style-type: none"> ▪ Collaborative setting and engages students learning in different spectrum.
Generalize	3	<ul style="list-style-type: none"> ▪ Allows for broad student thinking. May be modified better.
Experiment	4	<ul style="list-style-type: none"> ▪ Student center and hands-on.
Interpret	3	<ul style="list-style-type: none"> ▪ Allows for feedback from other members of the community.
Apply	4	<ul style="list-style-type: none"> • Extensive and variety of strategies used in explaining findings