**Q405: Saturday Science FS22**

**Lesson Plan Template**

**Grade level:** Kindergarten

**Anchoring Question/Phenomena for the unit:** *What is the relationship between the sun, the moon, and the Earth?*

**Lesson Plan # 1**

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| **Desired Results** |
| **Driving Question for this week’s Saturday Session** * What is the moon and what is it made of?
 |
| **DCI Addressed in lesson:**[ESS1.B: Earth and the Solar System](http://www.nap.edu/openbook.php?record_id=13165&page=175)* The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (6-8)
	+ For kindergarten this will be addressed in a shorter, more simplistic matter. The students will learn about the moon and its properties, such as craters, asteroids, mountains, planes, etc.
 | **SEPS Addressed in Lesson:** * Scientists use different ways to study the world. (K-PS2-1)
	+ Students are using hands-on modeling to observe the moon and its properties.
	+ Students will use questioning to guide their way through the experiment.
 | **CCCs Addressed in Lesson:** * *Structure and function:*
	+ The way in which the moon is shaped and its substructure determine many of its properties and functions.
 |
| **Learning objectives (outcomes):** ***What do you want students to be able to explain/state in response to the specific lesson question?***Students will be able to explain/state * what the moon is and what it is made of by creating their own moon models.
 |
| **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.* *\*Highlight in green the time period of the lesson your team wants video-recorded for the week. Should be ~30-40 mins total.** Introduction of us and the students: 9:30-9:45
* Read-aloud by : 9:45-9:55ish
* Quick read-aloud discussion: 9:55-10:00
* Brain Break: 10:00-10:10
* Introduction of topic and activity led by : 10:10-10:25ish
* Transition led by both: 10:25-10:30 move rooms
* Making Moon Sand Activity led by both: 10:30-10:45ish
* Discussion Time led by both: 10:45ish-10:55
* Bathroom Break: 10:45-10:55ish
* Transition led by both: 10:55-11:00ish
* Making Moon Craters led by both: 11:00-11:10ish
* Clean-up led by both: 11:10-11:15ish
* Wrap it up/Formative Assessment led by : 11:15-11:25ish
 |
| **Learning Plan***Any of these phases can be repeated should you have more than one activity to describe for the day OR a complex activity with multiple iterations of some of these phases.*  |
| **ENGAGE*** We will begin by briefly introducing ourselves.
* We will have the students each introduce themselves by telling us their name, where they go to school, and what their favorite color is.
* We will start off by conducting a read-aloud of a children's book about the moon (*Papa, please get the moon for me*?).
	+ “What happens in this story that is real? What is imaginary?”
	+ “Explain to Monica why Papa can’t get the moon for her.”
	+ “What facts does the author know about the moon? Select a drawing that illustrates the author’s knowledge of this fact. Why did you select this illustration?”
* Following the read aloud, we will have a quick discussion about what the students know and what they want to know about the moon. We will turn this into a KWL chart, without the L.
	+ What do you already know about the moon?What do you want to learn about the moon?
* We will then introduce our overarching theme for the weeks ahead to our students, introduce our topic for the day, and then we will introduce our activity.

**EXPLORE*** Students will explore the content by creating moon sand and making their own mini-moons. We will introduce to the students the idea of the moon. We will start with making the moon sand. To make the moon sand will mix together all purpose flour and baby oil. The students will get to feel the texture of the sand and can connect to the moon's surface.
* We will then create craters on the moon by taking our moon sand, putting it into a cake pan, then dropping marble on top of the sand. Students will get to see the texture of the moon, and connect the causes of how craters cause such marks on the moon.
* By doing this activity with students, they are getting hands-on experience. Although they are not actually creating a real moon, we will make connections between the materials we are using and what the actual materials are on the moon. This activity clarifies their thoughts or ideas on what the moon is and how it is composed.

**EXPLAIN*** We will have a discussion after the moon sand making about what the moon sand represents.
	+ “What do you think the sand represents?”
	+ “Why do you think the moon is gray?”
	+ “What is another thing found on the moon?”
* We will also talk about the purpose of the moon and give a brief overview of what it does using Google Slides.

**ELABORATING/EXTENDING Understanding*** To elaborate on the moon model we made with students, we will proceed to have them add craters to their models. We will discuss with them why the moon has craters and what their functions are. This continuation from basic moon sand to the actual surface of the moon allows students to dig deeper into their understanding of what the moon is made of and what the surface consists of.
 |
| **Formative Assessment Evidence (\*This is the Evaluation Phase of the 5E approach)** |
| **What evidence will you gather to understand if ALL your students met the learning outcome (see green box above)?*** Each student will make a moon sand version of the moon.
* As a class we will finish the KWL chart
	+ What we know, what we want to know, what we learned
 |
| **Individual Student Accommodations** |
| **Accommodations/Modifications for Individual Students** * If a student finishes their moon sand creation early, they will be able to have free-time with their sand.
* We will be walking around, along with other helpers, to aid students in the experiment if they need help.
 |

**Materials + Quantity for 14:**

* Mixing bowl
* All purpose flour (24 cups)\*
* Baby oil (4 cups)
* Pans (4)
* Marbles (4 cups of them)
* 12-15 zip-lock bags

\*Only in the case of a severe gluten allergy will this be an issue. We can address this by using gloves or by using gluten-free flour for this student.

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**Lesson Plan Template**

**Grade level:** Kindergarten

**Anchoring Question/Phenomena for the unit:** *What is the relationship between the sun, the moon, and the Earth?*

**Lesson Plan # 2**

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| **Desired Results** |
| **Driving Question for this week’s Saturday Session** * What is the sun and what does it do for us?
 |
| **DCI Addressed in lesson:**[ESS1.B: Earth and the Solar System](http://www.nap.edu/openbook.php?record_id=13165&page=175)* The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (6-8)
	+ For kindergarten this will be addressed in a shorter, more simplistic matter. The students will learn about the sun and how it gives off heat, light, and causes shadows.
 | **SEPS Addressed in Lesson:** * Scientists use different ways to study the world. (K-PS2-1)
	+ Students are using hands-on modeling to observe the sun and its properties.
	+ Students will use questioning to guide their way through the experiment.
 | **CCCs Addressed in Lesson:** * *Structure and function:*
	+ The way in which the sun is located and its substructure determine many of its properties and functions.
 |
| **Learning objectives (outcomes):** ***What do you want students to be able to explain/state in response to the specific lesson question?***Students will be able to explain/state * how the sun gives off heat and makes shadows.
 |
| **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.* *\*Highlight in green the time period of the lesson your team wants video-recorded for the week. Should be ~30-40 mins total.** Getting settled into the room: 9:30-9:40
* Mini discussion on review of last last week and today’s topic: 9:40-9:45
* Sunlight and heat slides: 9:45-9:50
* Demonstrating Solar Oven Activity: 9:50-10:00
* Solar Oven Handout: 10:00-10:10
* Transition and Bathroom: 10:10-10:20
* Brain Break #1: 10:20-10:25
* Sun and it’s shadows slides: 10:25-10:30
* Gnome Activity: 10:30-10:55
* Gnome Discussion: 10:55-11
* Check-in on smores: 11-11:05
* Solar Oven Discussion: 11:05-11:10
* Brain Break #2: 11:10-11:15
* Overall Review Discussion: 11:15-11:30
 |
| **Learning Plan***Any of these phases can be repeated should you have more than one activity to describe for the day OR a complex activity with multiple iterations of some of these phases.*  |
| **ENGAGE*** We will begin briefly by reminding one another of everyone’s names, while getting settled into the classroom.
* We will then have a short discussion about last week's topic and introduce what students will be learning about today. \*previous lesson connection\*
	+ What do we see in the sky? We see not only the moon, but what else?
	+ What time of day do we see the moon? What do we see during the day?
* We will then show students some powerpoint slides with information about sunlight and heat.
* After students have learned about sunlight and heat we will move into our solar oven activity.

**EXPLORE*** We will explain the solar oven to the students:
	+ “A solar oven works by trapping heat from the sun to cook the food inside. A solar oven consists of a cardboard box with a black inside, a transparent cover, and a reflective surface that directs sunlight into the box.”
* Students will explore the content by filling out a [handout](https://docs.google.com/document/d/1g0OmHK2c8qMP9dDHpsJY2PHqUQf-eHrfe3ZjX_G8ngY/edit?usp=sharing) that consists of them drawing the oven, predicting what will happen to the smores. Students will leave the “what actually happened?” section blank.
* To give the s'mores plenty of time to cook, we will move into our other activity.
* The second activity consists of shadow tracing. Each student will be given a gnome and a shadow handout. They will work in pairs with a flashlight to see how the movement of the light makes up their gnome shadows.
* Once they line up their gnome with the shadow on their [handout](https://docs.google.com/document/u/0/d/1FUbqrTSqrVkX9bvxT3o9u4fOok41XOj2S-Ote91WKbI/edit), they will trace their gnome shadow.
* After the gnome tracing, we will reconvene and discuss what the students discovered during the activity.
	+ What did you notice about your gnome shadows?
	+ What made the shadows change?

**EXPLAIN*** After each activity we will have short discussions.
	+ For our gnome activity: What made the gnome's shadows? What did you notice about the gnome’s shadows? What causes the gnome shadows to change?
	+ For the s’more’s activity: How did the s’mores cook? How do you think the heat moved from the light to the s’more? Can the sun cook things?
* We will also talk about the purpose of the sun and give a brief overview of what it does using Google Slides.

**ELABORATING/EXTENDING Understanding*** To elaborate on the idea of the sun, we will have students think about how the s’more and gnome activity could relate.
	+ How do these two activities relate?
	+ What was used in both activities? What could this thing represent?
	+ Were there shadows in the solar oven? Was there heat in the shadow tracing?
* We will then elaborate on what the sun does for us here on Earth.
 |
| **Formative Assessment Evidence (\*This is the Evaluation Phase of the 5E approach)** |
| **What evidence will you gather to understand if ALL your students met the learning outcome (see green box above)?*** Each student will draw the solar oven, and as a class we will collectively write about what we think will happen.
* Each student will work in partners to create and observe the gnomes’ shadows.
* As a class we will collectively write about what actually happened to the s'mores in the solar oven.
 |
| **Individual Student Accommodations** |
| **Accommodations/Modifications for Individual Students** * There are a few students who struggle to sit still, so we have a choice where they can move about the room during a couple activities and they will have the opportunity to work with partners.
* We will be walking around, along with other helpers, to aid students in the experiment if they need help.
 |

**Materials + Quantity for 14:**

* One pizza box
* Heat lamp
* Aluminum Foil
* Plastic Wrap
* Black construction paper
* S'mores Ingredients enough for 14
* 14 zip-loc bags
* Solar oven worksheet
* Gnomes (14)
* Gnome shadow sheet (14)
* 7 flashlights
* 7 pencils

**Q405: Saturday Science FS22**

**Lesson Plan Template**

**Grade level:** Kindergarten

**Anchoring Question/Phenomena for the unit:** *What is the relationship between the sun, the moon, and the Earth?*

**Lesson Plan # 3**

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| **Desired Results** |
| **Driving Question for this week’s Saturday Session** * What are the phases of the moon and what role does the sun play in them?
 |
| **DCI Addressed in lesson:**[ESS1.B: Earth and the Solar System](http://www.nap.edu/openbook.php?record_id=13165&page=175)* The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (6-8)
	+ For kindergarten this will be addressed in a shorter, more simplistic matter. The students will learn about the moon and its properties, such as its phases.
 | **SEPS Addressed in Lesson:** * Scientists use different ways to study the world. (K-PS2-1)
	+ Students are using hands-on modeling to observe the moon and its properties.
	+ Students will use questioning to guide their way through the experiment.
 | **CCCs Addressed in Lesson:** * *Structure and function:*
	+ The way in which the moon is shaped and its substructure determine many of its properties and functions.
 |
| **Learning objectives (outcomes):** ***What do you want students to be able to explain/state in response to the specific lesson question?***Students will be able to explain/state * what the moon phases are and how the sun causes them?
 |
| **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.* *\*Highlight in green the time period of the lesson your team wants video-recorded for the week. Should be ~30-40 mins total.** Getting settled into the room: 9:30-9:40
* Read aloud: 9:40-9:50
* Have Discussion about new observations from book: 9:55-10:00
* Brain Break: 10:00-10:10
* Moon and Sun Interaction Slide: 10:10-10:20
* What are Moon Phases? Discussion: 10:20-10:30
* Bathroom Break: 10:30-10:40
* Moon Phases Activity: 10:40-11:10
* Wrap Up/Discuss: 11:10-11:20
* Clean Up: 11:20-11:25
* Brain Break: 11:25-11:30
 |
| **Learning Plan***Any of these phases can be repeated should you have more than one activity to describe for the day OR a complex activity with multiple iterations of some of these phases.*  |
| **ENGAGE*** We will start off by conducting a read-aloud of a children's book about the moon (*Papa, please get the moon for me*?).
	+ As we have already read this book, we will be telling student’s to pay closer attention to what they are seeing in the book this second time around.
	+ “Does the moon look the same every time?” “How does it look when Papa grabs the moon?”
* We will have a discussion about the interactions between the moon and the sun.
	+ What causes the moon to light up in the night?
	+ How does the sun reach the moon?
	+ Why does the shape of the moon change?
* We will then introduce moon phases, what they are, and how they occur.
* Following our discussion, we will introduce the moon phases activity.

**EXPLORE*** Students will explore the content by creating all of the moon phases in pairs.
* Students will use either Oreo’s or shaving cream to display the 8 phases of the moon. In pairs, each partner will get 4 phases that they need to create.
* By doing this activity with students, they are understanding the 8 phases of the moon and how they occur.

**EXPLAIN*** We will wrap up our moon phases activity and discussion by showing students a yearly moon calendar. We will have students make observations and connect how the moon phase cycle and the calendar link up.

**ELABORATING/EXTENDING Understanding*** To elaborate on the idea of the moon’s phases we will show them a picture of the moon phase for the day we meet (Saturday) and ask students to tell us the name of what phase they see. Then, we will tell the students what the moon phase will be for the next day (Sunday) and ask students to visually show what that phase looks like.
 |
| **Formative Assessment Evidence (\*This is the Evaluation Phase of the 5E approach)** |
| **What evidence will you gather to understand if ALL your students met the learning outcome (see green box above)?*** Each student will create a model of the moon phases.
* As a class we will be sure each student has understood the moon phases by checking that their phase models are correctly done.
 |
| **Individual Student Accommodations** |
| **Accommodations/Modifications for Individual Students** * If a student cannot or would rather not work with the oreos they can create the phases with shaving cream and black construction paper.
* If a student cannot take the oreos home, will offer a different treat to have.
* We will be walking around, along with other helpers, to aid students in the experiment if they need help.
 |

**Materials + Quantity for 14:**

* 2 packages of oreos
* Toothpicks
* Paper towels
* Ziploc Baggies
* Shaving cream
* Black construction paper

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**Lesson Plan Template**

**Grade level:** Kindergarten

**Anchoring Question/Phenomena for the unit:** *What is the relationship between the sun, the moon, and the Earth?*

**Lesson Plan # 4**

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| **Desired Results** |
| **Driving Question for this week’s Saturday Session** * How does the Earth interact with the Sun and the Moon?
 |
| **DCI Addressed in lesson:**[ESS1.B: Earth and the Solar System](http://www.nap.edu/openbook.php?record_id=13165&page=175)* The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (6-8)
	+ For kindergarten this will be addressed in a shorter, more simplistic matter. The students will learn about the Earth and its interaction with the Sun, and the moon.
 | **SEPS Addressed in Lesson:** * Scientists use different ways to study the world. (K-PS2-1)
	+ Students are using hands-on modeling to observe the Earth and its properties.
	+ Students will use questioning to guide their way through the experiment.
 | **CCCs Addressed in Lesson:** * *Structure and function:*
	+ The way in which the Earth is shaped and its substructure determine many of its properties and functions.
 |
| **Learning objectives (outcomes):** ***What do you want students to be able to explain/state in response to the specific lesson question?***Students will be able to explain/state * how the Earth interacts with the Sun and the Moon.
 |
| **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.* *\*Highlight in green the time period of the lesson your team wants video-recorded for the week. Should be ~30-40 mins total.** Getting settled into the room: 9:30-9:40
* Introduction of orbits: 9:40-9:50
* Moon Sun and Earth song: 9:55-10:00
* Earth and Moon Interaction Slide: 10:00-10:10
* Earth, Moon, and Sun Interaction Discussion: 10:10-10:20
* Brain Vacation: 10:20-10:30
* Bathroom Break: 10:30-10:40
* Orbits Activity: 10:40-11:10
* Wrap Up/Discuss: 11:10-11:20
* Clean Up: 11:20-11:25
* Brain Break: 11:25-11:30
 |
| **Learning Plan***Any of these phases can be repeated should you have more than one activity to describe for the day OR a complex activity with multiple iterations of some of these phases.*  |
| **ENGAGE*** We will start off by reviewing what we discussed last week.
	+ What did we discuss last week?
	+ How do moon phases occur? What is involved?
	+ What have we not talked about yet?
* We will discuss how the sun moon and Earth are all interconnected by visually depicting orbits.
	+ What do we think an orbit is?
	+ How do orbits move?
	+ What orbits where?
* Following this depiction, we will sing a song about orbits and the sun moon and Earth.

**EXPLORE*** Students will explore the content by creating a paper visual of the moon e=Earth and sun orbits.
* Students will color the parts of their activity, cut out each part (with the help of the teacher), and then use brads to connect them.
* By doing this activity with students, they are able to make a hands-on visual of how the Earth, moon, and sun interact in outer space.

**EXPLAIN*** We will wrap up our orbits activity and discussion by showing off the students' work.
* We will have students make observations about their visuals and connect how everything we have discussed up to this point has connected to this activity
* Students will get to play with their models.

**ELABORATING/EXTENDING Understanding*** To elaborate on the idea of the moon orbiting the earth once per month, and the earth orbiting the sun once per year, we will ask student’s “When the Earth orbits the sun in a year, we get four seasons. What seasons do we get from the Earth traveling around the sun?”
 |
| **Formative Assessment Evidence (\*This is the Evaluation Phase of the 5E approach)** |
| **What evidence will you gather to understand if ALL your students met the learning outcome (see green box above)?*** Each student will create a model of the orbits using paper and other crafting tools to take home.
* As a class we will discuss the connection between all of the lessons and what we have learned up to this point in Saturday Science.
 |
| **Individual Student Accommodations** |
| **Accommodations/Modifications for Individual Students** * If a student cannot use scissors properly, a teacher will assist them
* Students will have creative freedom on how to color their models.
* We will be walking around, along with other helpers, to aid students in the crafting if they need help.
 |

**Materials + Quantity for 14:**

* 30 Brads
* 14 copies of worksheet on cardstock (if possible)
* Colored pencils, crayons, markers
* Scissors

**Q405: Saturday Science FS22**

**Lesson Plan Template**

**Grade level:** Kindergarten

**Anchoring Question/Phenomena for the unit:** *What is the relationship between the sun, the moon, and the Earth?*

**Lesson Plan # 5**

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| --- |
| **Desired Results** |
| **Driving Question for this week’s Saturday Session** * How does the Earth interact with the Sun and the Moon?
 |
| **DCI Addressed in lesson:**[ESS1.B: Earth and the Solar System](http://www.nap.edu/openbook.php?record_id=13165&page=175)* The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (6-8)
	+ For kindergarten this will be addressed in a shorter, more simplistic matter. The students will learn about the Earth and its interaction with the Sun, and the moon.
 | **SEPS Addressed in Lesson:** * Scientists use different ways to study the world. (K-PS2-1)
	+ Students are using hands-on modeling to observe the Earth and its properties.
	+ Students will use questioning to guide their way through the experiment.
 | **CCCs Addressed in Lesson:** * *Structure and function:*
	+ The way in which the Earth is shaped and its substructure determine many of its properties and functions.
 |
| **Learning objectives (outcomes):** ***What do you want students to be able to explain/state in response to the specific lesson question?***Students will be able to explain/state * how the Earth interacts with the Sun and the Moon.
 |
| **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.* *\*Highlight in green the time period of the lesson your team wants video-recorded for the week. Should be ~30-40 mins total.** Getting settled into the room: 9:30-9:40
* Read Aloud: 9:40-9:50
* Discussion of read aloud: 9:50-10:00
* Quick eclipse explanation: 10:00-10:10
* Sun, sun, moon game: 10:10-10:20
* Bathroom break: 10:20-10:30
* Making a sun/eclipse diagram: 10:30-11:00
* Worksheet: 11:00-11:15
* Wrap Up/Discuss: 11:15-11:30
* Brain Break: 11:30-11:45
 |
| **Learning Plan***Any of these phases can be repeated should you have more than one activity to describe for the day OR a complex activity with multiple iterations of some of these phases.*  |
| **ENGAGE*** We will start off by reviewing what we discussed last week.
	+ What did we discuss last week?
	+ What three things are orbiting?
* We will read *Someone is Eating the Sun*
	+ What do you think was happening to the sun?
	+ Why was this happening?
	+ Why can we NOT look at the sun while this is happening?
* Following this depiction, we will play Sun, Sun, Moon!
	+ Why is the moon chasing the sun?
	+ What does this represent?

**EXPLORE*** Students will explore the content by discussing what an eclipse is
	+ What is an eclipse?
	+ How often does this happen?
	+ What does it mean?
	+ What does it look like?
* Students will each make a sun that will be hung up on the board.
* Students will come up to the board with a big moon to cover their sun in the proper order an eclipse would occur in.

**EXPLAIN*** The students will see the evolution of the eclipse by looking at their suns up on the board
* To make sense of what this really looks like, we will show a real video of an eclipse
* We will also explain “totality” and why it is cool that the eclipse is occurring in Bloomington.

**ELABORATING/EXTENDING Understanding*** To elaborate on the idea, we will have students make a paper about when the solar eclipse is going to happen so they don’t forget
* They will write why it is an exciting event
* They can use this paper to show their families what they learned about and why it is an important event
 |
| **Formative Assessment Evidence (\*This is the Evaluation Phase of the 5E approach)** |
| **What evidence will you gather to understand if ALL your students met the learning outcome (see green box above)?*** Each student will create a sun for the eclipse demonstration
* As a class we will discuss the connection between all of the lessons and what we have learned up to this point in Saturday Science.
 |
| **Individual Student Accommodations** |
| **Accommodations/Modifications for Individual Students** * If a student cannot spell/struggles to write, a teacher will assist them
* We will be walking around, along with other helpers, to aid students in the crafting if they need help.
 |

**Materials + Quantity for 14:**

* Markers
* 14 sun worksheets
* 14 eclipse worksheets
* 14 certificates