

Western Engineering Outreach

Edible Sedimentary Rocks

Grade 3-5

Meet Today's ENG HERO!



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Dr. Nehdi was educated at Laval University, Sherbrooke University, and The University of British Columbia. He was Technical Director at Imasco Minerals Inc. in Vancouver B.C., before becoming a faculty member at Western University. Dr. Nehdi's research and consulting activities are in the area of cement and concrete technology, durability and repair of concrete infrastructure, structural behaviour of special concretes, modeling the behaviour of cement-based materials, and recycling mining by-products in construction applications. To learn more about Nehdi: https://www.eng.uwo.ca/civil/faculty/nehdi_m/index.html

Learning Goal:

Students will consider how rocks form and how to identify them.

Curriculum Connections: Grade 4- Rocks and Minerals

Materials Needed:

- 3 Cups rice cereal
- 3 Cups mini marshmallows
- 4 Tablespoons butter
- 1 Pinch salt
- 1/4 tsp vanilla extract
- 1/4 cup Mini chocolate chips
- 1/4 cup M&M's other candies, or more chocolate chips
- Cooking spray or oil to coat a cookie sheet
- Paint
- 1 Paint Brush
- 1 Rock



Engineering and Science Connections:

Today we will be becoming civil engineers! Civil engineers design, construct, and maintain the physical and naturally built environment. This includes roads, bridges, canals, dams, airports, sewage systems, pipelines, structural components of buildings, and railways

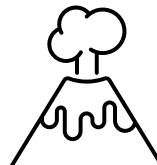
Civil engineers use a lot of natural materials to construct a lot of these physical things, one of the main materials is a rock. So what is a rock?

A rock is a solid made up of a bunch of different minerals. Rocks are generally not made up of exact structures or materials throughout. Scientists generally classify rocks by how they were made or formed. There are three major types of rocks: Metamorphic, Igneous, and Sedimentary.

Metamorphic rocks are formed by great heat and pressure. They are generally found inside the Earth's crust where there is enough heat and pressure to form the rocks. Metamorphic rocks are often made from other types of rock. Some examples of metamorphic rocks are marble, anthracite, soapstone, diamond, and schist.

Igneous rocks are formed by volcanoes. When a volcano erupts, it spews out hot molten rock called magma or lava. Eventually the magma will cool down and harden, either when it reaches the Earth's surface or somewhere within the crust. This hardened magma or lava is called igneous rock. Examples of igneous rocks include basalt and granite.

Sedimentary rocks are formed by years and years of sediment compacting together and becoming hard. Generally, something like a stream or river will carry lots of small pieces of rocks and minerals to a larger body of water. These pieces will settle at the bottom and over a really long time (perhaps millions of years), they will form into solid rock. Some examples of sedimentary rocks are shale, limestone, and sandstone.



Video Recommendation: What is Sedimentary Rock?

https://www.youtube.com/watch?v=Em3w_7KMmBQ

Activity:

Rock Painting

Today we will paint rocks and hide them for other people to find, you will be able to track them where they went. We will use GoRock.com.

STEP 1: Find a rock you would like to paint

STEP 2: Sign up at GoRock.com (it's free!)

STEP 3: Paint your rock as you normally would, then log in and get an ID

STEP 4: Add the ID to your rock, then hide anywhere

STEP 5: GoRock will let you know when your rock has been found - follow the link in the email to see where it has traveled, read stories from those who find your rock and to see how your rock is leading to donations to charity!

Time to begin

In today's main activity we will be making some tasty cookies that look like sedimentary rocks!

Warning! We will be using a hot stove, please do this activity with adult supervision !

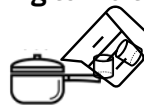
1. Melt the butter in a sauce pan on low heat.



2. Remove pan from heat.



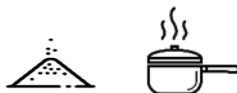
3. Add mini marshmallows one cup at a time stirring to melt.



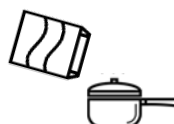
4. You can add the pan back to the heat as needed to melt the marshmallows. Melting the marshmallows slowly will result in a softer treat.



5. Once the marshmallows have melted into the butter, add the salt and vanilla extract.



6. Stir in the rice cereal.



EDIBLE SEDIMENTARY ROCKS

7. Coat the bottom and sides of an 8" x 8" pan with a thin layer of oil.



8. Add half of the rice cereal and marshmallow mixture to the pan.



9. Use a rubber spatula to press it down into a flat layer.

10. Cover this layer with mini chocolate chips.



11. Add another layer of the marshmallow and rice cereal mixture.



12. Press down firmly to make sure the layers all stick together.

13. Top with M&M's, other candies, or more chocolate chips.



14. Allow the edible sedimentary rocks to cool for at least an hour. Cut into squares and serve.

Debrief

We used layers of rice cereal, chocolate chips, and M&M's to make our very own edible sedimentary rocks. The rice cereal was one layer of the rock, the chocolate chips was another and finally the M&M's were the top layer of the rock. We hope they taste good and note that you can't eat real sedimentary rock like limestone or sandstone.

What Did You Learn?



- What is Civil Engineering?
- Rock types
- Properties of rocks
- Sedimentary rocks

Future Learning



- Research places around your area where you can see real sedimentary rocks
- Learn about igneous rocks in our other stem at home activity and learn how to create a yummy treat in the process!

Share your creations!

We would love to see what you made. Email as at discover@uwo.ca or tag us on social media.

Instagram: @westernueng

Twitter: @westernueng

Facebook: @westernueng

Thanks for discovering with us!