





















Earth's Place in the Universe Lesson

<p>Grade: 5th</p>	<p>Subject: Science</p>
<p>Materials: Notebooks Model pages Coloring utensils Bands (2 per student) Glue Scissors Paper clips (1 per student)</p>	<p>Technology Needed: Smart Board</p>
<p>Instructional Strategies:</p> <ul style="list-style-type: none">  Direct instruction  Guided practice  Socratic Seminar  Learning Centers  Lecture  Technology integration  Other (list) <ul style="list-style-type: none">  Peer teaching/collaboration/cooperative learning  Visuals/Graphic organizers  PBL  Discussion/Debate  Modeling 	<p>Guided Practices and Concrete Application:</p> <ul style="list-style-type: none">  Large group activity  Independent activity  Pairing/collaboration  Simulations/Scenarios  Other (list) <p>Explain:</p> <ul style="list-style-type: none">  Hands-on  Technology integration  Imitation/Repeat/Mimic
<p>Standard(s) 5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>	<p>Differentiation</p> <p>Below Proficiency: I will offer support to below proficient learners by offering more visuals or one on one explanations of these terms. I can use my own model to demonstrate revolution and rotation and then have them repeat after me. Students can also ask their peers for assistance for building their models or I can assist as well. They can verbally show me how the earth rotates or revolves, or they can write it down and show illustrations as well.</p>
<p>Objective(s) By the end of the lesson, students will be able to demonstrate the rotation and revolution of earth by constructing and using their models of the Sun, Moon, and Earth.</p> <p>Bloom's Taxonomy Cognitive Level: Apply</p>	<p>Above Proficiency: I will encourage above proficient students to dive deeper into how the earth moves, and what it causes. I can offer links to other supporting resources or I will encourage them to research any questions they may have relating to the lesson, like, "Why doesn't the sun revolve around anything?" Or "Why is the Earth tilted on it's axis?"</p> <p>Approaching/Emerging Proficiency: I will offer support by breaking down terms as simple as possible, with examples in the form of video, using students to model, and the use of the model we create. I will offer extra support when necessary.</p> <p>Modalities/Learning Preferences:</p> <ul style="list-style-type: none"> • Visual: The video example, student examples, and student made models will help visual learners. Their written notes and illustrations will also help them. • Auditory: Hearing how the earth revolves and rotates will help auditory learners. The class discussion and talking with a classmate will also help auditory learners. • Kinesthetic: Working on the models as well as having students show examples of how the earth moves will help kinesthetic learners. • Tactile: Working on the models, discussing with groups, and having student examples of how the earth moves will help tactile learners.

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<p>Classroom Management- (grouping(s), movement/transitions, etc.)</p> <ul style="list-style-type: none"> • Large Group: <ul style="list-style-type: none"> • Active listeners • Be respectful of others who are talking • Using Materials <ul style="list-style-type: none"> • Share materials with others • Do not rip, tear, or ruin materials • Clean up and put away nice and neat • Independent Work <ul style="list-style-type: none"> • Voice level 0 or 1 • Raise hands if there are questions • Group Work <ul style="list-style-type: none"> • Everyone shares materials • Voice level 0 or 1 • Transitions <ul style="list-style-type: none"> • Eyes on me in three, two, one • Fist raised 	<p>Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)</p> <ul style="list-style-type: none"> • Large Group: <ul style="list-style-type: none"> • Students are expected to be active listeners • Students are required to participate in the discussion • Students are required to be respectful of others who are talking • Using Materials: <ul style="list-style-type: none"> • Students are required to use the materials in a respectful manner • Students are required to share materials • Students are required not to ruin the materials Group Work <ul style="list-style-type: none"> • Students are expected to use a voice level 1 when working together on activity • Independent Work <ul style="list-style-type: none"> • Students are expected to keep their voices off when working on individual work • Students are expected to raise their hands silently if they have questions • Transitions: <ul style="list-style-type: none"> • Students are expected to use a voice level 0-1 when transitioning from one activity to the next • Students are expected to stop what they are doing and pay attention when they are being called on
Minutes	Procedures
	<p>Set-up/Prep:</p> <p>Find video and place on smart board Print enough model sheets for students Gather art and model materials</p>
10 min	<p>Engage: (opening activity/ anticipatory Set - access prior learning / stimulate interest /generate questions, etc.)</p> <ul style="list-style-type: none"> • “Good morning students, today we will be looking at the Earth, the moon, the sun, and their relationships with each other.” • “So the first thing I want you guys to do is take out your Science notes with the terms we filled out the other day. You should have your illustrations filled out by now, but if you don’t, you can fill those out when we go over the terms.” • “Once you have your notes out, I want you guys to look up at the board. I’m gonna put a video up on the board (with no sound).” • https://www.youtube.com/watch?v=QcgDiF1a14&feature=iv&src_vid=W47Wa7onrIQ&annotation_id=annotation_3058773399 • “I want you guys to pay attention to the video, and then in your notebooks, write down two observations and two inferences from the video.” • “Can anyone remind me what an observation is?” (something seen or noticed) • “How about an inference?” (Using what you see and your background knowledge to make an inference) • “Great, now remember, I want you to write down two observations and two inferences about the video. Make sure you label which ones are inferences and which ones are observations.” • Show video • “Alright students, you should be writing down your inferences and observations if you are not done with them yet.” • Wait for students to complete this step • “Okay now, when I say go, I want you to find a partner across the room and share your observations and inferences with them.” • “Go” (give students time for this and walk around while they share with their partner) • “Alright students, eyes back on me in three, two, one.” • “Who wants to share an observation or inference that they made from the video?” • Have a couple student volunteers share some observations and inferences with the class

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15-20
min

Explain: (concepts, procedures, vocabulary, etc.)

- “Alright students, now after we watched the video and shared some of our observations and inferences, I want you to take a look at your notes as we go over the terms that we wrote down. Make sure that if you do not have an illustration for each term yet, that we are doing that as we cover each term.”
- “Our first term is the word “axis” which we wrote down is an imaginary line through the Earth that allows it to rotate. Now if we look at the video, what can you guys tell me that you notice about the Earth’s axis? (it isn’t straight up and down, it’s diagonal, the Earth spins around the axis)
- “Our second term is “Rotate” which we wrote as being a spinning motion. Taking a look at the video again, can anyone tell me if they see a “rotating” motion at all? (the earth, the moon)”
- “Does anyone know how long it take the Earth to complete one rotation? So one full spin around the axis?” (24 hours, 1 full day)
- “So if the Earth is spinning around as it circles the sun, what do we think this causes?”
- (show example with body)
- -“So if I’m the Earth, and you guys are the sun, and I’m spinning around in circles, when my body is facing towards you, is it sunny or dark? If I’m spinning and my body is away from you, is it funny or dark?”
- “Yeah! So since the Earth makes one full rotation in 24 hours or one day, and when the earth is facing the sun it’s sunny and when the earth is not facing the sun it is dark, what does a rotation cause? (Day and night)
- “Make sure we are writing this important information down in our notes if we haven’t yet!”
- “Okay so next we are looking at the term “Revolve.” This is when something moves around something else. Looking at the video again, do we see any revolving happening? If so, what? (the earth is revolving around the sun, the moon is revolving around the earth)
- “Now let’s talk about how long one revolution from the earth around the sun takes. Does anyone know? (One revolution around the sun takes 365days or 1 year)
- “So just like one rotation causes day and night, depending on what side of the earth is facing the sun, one revolution around the sun causes something as well. Does anyone know what that is? (a revolution causes seasons)
- “Yeah! So as the earth is rotating around it’s axis in a tilted way, and it’s also revolving around the sun, certain parts of the earth are closer or further away from the sun. This causes the seasons because if your part of the earth is facing towards the sun and located closer to it, you will be in summer. If your part of the earth is facing away from the sun and farther away from the sun, you’ll be in winter.
- “This brings us to our last term, which is “orbit.” An orbit is the path that an object travels as it goes around something. So with hearing that, and knowing what we know now, an orbit is just the path a planet takes as it does what? (revolve)
- “Okay so as of now, you guys should have those illustrations done in your notes, please make sure those are in there, because they will help you later on.”
- “Does anyone have any clarifying questions of the terms we just went over?”

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25-30 min	<p>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)</p> <ul style="list-style-type: none">• “Okay guys, that was a lot of information we just covered, and I know it may be kind of hard to visualize unless you are looking at the video or at my lovely demonstrations, so we are going to work on a model now that you can use to demonstrate these terms and look back at later on.”• “In order for this to be successful since there are so many of you, I really need you guys to pay attention when I am telling or showing you what to do, I want to make sure you get your models done correctly so you can use them.”• Show my teacher model• “Can everyone see my model? What do you notice about my model? (colored neatly, sun, moon, and earth, they can move, etc.)”• “So what we are going to do so that this run smoothly, is I’m going to pick five students to pass out papers. But first, what do we notice about these sheets of paper? They have two sets of pictures on them. That means half of the paper can be used by one student and half by the other. Make sure you are splitting these papers between two students.”• “First and foremost, I just want you guys to get your papers, grab some coloring utensils that you and your friends can share, and start coloring the paper nicely. Should we color the planets all crazy like and any colors that we want? No, they should be colored like the actual planets because that will make it easier for you to use your model”• “As you guys get situated and start coloring, I will pass out some glue and scissors to groups. After you are done coloring, you may cut out your planets and the strips. Do NOT do anything else until I explain the next steps.”• Ask for questions, have students clarify on steps again, and have students start handing out papers• Hand out scissors, glue, and bands to groups• “Okay students eyes back on me for the next steps. Once you have your planets colored and cut out, we are going to take a small glob of glue and put that on the part of the strip where it says glue. THEN, take your moon and stick it onto the glue.”• “Next you are going to take one of the band things and push the pointy end through the middle of the sun, and one end of the long strip. Once you’ve done that, you’re going to push a band through the middle of the earth, the other end of the long strip, and the other end of the strip with the moon. Make sure the earth is on the top.• “Make sure you can move all of the shapes from the hinges connected to the bands, and write your name on the back of them.”• “Once you are done with your models, I want you to look at them and look at your terms and how you could demonstrate each other motions with your model.”• “Once you feel as if you can clearly show how to demonstrate each motion with your model, raise your hand and I will come over so you can show and explain it to me.”
5 min	<p>Review (wrap up and transition to next activity):</p> <p>“After you have demonstrated your terms to me, I want you to paper clip your models into your notebooks and help clean up the area around you. Putting paper in the recycling, putting glue and scissors away.”</p> <p>“Once you have helped clean up, you may get your stuff ready to bring back to the other class or get ready for the next activity quietly.</p> <p>“thank you for being responsible learners and paying attention during the lesson fifth graders!”</p>

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Formative Assessment: (linked to objectives)
Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.

I will monitor progress by taking frequent breaks throughout the lesson to check for understanding on terms and their definitions. I will ask clarifying questions such as "What is the difference between a rotation and a revolution?" I will walk around during model building to check if notes are completed and they are following the correct steps for building. I will assess by having students demonstrate the key terms using their models after they are complete.

Consideration for Back-up Plan:
Students can write and draw how the earth rotates and revolves if they so choose or if models aren't working out.

Summative Assessment (linked back to objectives)
End of lesson:

I will assess by having students demonstrate how the earth revolves and rotates by using their models. This is just to check for understanding of terms. Summative lesson will not be completed at this time as there is more to cover with this standard

If applicable- overall unit, chapter, concept, etc.:
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Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Completed Model

