**Inquiry Unit**

**Clouds**

**Kindergarten**

**Content Standard K.3**

GLE #7

CMT Expected Performances A.7

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**Phase One**

**Inquiry**

Clouds Unit

**Content Standard K.3**

Weather Conditions Vary Daily and Seasonally

Daily and seasonal weather conditions affect what we do, what we wear and how we feel.

GLE #7 (Grade Level Expectations)

*Clouds and fog are made of tiny drops of water.* Clouds have different shapes, sizes, and colors that can be observed and compared. Some cloud types are associated with precipitation and some with fair weather.
CMT Expected Performances
A.7 Describe and record daily weather conditions.

Summative Assessment:
Students will use arts and crafts material to create clouds, one that is associated with precipitation and one with fair weather. Students will write describing their pictures (If this unit takes place at the time of year when the students can write. If this unit takes place when the students cannot write the students will dictate the descriptions to the teacher.)
Possibly include background information on clouds: literature, pictures, walks outside, ....
Optional materials for the assessment:
- Paint, clay, cotton, pom poms, felt, tissue paper, yarn, pipe cleaner, sponge paint/sponges, glue, oak tag paper

Questions
Questions I want the students to ask at the end of their Phase 1 Inquiry Starter.
The students’ questions will be summarized into these questions.

1. What do different clouds look like? (shape, size, color, tiny drops of water)
2. What clouds are in the sky when it rains? (precipitation)
3. What clouds are in the sky when it is sunny out? (fair weather)

Pre-assessments

Option 1:
Students will take a walk outside and notice the types of weather and the clouds. Students will record their responses in the science notebooks using pictures and writing. Students are to record in their notebooks while outside, unless it is precipitating outside.
Back in the classroom, as a whole group, each student will show their pictures and describe it verbally.
Option 2:
Students take a walk outside and notice the types of weather and the clouds. Students verbalize what they notice.

Option 3:
The teacher shows each individual children 2 weather pictures, including clouds (one fair weather and one precipitation), and asks each student:
What can you tell me about these pictures?
Or What weather does this picture show? How can you tell what weather this picture shows?

Option 4:
The teacher can pre assess students over the course of days as the students complete the weather graph during meeting time. A weather graph is a manner of graphing the daily weather (possibly including: temperature, sunny, rain, windy, foggy, snowy, warm, hot, ...)

**Inquiry Starters**

Possible questions: What causes clouds to be different?
How does the amount of water affect weather?

Inquiry Starter #1

**Setting:** whole group

**materials:** 9oz. clear plastic cups, magnifying glass, fingers, note paper, pens

**setting:** sitting as whole group,

**procedure:**
- teacher demonstrates breathing into the clear plastic cup (messing around)
- stop the mess around
• teacher models observing, wondering/asking a question
• each student has a clear plastic cup (9oz.) allow them to mess around
• giving each student opportunity to observe, wonder/ask a question
• teacher records the observation, wonderings/questions after repeating what students said and then rewording it in grammatically correct complete sentence
• teacher introduces another tool, magnifying glass, and repeats the messing about as above

Inquiry Starter #2

Setting: whole group outside during different types of weather (fair weather and precipitation)

Procedures:
• take the whole class outside
• teacher models looking at the clouds/sky through a pair of binoculars
• teacher models recording what she sees through the binoculars, drawing the clouds
• students are given their own binoculars (paper towel tubes) and look at the clouds/sky; if possible please provide individual real binoculars for each student; there are binoculars available through the Children’s Museum in Niantic, CT for loan
• students are given their record paper on clip boards (card board) (record paper are pictures of binoculars with the lens’ circles being most of the paper)
• teacher records students’ observations, wonderings/questions

Thinking Tools
Optional activities
• Cloud in a Bottle *note this does not demonstrate rain, but drips down the edge and may be too vague for kindergarteners to transfer understanding to clouds
• Make Fog activities from website: weatherwizkids.com/cloud1

Focused Investigation

Day 1
• Whole group, teacher at the easel, students observations, wonderings/questions on the easel
• Teacher reviews each of the observations, wonderings/questions circling the key words
• Teacher takes the key words and with the students creates the guiding questions using the students key words
• Write and post the guiding questions- remember to focus on: what causes some clouds to form precipitation and others not to?
• Teacher leads a discussion in how the guiding questions are investigable and what that means

Day 2
• Introduce the materials: cotton balls, paper towels, pipettes, eye droppers, hand lenses, water, quilt batting, science notebooks, data table, glue stick, precut paper water drops (for recording number of water drops), student pencils, crayons, measuring cup, clear plastic cups, one tray per group to catch the spilled water, label materials
• Teacher creates a plan with students and the teacher models recording the plan in a notebook
• Teacher is to type the plan for students that need a copy to glue into their notebooks
• Students take their notebook to draw/write a plan or cut and glue a typed plan in their notebooks
• Teacher is to review all plans (typed or hand written) to check on the completeness of the plans and the feasibility of use
• Students will move into pairs/groups as per the teacher
• Students gather materials
• Students conduct investigation; students are to squeeze out the water from their absorption material into a clear plastic cup to be measured and recorded in their science notebooks
• Students record/glue results into science notebook
• Teacher moves around the groups and prompts/guides students

Invitation:
• Once students have completed their investigation, they may take the sticky notes with the “?” and “!” on them (provided by the teacher or students can write “?” “!” and look at weather books marking pages with the sticky notes that they would like to think more about, or share at a later time.

Shared Understandings
Day 3
• The teacher is to review with the students what the question was “ ” and model how to share out using their materials, showing their recording, and answering the question. For example or model if needed: “I chose the paper towels to be my cloud. 10 drops went into my cloud before the water came dripping out. Before the water came out, the paper towel was a fair weather cloud. The water dripping out shows precipitation.” The teacher might choose to demonstrate with the materials or act out with hand gestures while modeling the share out; once students have water beginning to drip out of the absorption material the students are to squeeze the water that is in the material into a clear plastic cup and measure the amount
*misconceptions may exist regarding what makes a cloud precipitate; this may be addressed through literature, discussion, etc. Be cautious to limit the explanation to the kindergarten level as there are many explanations. The GLE refers to precipitation.

- Students are to think-pair-share with their partner to prepare to share what they used for a cloud and how many drops of water went in to the cloud to create precipitation.
- Students will share out with their partner to the whole class. Students will use their notebooks to show their results and recording form.
  This part is also a Formative Assessment. If there are any misconceptions resolve through another inquiry before going on to the content blast.
- Following all sharing out the students will place their notebooks down on the rug or table seats with the page open. The whole class stand and take a gallery walk in line following the teacher around the room to view the different results.

**Teacher Synthesis (content blast)**
Teacher will synthesize the class learning and gives a content blast on clouds, precipitation and fair weather. The teacher will have the concepts pre-written on chart paper with cloud weather pictures and ready to use in the synthesis.
This next part is also a Formative Assessment:
The students will have similar or identical pictures in front of each of them. As the teacher discusses each concept, the students will touch the picture (same ones as on the teacher's chart) of the cloud that portrays the concept the teacher is describing.

**Key Concepts in the Content Blast:**
- Clouds are made of tiny drops of water.
- Some clouds are associated with precipitation.
• Some clouds are associated with fair weather.

**Summative Assessment**

Summative Assessment:
Students will use arts and crafts material to create clouds, one that is associated with precipitation and one with fair weather. Students will write describing their pictures (If this unit takes place at the time of year when the students can write. If this unit takes place when the students can not write the students will dictate the descriptions to the teacher.)

**Optional materials for the assessment:**
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**Rubric**
Teacher's use

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Partially completed</td>
<td>Needs additional help</td>
<td>incomplete</td>
<td></td>
</tr>
</tbody>
</table>

Students
creation of a
Fair weather cloud
Students creation of a Precipitation cloud

**Student's Rubric**
To be made using happy, sad, straight line faces

Addressing the three content blasts:
- Clouds are made of tiny drops of water.
- Some clouds are associated with precipitation.
- Some clouds are associated with fair weather.