

Manchester College  
Education Department

**Lesson Plan by: Jeff Bauman**

**Lesson:** Clouds in a Jar

**Length:** 30 – 45 minutes

**Age or Grade Intended:** Grade 5

**Academic Standard(s):** 5.3.5 Observe and explain that clouds and fog are made of tiny droplets of water.

**Performance Objectives:** Given the necessary materials, the students will create a cloud jar so that they can observe that clouds are made of tiny droplets of water with 100% accuracy.

After observing the cloud jar, the students will record their observations on a worksheet in written form explaining that clouds are made of tiny droplets of water.

**Assessment:** Formative assessment will be done by observations during the duration of the project. Summative assessment will be done through the worksheet the students will complete during the experiment.

**Advanced Preparation by Teacher:** The teacher needs to have the following materials ready: a large glass jar, a plastic bag of ice that will fit over the jar opening, a pitcher of warm water, one sheet of black paper, a flashlight, and matches.

**Procedure:**

**Introduction/Motivation:** To introduce the lesson the teacher should ask the students what some of the different types of clouds are and what they are made of. The responses of this question could be written on the board to return to later. Then tell the students that we are going to perform a simulation of the forming of a cloud. Take out and tell them that we will make a cloud fit in this jar.

**Step-by-Step Plan:** First have students come help to prepare the jar to form the cloud. Students should be picked with sticks to ensure fairness. Have one student tape the piece of black paper on one side of the jar. Next have another student pour the warm water into the jar until it is about one third full. Now have the whole class gather around the jar so they can see. Draw another stick and have that student hold the plastic bag with the ice while you get the match ready. Now light the match and hold it in the jar for a few seconds then drop it in. As soon as you drop the match in the student with the ice should cover the top of the jar as quickly as possible. Finally have the last student shine the flashlight on the jar while the rest of the class records their observations. A cloud should be forming in the jar. The experiment can be repeated with different students performing the jobs so everyone has an opportunity to participate and observe the entire experiment. The following questions can be asked during the lesson to enhance student thinking: --What did you see in the jar? (a cloud), Where did the cloud come from? (the water in the bottom of the jar), How did the warm water effect the cloud formation? (caused the water to evaporate and warmed the air, causing it to rise), What did the ice cubes do to help the clouds form? (cooled the air, made the water vapor condense). What

role did the match and its smoke play in the cloud formation? (gave the water something to condense or grab on to) Now what would you tell me a cloud is made of? (small water droplets)

**Closure:** To close the lesson have the students record their observations on the worksheet that they have and draw a picture of how they saw the cloud form. These observations and drawings can then be shared among the class.

**Adaptations/Enrichment:** This lesson can be adapted for those students with special needs by having the students work in pairs to complete the worksheet at the end of the lesson. Those students who need enrichment can be encouraged to expand with details on the formation of the cloud in their explanation.