**Lesson Plan Idea Format**

**Grade Level & Subject Area: 6th grade Science**

**Standards/Framework (State Standards, Content Standards, InTASC Standards)**

Arkansas State Standards

6-ESS2-4 Develop a model to describe the cycling of water through Earth’s systems driven by energy from the sun and the force of gravity. [Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.] [Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.]

**Theme/Series of Lessons (if Not applicable, put N/A. If it is part of a series, of lessons, tell me, give a BRIEF description of the overall and tell me where this particular lesson fits):**

This one be one of many lessons on the water cycle. This lesson is specifically on having students explore condensation. In the overall unit, students would explore and learn about the water cycle as a whole and each individual step.

**Time (is this a 1 day 50 minute lesson, 5 day 1 hour lesson, once a week over a month lesson….):**

This is a 1 day 50 minutes lesson.

**What do the students already know? (This could be the Intro or they have learned information before starting this lesson):**

Students will have already had a lesson that talked about the water cycle as a whole.

**Objective (What are the students’ going to accomplish):**

Students are going to explore the process of condensation. They will also write and share scientific explanations of condensation.

**Materials:**

**2 cup of water per group**

**1 thermometer per group**

**1 cup of ice per group**

**1 glass jar with ½ cup of warm water per group**

**1 plastic plate per group**

**1 iPad with Arduino Science Journal for each student**

**Procedure:**

* **Students will begin by being instructed to create a new journal entry on their Arduino Science Journal title “Condensation.”**
* **Students will begin by being presented the learning goal of the day. They will then be asked to turn to their elbow partners and discuss about their experiences with little droplets forming on the outside of a cup. At the end of the quick discussion, students will be asked to briefly list a few things they talked about in their journals.**
* **Students are introduced that this is condensation. Students are then instructed to discuss with their elbow partners when does condensation occur and why does it happen. Students will also list their thoughts in their science journals.**
* **Next students are going to complete two investigations to explore condensation.**
* **Students are going to complete an investigation with two cups of different temperatures of water.**
* **Students will be split into groups of 2 or 3.**
* **Students will receive 2 separate cups of water, 1 thermometer, and 1 cup of ice.**
* **Students will answer the questions how the temperature of water affects the number of droplets we see on the outside of the cup and record it in their journals.**
* **Students will be guided to come up with how we will investigate this question.**
* **Once students land on the correct steps of the investigation, they will complete it in their groups.**
* **Students will be asked to record their observations and data in their science journals as they work through the experiments.**
* **Students will complete a second investigation to explore what happens when you place a plate of ice on top of a jar filled with very hot water**
* **Students will be given 1 jar of very hot water and 1 plastic plate. Students should still have ½ a cup of ice from the previous investigation**
* **Students will be presented with investigation question of what happens when warm air meets cold air.**
* **Students will be guided with questions to come up with our experiment procedure given the materials.**
* **Students will complete the investigation and record their observations and data in their science journals.**
* **After giving students enough time to finish up all their observations and thinking over what the main thing they discovered today, I will ask students to write down how they would explain condensation after todays experiments on a sheet of paper. I will gather this paper afterwards as a nongraded assessment of the students understanding. After students have turn in their paper, I will ask them to talk with their classmates, as a whole class, to discuss what they learned today.**

**Assessment (How will the students’ show you that the objective has been met):**

**(Note: the assessment does not have to be a paper and pencil test)**

**I will review student’s science journals for their observations. I will also assess students by collecting an exit ticket type assessment where I just ask the students to write down how they would explain condensation after todays investigations. Students will also discuss as a class their finding, which will serve as another informal assessment for me.**

**A Brief Description Of The Entire Lesson - Plus Any Additional Information to be Included:**

Students are going to model the process of condensation by completing two different investigations. Students will record their observations in their Arduino Science Journals on their iPads.

For the first investigation students will observe the number of water droplets that from on the outside of two cups of water at different temperatures. Students will start with two cups that are at room temperature. Students will record the temperature. Students will also record how many water droplets they can see on each cup. Next, students will add half a cup of ice cubes to one cup only. They will record the temperature of both cups and again record their observations on the amount of water droplets that form on the outside of the cups. Students will record what they noticed after completing the investigation.

Students will then move on to a second investigation. Students will see what happens when a plate of ice is placed on top of a jar that is filled with very warm water. Students will begin with a jar of very warm water. They will carefully record the temperature of the water. Students will them place a plastic plate on top of the jar. They will carefully pour 1.2 a cup of ice onto the plate. Students will then observe what happens. Students should see water droplets start to form on the inside of the jar lids. Students will also record in their journals why they think this happened.

At this point, students should have come up with the same answer to both of the investigations as to why it happens. Once they have finished recording all of their observations, I will ask the students to share with the class their findings.

I will assess if the students have met the learning goal by viewing their science journals as well as listening to them give their finding out loud to the class.

**(I should be able to see and understand your entire lesson by reading this. Remember, Technology is not the lesson. It enhances the lesson)**