

Grade: 5th	Subject: Science
Materials: Computer, Power Point, scissors, plant pro worksheet, wizard pro work sheet, discussion questions	Technology Needed: Computer and PowerPoint
<b>Instructional Strategies:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Direct instruction</li> <li><input type="checkbox"/> Guided practice</li> <li><input type="checkbox"/> Socratic Seminar</li> <li><input type="checkbox"/> Learning Centers</li> <li><input type="checkbox"/> Lecture</li> <li><input type="checkbox"/> Other (list)</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Peer teaching/collaboration/cooperative learning</li> <li><input type="checkbox"/> Visuals/Graphic organizers</li> <li><input type="checkbox"/> PBL</li> <li><input type="checkbox"/> Discussion/Debate</li> <li><input type="checkbox"/> Modeling</li> </ul>	<b>Guided Practices and Concrete Application:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Large group activity</li> <li><input type="checkbox"/> Independent activity</li> <li><input type="checkbox"/> Pairing/collaboration</li> <li><input type="checkbox"/> Simulations/Scenarios</li> <li><input type="checkbox"/> Other (list)</li> </ul> <p>Explain:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hands-on</li> <li><input type="checkbox"/> Technology integration</li> <li><input type="checkbox"/> Imitation/Repeat/Mimic</li> </ul>
<b>Standard</b>  5-ESS1-1 Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth	<b>Universal Design for Learning</b>  <b>Below Proficiency:</b> During discussion, students will be partnered/sat at table group with those who are at or above proficiency. During the activity, I will strategically partner the students up in order to scaffold instruction and help those students who are below proficiency.  <b>Above Proficiency:</b> Students above proficiency will be partnered with students below proficiency. They will also be challenged with their ending discussion questions and be asked to elaborate and give more reasons as to why or how they got their answer  <b>Modalities/Learning Preferences:</b> <ul style="list-style-type: none"> <li>• <b>Visual:</b> For visual students there will be videos played throughout the lessons that help model expectations and give students a visual on what they are doing.</li> <li>• <b>Auditory:</b> For auditory students there will be lecture and discussion at tables and with partners. The discussion will help auditory learners by helping them hear different ideas and also giving their ideas to their peers.</li> <li>• <b>Kinesthetic:</b> For kinesthetic learners will learn best is this activity by the manipulatives and creating the space mission to another solar system.</li> </ul>
<b>Objective</b>  By the end of the lesson, students will be able to understand the brightness of the sun and stars is due to their relative distances from the Earth by planning and creating a space mission to another solar system.  <b>Bloom's Taxonomy Cognitive Level:</b> Creating	

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	<p>They learn best by doing.</p> <ul style="list-style-type: none"> <li>• <b>Tactile:</b> Tactile learners will learn best from this activity when they are writing down their answers to their discussion questions. They learn best by writing things down/taking notes while learning.</li> </ul>
<p><b>Classroom Management- (grouping(s), movement/transitions, etc.)</b></p> <ul style="list-style-type: none"> <li>- When video is playing, students will have voice level zero and hands will be in lap</li> <li>- During discussion, students will be given about a minute to discuss. They are expected to stay on task and only discuss the questions</li> <li>- During partnering, students will be partnered up by the teacher</li> <li>- Transitioning from video to activity, students will need to have full attention on both</li> <li>- Transitioning into lunch/recess students will put materials away and line up</li> <li>- 123 eyes on me (1 2 eyes on you)</li> <li>- 321 done talking who can raise their hand and tell me....</li> <li>- If they need to use the restroom during the lesson, they need to use the classroom procedure and grab the 'B' to put on their desk</li> <li>- Eyes need to be on the board and no side conversations during lecture time.</li> </ul>	<p><b>Behavior Expectations- (procedures/expectations specific to the lesson, rules and expectations, etc.)</b></p> <ul style="list-style-type: none"> <li>- Students will raise their hand instead of blurting out their answers</li> <li>- Students voice level will stay at zero during lecture and video</li> <li>- Students voice level will stay between 1-2 during discussion periods and partner work</li> <li>- Students will participate in each activity and will participate equally with table group and partner</li> <li>- Students are expected to follow along and not work ahead during the lesson.</li> </ul>
<b>Minutes</b>	<b>Procedures</b>
<b>5 Minutes</b>	<p><b>Set-up/Prep before lesson:</b></p> <ul style="list-style-type: none"> <li>- Have mystery science up and ready to go.</li> <li>- Have materials prepared and ready to hand out</li> </ul>
<b>10 – 15 minutes</b>	<p><b>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)</b></p> <ul style="list-style-type: none"> <li>- Natural phenomena (our solar system)</li> <li>- Can anyone tell me what a solar system is?</li> <li>- What planet would you visit in the solar system? Why (turn and tell a neighbor)</li> <li>- 321 talking done! Eyes on the board and hands in lap!</li> <li>- Play introduction video on mystery science (3-5 minutes)</li> <li>- *This video starts out with families sitting down and listening to their favorite shows on the radio (not TVs at the time). They became very startled because over the radio they heard “Martians are landing, and they are going to attack from Mars!” In reality</li> </ul>

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	<p>they were listening to a reading of “The Wart of the Worlds.” The video then goes on to talk about Mars the red planet and the dark markings on the surface. When we hadn’t sent anyone into outer space yet, this caused people to create maps and create Martians on other planets using their imaginations. The video goes on to explain how we can now travel to the outer space and how we now know there is no life on Mars. We can now send rockets and robotic cameras into outer space.</p> <ul style="list-style-type: none"> <li>- Discussion questions #1: Based on what we now know after watching this video, where would you visit in the solar system? (I’m expecting different answers than their first one in the beginning because they now have background knowledge of some planets) (pick 1-2 students based on time)</li> <li>- Discussion questions #2: Where would you go? (pick 1-2 students based on time)</li> <li>- Discussion questions #3: Discuss with your table what kind of dangers you might have to protect yourself from? (I’m expecting answers about the climate, oxygen, and if living things are able to life there) (If time, have a table share their discussion with the whole class.)</li> <li>- 1 2 3 eyes on me (1 2 eyes on you)</li> </ul>
<p><b>15 - 20 Minutes</b></p>	<p><b>Explain: (teacher-led)</b></p> <ul style="list-style-type: none"> <li>- “okay students listen closely to the next video!”</li> <li>- This video explains how and why these planets may be more challenging to live on than we imagined. Examples are how Mars and Venus have no oxygen and Jupiter and other gas planets have no place to land because they are all gas. The video poses the question: Ar there planets somewhere not in our solar system? We see thousands of stars like our sun, so does this mean that other stars have planets around them too? These are called exoplanets: planets outside our own solar system.</li> <li>- At the end of the video as students: What are exoplanets? (planets outside our solar system) What made scientists try and find exoplanets? (They knew the sun was a star and planets surround the sun, so why would other stars have planets?)</li> <li>- “Okay scientists, now that we know more about exoplanets and the stars, how would you decide which exoplanet to visit first? Discuss with your table” (expecting students to answer with supporting information from lecture/video) (Have multiple tables share outs to compare answers and have students explain why they would visit that exoplanet first.</li> <li>- “Okay scientists, today we are going to be planning a space mission to another solar system!”</li> </ul>
<p><b>20 – 30 Minutes</b></p>	<p><b>Elaborate: (concreate practice/application with relevant learning task -connections from content to real-life experiences)</b></p> <ul style="list-style-type: none"> <li>- “For our activity today, we are going to work together in groups of 2-3 (depending on class size) and read up on a science topic!”</li> <li>- “You scientists are going to work together to see which planet is best to live on and explore, remember you only get to pick one planet!”</li> <li>- “First, I am going to split you up into partners” (strategically partner the students based on proficiency and work ethic, should they be working with one another?)</li> <li>- When I say go, you and your partner will grab a writing utensil and find a table spot, GO! (if students are taking too long, give them 15 second countdown or motivate with a sticker.)</li> <li>- Once students find a spot give them 5 seconds for them to pick one of them to be the plant pro, and the other students to be the water wizard.</li> <li>- Once students have picked plant pro or water wizard, I will hand out supplies for the</li> </ul>

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activity.

- Plant pro gets the plant prop work sheet and water wizard gets the water wizard worksheet and each student will get some scissors
- "Okay scientists everyone eyes on me! Notice on both papers there is this decoder? Cut these decoders off of your worksheet (visually show the students) Everyone Notice that there are different colors of grey on the decoder and behind your planets.
- Give students time to cut the decoders out
- When you are done cutting your decoder out, raise your decoder and worksheet in the air to show me you are done!
- "okay next step!" "Now I want my plant pros to reading their information about plans and my water wizards to read their information about water.
- Give student ample time to read their information
- "friends give a thumbs up when you are done reading your information, make sure we are reading to learn, because this information is important for our next activity!"
- "Now that I have seen everyone's thumbs up, I want my Plant Pro students to circle the percentages of light too dim, too bright for plants. Water Wizards I want you to circle temperatures too hot, too cold for liquid water" (Students are using their decoders)
- When hands are on our desks, I know we will be ready to move on to the next step
- Okay 5<sup>th</sup> graders, I need my plant pros to label each box in their decoder too bright, too dim, or just right.
- Water wizards, I want you to label each box too hot, too cold, or just right.
- After this we will watch a quick example video on mystery science
- Okay students now I want us to use our decoders on the planets closest to the start Malina and match the color. Put an X if you can't there or a check mark if you think you can live there. (give students 30 seconds to a minute to answer)
- Now let's do one together: Choose planet and use an x, check mark, or question mark if you are unsure about it. Make sure to be thinking out loud to show the students my thinking process and why I decided to put an X, check mark, or ?.
- Okay scientists, now I want you to use the decoder to decide if you would live on the rest of the planets using an x, check mark, or ?.
- While students are doing this, grab discussion questions.
- I will know when we are ready when are hands are on our heads
- First I want you and your partner to go through your planets and find the planets where you both have check marks, the other planets need to be crossed out.
- Next discuss the questions: Look at how far the habitable planets ar from their star. What do you notice? What differences do you notice between the stars Malina, Thea, and Helios? Does that help explained what you noticed? (discuss and table groups then have them share out loud.)
- Expecting students to notice the habitable places are close to small stars and far from the larger stars.
- Okay scienticts, now remember we cannot pick more than one planet, so let's go back and get more information before we make a final choice.
- Grab handout and have student cut the handout on the dotted line
- Plant pro: read the spinning specialist information and Water wizard read the gravity guru information
- Give student ample time to read information
- 1 2 3 eyes on me (1 2 eyes on you)

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	<ul style="list-style-type: none"><li>- Okay plant pros I will give you one minute to tell the water wizard what you learned</li><li>- Water wizards I will give you one minute to tell the plant pros what you learned</li><li>- Alright 3 2 1 finish your thought</li><li>- Now work together and put x's on planets you don't want to live on based on your new information.</li><li>- Finally, students discuss and circle the planet that you and your partner choose to go on a space mission too!</li></ul>
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<b>10 Minutes</b>	<b>Closure (wrap up and transition to next activity):</b> <ul style="list-style-type: none"><li>- Students will watch a two-minute video summarizing what we learned and why we learned it.</li><li>- Have students share out their planets they chose and why</li><li>- Okay scientists let's discuss our new knowledge. I want you to discuss at your table "If you went on your space mission, you would spend several years traveling into space to get to your planet. When you land on the planet and look up at the sky, what would Earth's sun look like from there? (discuss at the end as whole group)</li><li>- Scientists, you did a great job today and we learned a lot about our solar system. Tomorrow we are going to learn even more!</li><li>- Odd numbers line up for lunch</li><li>- Even numbers line up for lunch</li></ul>
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<b>Formative Assessment: (linked to objective, during learning)</b> <ul style="list-style-type: none"><li>• <b>Progress monitoring throughout lesson (document of student learning, data collection)</b><ul style="list-style-type: none"><li>- Throughout the lesson I will be observing discussing and guiding instruction based on student responses to discuss questions and share outs. Another formative assessment are the discussion questions the students will write down their answers too. As I read these while I walk around the room I will see which students are understanding the content and others who may need more scaffolding or elaboration.</li></ul></li></ul>
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<b>Summative Assessment (linked back to standard, END of learning)</b> <ul style="list-style-type: none"><li>- By the end of the lesson, students will create and choose an exoplanet to go on a space mission to. They will pick this space mission by understanding how the brightness of the sun and other stars affects those planets and explain why there could be living things on some but not the other.</li></ul>
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<b>Teacher Reflection (What went well? What did the students learn? How do you know? What changes would you make?):</b> <p>What went well with this lesson was student engagement and classroom management. I walked around the classroom to help keep those students on task who were off task. When students would talk while I was talking, I reminded my friends that they shouldn't be talking while I'm talking. I thought I had great wait time in the beginning of my lesson and gave students time to think about the discussion question. What I felt could have went well is the overall organization. Some parts in the lesson should have taken a few minutes, but</p>
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some students took almost ten while others were done in two. I then had those students who finished earlier messing around and discussing things other than science. The other students who didn't get done at all were confused and needed a re-teach of it. During the lesson I noticed this, but I didn't know what to do to fix it. So, I felt during this portion of the lesson, I lost control of the room and felt really overwhelmed. I decided to move on and then help my students who needed it as much as could during the lesson and more after the lesson. Talking with my practicum teacher after the lesson, she noticed this loss of control as well during my lesson. I asked her what I could do in a situation like this. A lot of times she will teach the lesson and check for understanding throughout. As she is checking for understanding, she sees which student might need extra intervention during independent time. Her tip for me was to continue with the lesson for those students who are above and at proficiency and make sure to explain well for those students below. Then during independent work and WIN time, work one on one with those students who were struggling or didn't understand the lesson. With this you are using students time effectively and teaching to all students. The first thing I would change is the organization of the lesson. Organize the lesson better, give students only a few moments for things that should only take a few moments. Remind them that if they don't understand it completely that okay, and they will. I will also group certain students together better. Some students should not have been partnered together and cause for some behaviors during the lesson. During discussion, what I thought I did well was checking for student understanding. I also did well for those students who were blurting or talking while another student was talking. I politely asked my friends to not talk while our other friends are talking and asked the student to repeat their answer. This was a great way to make students were listening to their peer's response respectfully.

- If extra time, students will elaborate more on their missions and write a short story on their mission
- If running out of time, students will pause and pick up where they left off the next day.