

Meghan Rudquist
Science Lesson
2/5/19

Grade: 4th	Subject: Science
Materials: <ul style="list-style-type: none"> • Shoe Boxes • Sand • Straws • Water • Small cup • Ice 	Technology Needed: <ul style="list-style-type: none"> • Smart Board
Instructional Strategies: <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 	Guided Practices and Concrete Application: <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
Standard(s) -Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. 4-ESS2-1 Clarification Statement and Assessment Boundary -Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow. -Assessment Boundary: Assessment is limited to a single form of weathering or erosion.	Differentiation <p>Below Proficiency: partner with a student who is above proficiency or approaching.</p> <p>Above Proficiency: partner with a student who is below proficiency or approaching.</p> <p>Approaching/Emerging Proficiency: partner with a student above, below, or approaching proficiency.</p> <p>Modalities/Learning Preferences:</p> <ul style="list-style-type: none"> • Visual: Video and pictures of weathering and erosion. • Auditory: Video and talking with partner. • Kinesthetic: Stand while working on the model and move around the classroom to gather materials. • Tactile: Hands on activity of making a model of weathering and erosion.
Objective(s) -By the end of the lesson, students will be able to explain what erosion and weathering is and how it effects the world by making and observation through a stem activity. -By the end of the lesson, students will construct a model of erosion and weathering by using sand and a shoes box and different variables such as, angle of slope, movement of water, and air. -By the end of the lesson, students will be able to assess their model by writing a hypothesis, what went well and what could be better. Bloom's Taxonomy Cognitive Level: Explain Construct Assess	
Classroom Management- (grouping(s), movement/transitions, etc.) -Students will paired with a partner and will find a spot in the classroom to do their work together. -Each group will have a box, two straws, sand, and a cup of water. They may find other safe materials to use around the classroom that they believe will help with their experiment.	Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.) -Student must raise their hand when they have a question or a comment to share with the class. -Students must work quietly with their partner and work together to hypothesis and create a model of weathering and erosion. -Students must try and use the materials provided but may use other materials around the classroom and they think they will help.

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	- Students must work on their own project and not bother other groups while they are working.
Minutes	Procedures
30-45min	Set-up/Prep: <ul style="list-style-type: none"> • Find sand and straws at the store and shoe boxes for the students to put the sand in. • Practice demonstration before doing it with the students to make sure the project will work and create the effect of erosion and weathering. • Have materials on the back table ready for the students to use. • Have garbage bags ready to put underneath the bins when students are working with sand.
5min.	Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.) -Show this video to students and explain to them how our world is changing because of many things including weathering and erosion. https://www.youtube.com/watch?v=ysgZogSBMio&frags=pl%2Cwn Start Video at 22sec.
10-15min	Explain: (concepts, procedures, vocabulary, etc.) <ul style="list-style-type: none"> • “Do you remember what weathering and erosion is?” (Knowledge question) • Erosion- when something is eroded away by wind, water, or some other natural agent. Broken down. • Weathering- wear away or change the appearance of something from long exposure to air. • “Where do we see weathering and erosion in North Dakota?” (comprehension question) –Badlands, Missouri River, etc. • Show students a slide show of different pictures of erosion and weathering in North Dakota and somewhere you have been. • “What caused the weathering and erosion in these pictures?” • “Remember that the land used to be all the way up and now is down lower. Do you remember why this happened?” • “Today we are going to create an example of weathering and erosion by using sand and a small box. You will be paired with a partner and will have to first create a hypothesis on what you think will happen. I want you to draw a picture of what you see before anything happens and then draw a picture after you mess with the sand a bit.” • The students can use a small cup for the water and can brainstorm different ways to create the effect they want. They can also use a straw for the water or for air. • “Remember to not pour all of the water at once but make a stream or rain like we see today. You can also use the straw to blow on the sand and see what you will make by doing so.” • Students should have a work space cleared and do their best to keep the sand in the box and not outside on the floor. If student spill, have them clean the mess up right away and then continue with their activity.
30-45min.	Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions) <ul style="list-style-type: none"> • This is an example of something the students can do, but try to let them figure something out but if they are struggling guide them on what to do. • Place garbage bags underneath the bins to make sure sand does not get all over the floor.

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- Give students time to work on their experiment and make sure they fill out the hypothesis before they start. Then make sure they fill in the rest of the question at the end of their experiment.
- “What are some ways we can create weathering and erosion.” Students can brainstorm as a whole class before or with their partner.
- “What else could we use to create weathering and erosion? What happens in our world today?” (synthesis questions)
- When students are finished they must clean up their area and can put the sand back into their bag they have. One student can then rinse out the box while the other can dry it.
- Students can then share what they observed and what they would have done differently.

5-8min.

Review (wrap up and transition to next activity):

- “Who would like to share what they found? Why do you think it is important for us to learn about weathering and erosion?”
- This helps us understand why the world looks the way it does and we can predict what might happen and prevent water from flooding and homes from getting destroyed.
- “When you travel around North Dakota, look for signs of weathering and erosion. You may even find some outside by your house.”
- Transition to the end of the day and make sure all of the materials are back on the back table.

Formative Assessment: (linked to objectives, during learning)

- **Progress monitoring throughout lesson (how can you document your student’s learning?)**
- Students will fill out a sheet of paper with questions on what they did and how they did it and what they can do better in the future.
- Observe students as they are making their models and talking with one another on how to create weathering and erosion.

Summative Assessment (linked back to objectives, END of learning)

- Students will turn in their data they collected while doing the activity and make sure they have their name on it.
- Students can draw a picture and then take a picture of their model to keep or show their family what they created.

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

This was one of my favorite lessons this week and I think the students really enjoyed the activity as well. I was able to teach/review with the students about things they were learning the week before, so they knew what I was talking about when I said weathering and erosion. I was able to connect the real world to the students and have them make a model of what erosion looks like. I showed them pictures before hand and then ask where in North Dakota they could find erosion. They had some great places but I also wanted to make sure they knew that they could find erosion in their backyard or in places around their house too and to keep an eye out for this when they are at home.

What went well was the students worked well in their groups, they had fun while learning, and it wasn’t too messy. I made sure to split the groups into students that were lower learners with higher learners and make the group a mixture of students. Luckily, with the class I am in all of the students work well together so it was not hard to create the groups. When walking around the room and observing the students, I noticed them all smiling and laughing and talking about what was happening. They knew what words to use when talking about their model and everyone was participating and enjoying what they were doing. I think this is important because it will help the students to remember what they learned and maybe do this experiment at home with their parents. I was nervous that the sand would get everywhere and the students would make a huge mess, but to my surprise they listened very well and were able to keep the sand on their desk and the garbage bag that was underneath it. While I walked around the room I was able to listen in on some of the conversations and heard the students talking about what

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erosion is. When we finished we discussed the questions as a class and the students were able to say what went well and what they would do differently. Some thought the holes in the cup were too small or too big and the straw did not work well on the wet sand.

Some changes I would make would be to make the directions a little clearer for clean up and have one group go at a time. I explained the clean up instructions at the end of the activity but students were distracted and some had questions about where everything was supposed to go. Next time I might write the directions on the board or give them a sheet of paper that has them on it. Clean up was a bit messy and chaotic but the lesson still went well and the students understood and learned the purpose of the lesson.