

Light and Shadow Lesson Plan - 10/08/2021

Grade: First	Subject: Science
Materials: Popsicle sticks, paper shapes, paper, flashlights and sticky notes	Technology Needed: Projector/smart board for video of book
Instructional Strategies: <input type="checkbox"/> Direct instruction <input type="checkbox"/> Guided practice <input type="checkbox"/> Socratic Seminar <input type="checkbox"/> Learning Centers <input type="checkbox"/> Lecture <input type="checkbox"/> Technology integration <input type="checkbox"/> Other (list) <input type="checkbox"/> Peer teaching/collaboration/cooperative learning <input type="checkbox"/> Visuals/Graphic organizers <input type="checkbox"/> PBL <input type="checkbox"/> Discussion/Debate <input type="checkbox"/> Modeling	Guided Practices and Concrete Application: <input type="checkbox"/> Large group activity <input type="checkbox"/> Independent activity <input type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) Explain: <input type="checkbox"/> Hands-on <input type="checkbox"/> Technology integration <input type="checkbox"/> Imitation/Repeat/Mimic
Standard(s) 1-PS4-3 - Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	Differentiation Below Proficiency: For students who may struggle with discovering the shadows, I will first direct them to a peer for guidance. If the peer is unable to help, I will then assist the student with remodeling how to discover the shadow for a second/third time.
Objective(s) Students will describe how a shadow is created. Students will experiment with light and shadow by using flashlights and various objects. By the end of the lesson, students will determine the relationships between light and shadow. Bloom's Taxonomy Cognitive Level: Remembering, Understanding, & Applying	Above Proficiency: Encourage students to explore with the shadows of moving the flashlights in different directions and seeing what takes place such as moving in circles, sideways, or closer/farther away from the object. Help their peer if needed Answering all questions asked by the teacher Asking additional questions to further learning of their own and peers Approaching/Emerging Proficiency: Students are able to complete all tasks/activities throughout the lesson Modalities/Learning Preferences: Auditory – Listening to the directions/content throughout the lesson Visual – Seeing the teacher model how to create the shadows with the flashlight The chart drawn on the white board with the sticky notes (students answers) The materials used during the lesson Tactile – Flashlights, popsicle sticks, paper shapes, objects throughout the classroom Kinesthetic – Moving to place the sticky note on the chart Moving throughout the classroom when doing partner work Moving back to whole group at the end for review and wrap up
Classroom Management- (grouping(s), movement/transitions, etc.) For this lesson, we will be in a whole group setting where the students will be sitting on the group rug. During the lesson, the students will be prompted to get up from their spots two at a time and will place their sticky note in the section they agree with up on the white board then return to their spots. For the partner activity, students are free to choose an area throughout the classroom to work, but may not be in the same area as another group.	Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.) - The students will stay seated during the whole group lesson - The students will only get up when told to - If a student has a question, they will raise their hand and wait to be called on - When a student is answering a question, they must raise their hand and wait to be called on and answer the question at a voice level 1 - The students must not blurt out any answers (voice level 0), they must raise their hand - The students must be at a voice level 0 during the lesson - The students will demonstrate “whole body listening” during the lesson, when the teacher is talking, and when they their peers are talking

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	<ul style="list-style-type: none"> - The students will respect the space they are in and their peers around them - The students will follow the directions when experimenting with light and shadows during both experiments - The students must participate - The students will only work with the partner they are assigned too
Minutes	Procedures
1-2	<p>Set-up/Prep: The teacher will gather the materials for the lesson: popsicle sticks, paper shapes, paper, flashlights and sticky notes.</p>
3-4	<p>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)</p> <p>The teacher will say, “Today we are going to learn about light and how shadows are created from light such as the sun. Can anyone tell me what a shadow is and have you seen one before, if so, where?”</p> <ul style="list-style-type: none"> • Shadow – a dark shape that is made when something blocks light, need light to have shadows • Demonstrate what a shadow looks like <ul style="list-style-type: none"> ○ Turn off lights, place hand in front of white board and turn on the flash light over my hand to show how the light creates a shadow <p>The teacher will say, “Do you guys remember when you learned about your five senses a little while ago? Can I have five friends tell me what our five senses are? Today we are going to use three of our senses to learn about light and shadows. Does anyone have an idea of what three senses we are going to use?”</p> <ul style="list-style-type: none"> • Five Senses: Sight, touch, hearing, smell, taste • Three senses we are using: Sight, touch, and hearing
15-20	<p>Explain: (concepts, procedures, vocabulary, etc.)</p> <p>The teacher will say, “Today we are going to read a book and we are going to use two of our senses to listen to the book. Do we know which two senses we are going to use?”</p> <ul style="list-style-type: none"> • Sight and hearing <p>The teacher will say, “We are going to use our senses of sight and hearing to watch and listen to the book <i>The Day I Met My Shadow</i>. After reading the book, we are going to do some fun activities with light and shadows.”</p> <p>Play/Read the book which will be displayed on the smart TV</p> <ul style="list-style-type: none"> • https://www.youtube.com/watch?v=8L52xSUTJNg • I will either play the book for us to listen to, OR I will read the book to the students by pausing the video at each page • Questions to ask during the book: <ul style="list-style-type: none"> ○ Page 4: What do you think the little boy saw? ○ Page 8: Why do you think it grew? ○ Page 13: Why do you think it went away when the sun went behind the clouds? ○ Page 17-18: Why do you think he moved when the boy did? ○ Page 20: How can the spot be a person too and why do you think it looks like the little boy? ○ Page 26: What is the black object and how does it appear? <p>Show students examples of shadows – watch video as well (Appendix A)</p> <p>Light/Shadow Activity - Have materials ready</p> <ul style="list-style-type: none"> • To generate student thinking before the main activity, do the shadow size formative assessment (Appendix B) <ul style="list-style-type: none"> ○ Give 1 sticky note to each student (they will write their name on it) and will put it on the floor in front of them, tell students that it must stay there and cannot move/touch it until they are directed to ○ Draw on the white board: <ul style="list-style-type: none"> ▪ Question: How can you make the shadow bigger (ask before drawing rest of chart to allow for think time) ▪ Three choices: <ul style="list-style-type: none"> • Move the flashlight closer • Move the flashlight farther away • The shadow stays the same (doesn't move) ○ After drawing this on the white board, students will choose a response they agree with <ul style="list-style-type: none"> ▪ Students will come up in pairs which will be called on by the teacher and will place their sticky note with their name on there under the response they agree with • The teacher will say, “Let’s see if we can figure out how we can change the size of a shadow.” <ul style="list-style-type: none"> ○ Students will create a “wand” to test their ideas about shadows <ul style="list-style-type: none"> ▪ They will be given a popsicle stick and a shape then place it at the top of the stick and tape it ○ The students will then each be given their own flash light and the room will get as dark as possible

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	<ul style="list-style-type: none"> ▪ Students will be told that they are not able to shine the flashlights at their peers or shine the flashlights all over the classroom, only on their shapes <ul style="list-style-type: none"> • Have a student model what this looks like so it is done correctly ○ The students will shine their light on the paper shape <ul style="list-style-type: none"> ▪ Model for the students of how to shine the light on their paper shape so they are able to visually see the result then discover on their own ▪ “Do you see your paper shape’s shadow?” <ul style="list-style-type: none"> • Have students point out the shadow to check for understanding before moving on • Let students explore for 2-3 minutes ▪ Have students turn flashlights off and put at corner of desk ○ Look for cause and effect between shadow size and distance from flashlight <ul style="list-style-type: none"> ▪ Have the students answer two questions: <ul style="list-style-type: none"> • When I move the flashlight closer to my paper shape, the shadow... • When I move the flashlight farther away from my paper shape, the shadow... ▪ After asking each question, allow the students to turn and talk with a peer about agree/disagree then bring students back in • The teacher will say, “Now that we have explored with our shapes that we have created, we are now going to explore with some other objects around the classroom. You will each be paired with a partner and will explore three objects around the classroom using your flashlight and will then draw each one on a piece of paper of how the object looked when the light was on it, including the shadow.” <ul style="list-style-type: none"> ○ Students will be paired with a partner ○ Students will choose three objects to explore with their partner ○ Students will draw each object on their piece of paper after exploring it and discovering its shadow <ul style="list-style-type: none"> ▪ Each student will have their own piece of paper
<p>10-15</p>	<p>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions) The students will be paired with a partner and will choose three objects from the classroom to explore with their flashlights and discover each shadow.</p> <p>Before the students start, the teacher will say, “Repeat after me.” (Students will repeat after the teacher)</p> <ul style="list-style-type: none"> • I will go with my partner and choose three objects to explore with my partner using my flashlight. After finding the shadow, I will draw the object on my piece of paper.” • Students will find their partner and choose three objects they want to discover the shadows of THEN go find those three objects and discover the shadows then draw each one of the piece of paper <p>While the students are working on their writings, the teacher will walk around the classroom to check the students understanding of what is expected of them along with answering any questions they may have.</p>
<p>3-5</p>	<p>Review (wrap up and transition to next activity): Collect flashlights</p> <p>Students will hand in the work of their drawings of the objects and their shadows</p> <p>Refer back to the assessment we did at the begging of the lesson on the white board:</p> <ul style="list-style-type: none"> • Ask the students, “What did you notice in your exploration with your partner that makes you agree with your answer of where you put your sticky note at the beginning of class?” (Allows the students to support their claim with evidence from the data they collected, what they noticed.) <ul style="list-style-type: none"> ○ Give students a couple minutes to think <p>The teacher will say, “Thinking back to the beginning when we started science, do you remember what senses we were using today? How did we use them?”</p> <ul style="list-style-type: none"> • Sight, hearing, and touch <p>The teacher will say, “Let’s review one more time, what are our five senses? Think back to what you told me at the beginning of the lesson.”</p> <ul style="list-style-type: none"> • Sight, hearing, touch, smell, and taste
<p>Formative Assessment: (linked to objectives) Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.</p> <ul style="list-style-type: none"> • Shadow Size chart on the white board 	<p>Summative Assessment (linked back to objectives) End of lesson:</p> <p>If applicable- overall unit, chapter, concept, etc.:</p>

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- Determining how students think they can make a shadow bigger
- Place a sticky note with their name on it at one of the three responses
- Observing the students while they are creating their “wands” and exploring with them
 - See if they can see the shadow
 - Make it bigger/smaller
- Observing the students while they are working with their partners during the explore phase
 - If they are able to find three objects, discover the shadow then drawing them on their paper

Consideration for Back-up Plan: If the students are unsure of how to discover the shadows on the three objects they choose, I will either work one on one with the pair or if there are multiple groups, I will bring the class back together and re-teach the content so the students are able to better understand what is expected of them. I will model again for the students of how to discover a shadow when light is on an object such as my hand.

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Looking back at how this lesson went, it went well for a few reasons. The first reason this lesson went well is that the students were engaged in the content throughout the whole lesson whether it was answering a question, placing their answer to the question, “How can you make a shadow bigger” on the white board using a sticky note, or experimenting with the flashlights to create shape and hand shadows. Second, I started the lesson with accessing some background knowledge of light and shadow then moved to reading a book titled, “The Day I Met My Shadow” where the students learned about what a shadow is along with answering some questions I asked throughout the book. This part of the lesson kept the students engaged because they listened to someone else read the story through a video then I would pause during throughout and ask questions relating to the story. Also, the questions I asked allowed the students to further their knowledge of light and shadow while also retaining new information. Third, the students were quite interactive in the lesson when they were able to go on their own and experiment with the light and shadow. The students did this by having a flashlight and their shape wand and experimented with how to make the shadow bigger/smaller along with moving their flashlights in different directions and seeing what happened to their shadow. The students gained a great amount of knowledge during this time because they were able to experiment on their own rather than as a whole group and not getting a hands-on experience. Lastly, the lesson went well because I changed the final activity I was going to have the students do. I changed the activity from the students working with a partner and choosing three objects to discover the shadow of then drawing each object on a piece of paper along with its shadow. I changed this activity to the students working with a partner and creating shadow hand puppets instead which I displayed up on the smart TV and they were able to see a variety of shadow hand puppets they could create. I changed this because the students had a great amount of energy when I was teaching this lesson and I knew they would not be able to complete the tasks I had originally planned which is why I chose to alter this part of the lesson. The students enjoyed this part of the lesson since they were able to create multiple shadow hand puppets that they may have not done before.

From this lesson, the students learned a couple of new things as well as furthering their knowledge of what light and shadow is. First, the students learned what a shadow is and how they are created which is from the sun when it is shining on an object at a certain angle. A few of the students knew this but others did not so this was important information to go over. Second, the students learned how to make a shadow bigger and smaller through experimenting with their flashlights and shape wands. After the students had experimented with this, we came back together as a full group and discussed what the students learned while they were experimenting such as what they did to make a shadow bigger/smaller and if they discovered any other ways to make their shadow look different. Lastly, the students learned how to create shadow hand puppets from looking at the smart TV and seeing what animals they could create while their partner was holding the flashlight. During this lesson, the students furthered their knowledge in a couple of ways. First, the students who already knew how shadows were created furthered their knowledge by hearing a few different ways of how they are created as well as how a shadow is made bigger/smaller. Second, the students furthered their knowledge by knowing how to take turns with their partner during the final activity of creating shadow hand puppets. The students each had a partner and had to take turns holding the flashlight so the other students could create the shadow hand puppets then would switch.

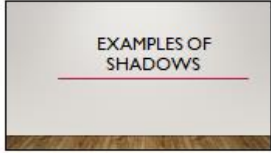
After teaching my lesson, there are a couple of things I would change or add if I were to teach this lesson again. The first thing I would change would be having a hard copy of the book, “The Day I Met My Shadow” because it would have been a little easier to stop reading and ask the question rather than displaying a video of the book on the smart TV and having to pause the video every so often. It was great to experiment using the technology in the lesson, but having a hard copy of the book would have been a little easier. The second thing I would change would be the last activity I have the students do which is creating hand shadow puppets instead of having to draw three objects and their shadows. I think the students would better understand how shadows are created from this activity first, then later on have them worked towards being able to draw the shadows of objects. One thing I would add to this lesson would be more technology which I did. I used the smart TV for the video, but I also had to adjust my lesson last minute as I was not able to use my PowerPoint I created so I searched for examples of shadows on the internet to show the students which went well because I was able to zoom in on the pictures and ask the students questions right from the

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top of my head without thinking instead of asking previously thought out questions. This also allowed the students to have a bigger visual of the shadows along with the shadow hand puppets they were practicing to create.

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Appendix A

10/5/2021



1

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2

Shadow Size

How can you make the shadow bigger?



Move the flashlight closer.



Move the flashlight farther away.



It doesn't matter. The shadow stays the same.

What are you thinking?