

Q405: Saturday Science

Lesson Plan 3

Lesson Topic: Puddles

Grade level(s): K-1

Instructor Names:

Desired Results	
<p>Overarching Focus Question for the Session (<i>the phenomenon being explored across the 3-weeks</i>)</p> <ul style="list-style-type: none">• Where does rain come from and where does it go?	
<p>Central Focus/Topic for today:</p> <p>Students will understand:</p> <ul style="list-style-type: none">• That water travels in a cycle• The process of the water cycle <p>Therefore, the guiding question for today's learning is:</p> <ul style="list-style-type: none">• How does water travel through the different phases of a cycle?	<p>Relationship that this central focus has to the overarching big idea/question for the unit</p> <p>The central focus for today, which is to explore the different phases of the water cycle, ties into our overarching theme of puddles because this final lesson will help them tie all their ideas from the previous weeks. Through this lesson, students will understand where puddles come from (when it rains) where puddles go (when it evaporates) and how the cycle starts all over again (condensation).</p>
<p>Student objectives (outcomes):</p> <p><i>(Remember, this is like the performance expectation statement in the NGSS, so you need to be incorporating Science Practice in this/these statement(s).)</i></p> <p>Students will be able to:</p> <ul style="list-style-type: none">• Develop and use models to show how water travels in a cycle.• Plan and carry out an investigation on how water travels through a cycle.	
Timeline of Activities for the Day	

**Provide a breakdown of how long each activity will take, who will lead the segments of the activities, when breaks will occur or other transition points, etc.*

Identify by **highlighting in blue the portion of the lesson you team wants video-recorded each week. This should be ~45 mins*

Inside:

9:30-9:45: Welcome back! Review expectations

9:45-10:00: Review last week

10:00-10:15: Water boiling demonstration and observations

10:15-11:00: Split the students into groups of 3. Tell the students what the model will represent and then show them how to fill out the worksheet with their observations. Assist the students in creating the water cycle model. Let the students observe what is happening as the hot water heats/melts the ice cubes. Explain what happened when the water evaporated and then condensed.

11:00-11:30 Snack/bathroom break

11:30-12:00 Explain/Elaborate

Learning Plan (First three E's of the 5E model)

Any of these phases can be repeated should you have more than one activity to describe OR a complex activity with multiple iterations of some phases.

ENGAGE

- We will start our lesson by asking the students what they remember about the activities we did last week. We will draw three puddles on the board specifically ask them:
 - Where does the water go when it 'evaporates'?
 - Students will then tell me where the water goes and I will draw an arrow on the board to represent it and label it.
 - Where does the water go when it absorbs?
 - Students will tell me where it goes and I will draw an arrow on the board to represent it and label it.
 - What happens to a puddle when it is on top of the ground that is porous?
 - I will draw what they describe and label it. (Moves down fast)
 - What happens to a puddle when it is on top of the ground that is not porous?
 - I will draw what they describe and label it. (Moves down slowly or not at all)

- Next, I will give each pair of students printouts of the different phases of the water cycle and tell them, “put these in the path of where water comes from and where it ends up”
 - During the activity, the teachers will be circulating asking students to explain their thinking.
 - Why did you put those in the order you did?
 - What made you put _____ card before _____ card?
 - This will allow the teachers to get the initial ideas of students to see what questions need to be asked during the explore phase.
- I will collect the cards, and set them aside. We will come back to them at the end of the lesson.

EXPLORE .

- We will do a demonstration of water boiling to show where water goes when it leaves the boiler. We want the students to see that the water rises up, and then comes back down.
- We will create a model of the water cycle to show the students. We will do this by first cutting the top off of a two-liter bottle. We will then put warm water and ice into a cup. We will put sand on the bottom of the bottle to make it seem more realistic for the students. The water will condensate on the sides of the water bottle.
- We will then split the students up into four groups and they will make this exact model. They will first make a prediction about what happens and then they will observe what happens to the water. They will record their observations of what happens before and after the ice is put into the warm water by drawing a picture of what they see.
 - We want students to notice how the water collects on the outside of the bottle and then eventually drips back down into the bottle. This will simulate the water cycle.
 - We will ask students:
 - Why do you think the water collects on the outside of the bottle like this?
 - Does the temperature of the water or ice have anything to do with this?

EXPLAIN

- We will show students a video that explains the water cycle, then have the class connect what they saw in the video to there model
(<https://safeshare.tv/x/ss5ba69616a0b70>)
- We will draw a picture of the model we created on the board and have students describe how every step of the water in the model parallels the water cycle (use arrows to help represent the direction and cycle)
 - What happened when the water disappeared from the bottom of the bottle?
 - Guide them towards evaporation
 - What part of the water cycle is this?
 - What happened before the evaporation and what happens afterwards

- What was happening when the water formed on the side or top of the bottle
 - Why did it condense? (if they have not learned the term condense, define it with their words)
- Why did the water droplets start to fall
 - How is this represented in the water/rain cycle?
 - Introduce term precipitation
- What do you notice about the direction and path of the arrows?
 - Guide them towards circle or cycle

ELABORATING/EXTENDING Understanding -

- We will come back to our original printouts of the different phases of the water cycle and tell them to put these in the path of where water comes from and where it ends up.
 - We will ask:
 - “Why did you put them in this order?”
 - “Is this different from the order you put them in when we first showed you these cutouts? If so, why do you think your ideas changed?”
- After everyone has the printouts in the correct spots, I will walk through the water cycle and actually draw the cycle (with arrows) on the board. The students will guide me in drawing the cycle the correct way. I will emphasize that they should not just be able to name the different phases of the water cycle (condensation, evaporation, and precipitation), but that they should be able to describe WHAT is happening in each of the phases. It’s important for students to not just know the vocabulary word associated with different processes in science. They should be able to apply vocabulary words/explain what the words mean in order to gain a deeper scientific understanding of our lesson (the water cycle).

Assessment Evidence (*This is the Evaluation Phase of the 5E approach)

Performance Task(s):

- Students will draw pictures of what they observe from the model, and draw conclusions on ‘where rain comes from and where does it go’.
- Students will put their ‘water cycle’ picture cards in the correct order by the end of the activity.

Other Evidence:

- Students might ask questions that engage with the inquiry and push their concepts about the water cycle.
- Students might apply their knowledge of the water cycle to outside experiences to help deepen their understanding.

Materials + Quantity:

- 4 2-liter bottles
- 4 12-oz see-through cups
- 8 Water cycle picture print outs (Alex will print these)
- 1 water boiler
- Large cup of ice (not sure if you will be able to get this or not Angela)
- Sand to fill 3in of the bottom of 4 2-liter bottles
- 13 print-outs with rain-bottle models drawn onto them
- 2 sheets of chart paper (with sticky back)
- Tub of crayons
- 6 containers/cups large enough to hold crayons
- 15 pencils

Required Accommodations/Modifications:

- Gear up: If students are easily able to make the connection from the activity that it represents the water cycle, we will challenge them with a more in-depth look at the process of the water cycle.
 - We have a book called "Rain" by Joy Palmer, that provides lots of detail in regard to the water cycle. One teacher will work with these students and read the book with them, to challenge their thinking.
- Gear Down: During the activity instead of students working in pairs they will work in their table groups. The teachers will switch groups around to make sure we have a high performing student at each table (this works because we know of at least three students who are right on or above grade level). If more assistance is necessary, we will stick close to the table in need and use explicit language to guide students through developing their understanding.

