The Project Approach to Learning at

RisingOaks Early Learning | St. Matthew

Project Name: Rock

Age Group: 4-5 years

Project Start Date: November 2, 2020

Project End Date: March 25, 2021

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Background

The rock project started on November 2, 2020, and finished on March 25, 2021. The children who participated in this project were from the School-age- JKK group 4-5 years old. The staffs that were involved in this project were Josephine Allishaw and Ruchi Patil.

Phase 1: Beginning the Project

The children showed a lot of interest in rocks during the before and after school programs. They collected rocks to make pretend cakes and various other types of food. Some of them made houses and towers and decorated them with other natural materials like sticks, leaves and grass. They had fun building with rocks, and playing pretend games. The children started to make their imaginary structures in creative ways. Stanley, "Some special rocks give me some special power". Thomas tried to smash the rock to see what is inside of it. William tried to create fire by rubbing two stones together. Some of the boys used the skipping rope from our outdoor toy box to wrap it around a boulder and try to move it. Some of them even had a competition to see who can throw their rock the farthest (This was set up in a very safe way, spaced out away from others). Kylah and Avery tried to sneak rocks inside the classroom to take them home to add their rock collection. The children started asking questions like, "How are the rocks made?" and "Where do rocks come from?" After observing the children's curiosity and interest in rocks, we decided to do the rock project. We discussed rocks with children to understand what they know about rocks and asked them what they would like to learn about rocks. The group came up with wonderful ideas, and later we created a learning web to plan out the project and activities for them to explore and answer their questions.

What do we know about Rocks?

- Thomas(5yrs)- Rocks have crystals inside
- Wyatt D.(5yrs)- Made of tiny particles
- Lucy(4yrs)- They are very hard
- Wyatt T.(5yrs)- Some are shiny
- Kylah (5yrs)- They are heavy
- Michael (5yrs)- Some are small, some are medium and some are big
- Mason (5years)- Some are soft
- Valentina (5yrs)- Some are sparkly, and some are not
- Oliver (5yrs)- Some are harder than metal
- Thomas (5yrs)- Used for decorations and building homes

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What do we want to know about Rocks?

- What are rocks made of?
- How are crystals formed in rocks?
- Why do rocks have different colours?
- Where do rocks come from?
- Why do volcanoes erupt?
- How are mountains formed?

Experts we can ask about this topic

- Books
- Google
- Special guest/Expert

Phase 2: Developing the Project

What is a rock?

Formal Definition
A rock is a solid collection of mineral grains that grow or become cemented together.

Informal Definition
Kylah- A rock is a diamond.
Lucy- A rock is a gem.
Wyatt D. - A rock is hot lava.

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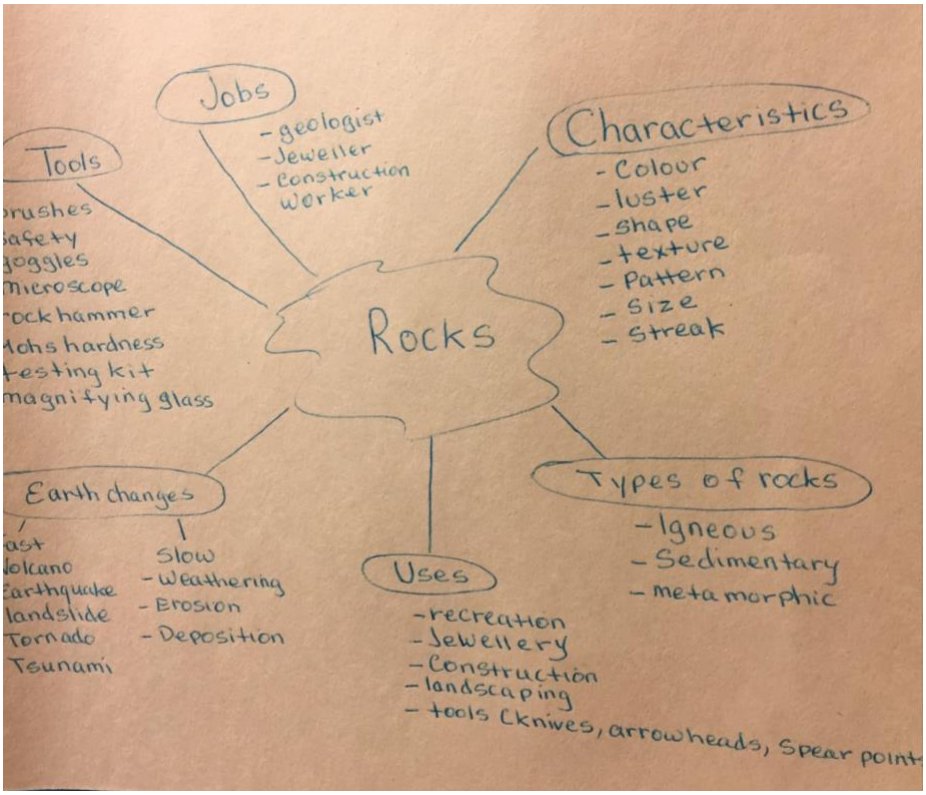
Our Web



Vocabulary

- Sedimentary
- Igneous
- Metamorphic
- Weathering
- Geology
- Fossil
- Minerals
- Gemstones
- Deposition
- Eruption
- Tectonic plates
- Lava
- Magma

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Volcano Project

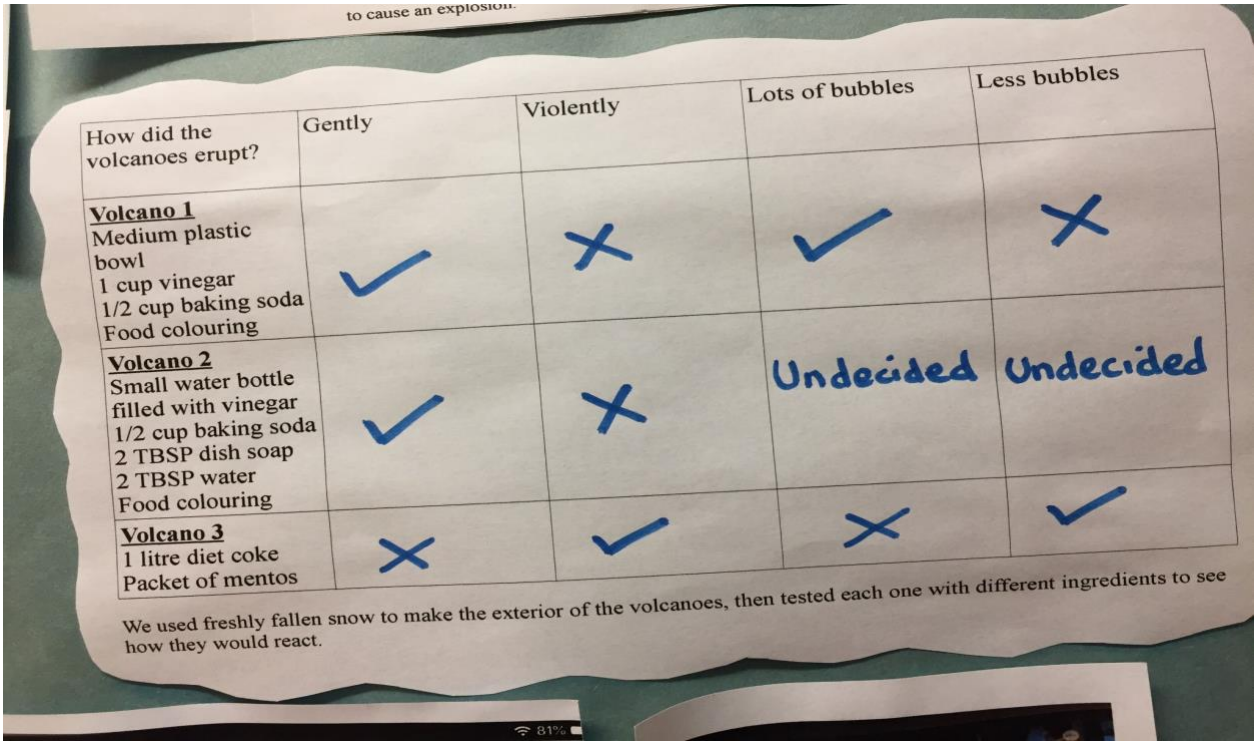
To support their learning, we read them books about the formation of rocks, watched videos on the iPad, and brought various rocks to explore. The children showed a large interested in volcanic eruptions and how lava turned into rocks after cooling down. This lead to our volcanic adventure!

We decided to carry out volcanic eruption experiments outdoors. The children were very excited about it. Wyatt said, “It is snowy outside” Avery added, “How can we experiment in the snow?” Josephine was ready with all the material for the experiment, and we headed outdoors.

We decided to make three different volcanoes to see which one erupts violently with lots of bubbles. We decided to make the exterior of the volcano with the freshly fallen snow. We three snow hills and buried the plastic water bottles up to the neck. The first volcano had a bottle of vinegar to which baking soda and food colouring were added. It erupted gently with not too many bubbles. The second bottle had vinegar, dish soap, food colouring and baking soda. It erupted gently with some bubbles. The third volcano had a bottle of diet coke, and we added a pack of Mentos. There was a violent

eruption with lots of bubbles. The children were thrilled and cheered to see all the diet coke lava rolling down the snow. Later we discussed the activity and everyone agreed the third volcano was violent and produced lots of bubbles.

With this activity, the children could make a connection about the volcano eruptions they read and watched. It leads to exploration and learning through play and inquiry, supporting their cognitive skills and interests.



Borax Crystals

The children made their own crystals with Borax and pipe cleaners. Each child twisted two pipe cleaners into a ball shape, tied one end of a piece of yarn and the other end to the middle of a pencil. Next, hot water was poured into clear glasses and each child added 3 tablespoons of Borax and food colouring if they wanted into a glass and stirred carefully until the Borax was completely dissolved. Then they rest the pencil on top of their glass with the pipe cleaner shape in the solution ensuring that it was completely covered but not touching the bottom of the glass. The glasses were left undisturbed overnight for the crystals to form. The next day the children were excited to see the beautiful crystals that they had help to create.

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Gemstones

As we continued our Rock Project, we are learning and exploring how gemstones are formed deep within the Earth and brought to the surface during volcanic eruptions, tectonic plate movement, erosion and deposits.

We decided to make our own gemstones using clear glass gems and nail polish. The children were happy to see the different colours of nail polish and eager to paint with them. Each child got their own tray with several clear glass gems and nail polish in various colours. The trays were covered with wax paper to prevent the painted gemstones from sticking to the tray and also for easy cleanup.

Each child painted the gem's bottom (or flat side) with two layers of nail polish, some with glitter and some without. The children had fun painting with nail polish, which was novelty as they usually paint with paints. We left the trays overnight so that the nail polish will dry completely.

When it was dry, they turned the gem over and it looked like real gemstones. Some looked like black onyx, opal, sapphire, jade, ruby and other precious gems. Each stone was unique and beautiful!

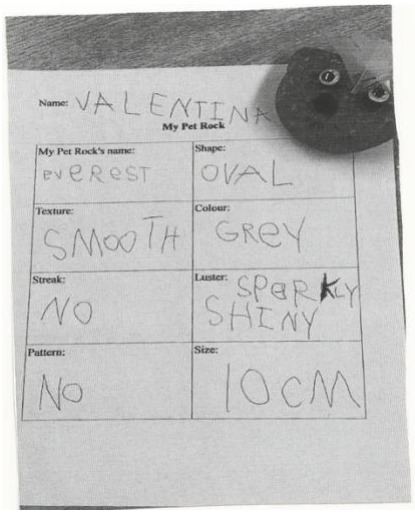
The children also made paper plate crowns and hot glue their beautiful gemstones to them. The activity enhanced their fine motor skills and creativity. It also helped them in the process of decision-making as they chose the colours of the nail polish and patterns of gems for the crown. Oliver put his crown on his head and said, "I am your King! You will obey me!" The children had fun pretending to be princes and princesses, queens and kings with their gemstone crowns.

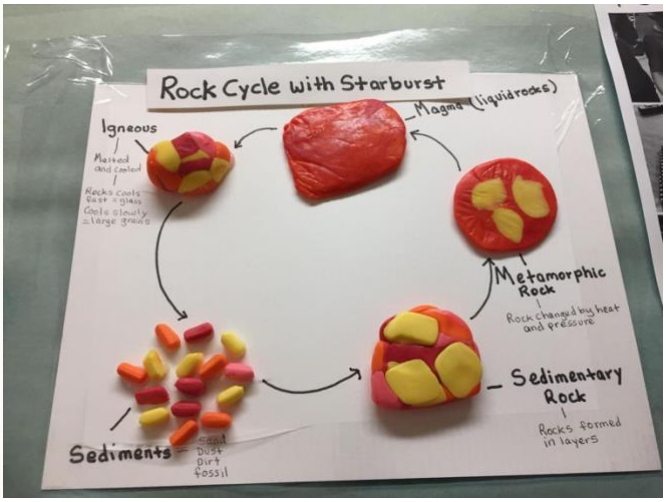
Kylah (age 4) painting her gemstones.

Wyatt (age 5) wearing his gemstone crown.

Pet Rock

Each child got to choose a rock that they like from our rock collection and describe it using the characteristics of a rock chart. The characteristics include the shape, texture, colour, streak, pattern, luster, size, and a name for their pet rock. When they finished the chart, they tested the hardness of the rock using their fingernails, a penny, a screw, then used open-ended materials such as feathers, pompoms, googly eyes, coloured yarns and fake hair to create their pet rock.





Continents of the World

The children have been learning about the continents of the world, plate tectonics and layers of the Earth. Oliver asked, “Which continent is Canada located in?”. Mason said, “The earth is a big rock”. We decided to learn more about the continents. Eventually, they learned the name of each continent and where it’s located on the map. They have also learned that they live on the North American continent and that it is the third-largest continent in the world.

The children made their own continents of the Earth craft by painting a paper plate blue to represent the Earth. While their paper plate was drying, they coloured a printout of the seven continents, each one a different colour, and cut each one out to glued on to the dried paper plate where the continents belong. The children soon figured out there are seven continents! We later discussed what countries are on each continent and the type of animal that lives on each one. The children showed great interest in learning about the continents and learning about the animals found in the particular continents.


Stanley (4yrs) cutting out his continents. Lydia (4 yrs) writing the layers of the earth.

We also watched a video on YouTube that suggested that when Earth was the first form all the continents were joined together into one supercontinent called Pangaea. It is believed that the constant shifting of the Tectonic Plates under the supercontinent caused it to break up into pieces and drifted apart. As the tectonic plates push against each other or pull away from each other, this movement can cause earthquakes, volcanoes or mountains to form.

This was a hands-on activity for the kids to learn about the seven continents and mapping skills. Colouring and cutting were involved in making the earth craft and these activities helped to develop fine motor skills. The activity also supported children's cognitive, reading and creative skills.

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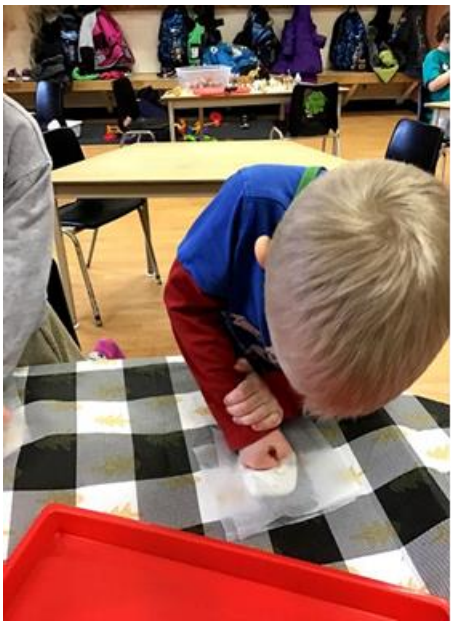
Creating Fossils

The children in School-age 1 have been learning about rocks, earth and Volcanoes. They learned how the earth was formed and the different kinds of rocks found. The children enjoyed various activities involving rocks and watching videos. While watching the video, they saw the formation of fossils, which are the remains of plants and other organisms that get buried in the rocks. They watched how Paleontologists study fossils to find the age of the rocks and discover the different types of animals and plants that existed millions of years ago. This also helped in finding out what the living things ate, how they lived and their habitat. The children showed a deep interest in learning more about fossils and wanted to make their own fossils.

The children had their own imagination and ideas to create fossils as they read books and watch a video on the IPad. Wyatt said, “I want to make a Stegosaurus”. John added, “I want to make a leaf fossil”. Stanley had a great idea of making a Brontosaurus foot and Avery chose a beetle.

We didn’t have a Stegosaurus among our collection so Wyatt chose another object to try.



John (4yrs) flatting out his clay.

Avery (5yrs) showing off her bug

The children were provided with white clay and wax paper. They made their own fossils by placing a piece of clay between two pieces of wax paper and they used the palm of

their hands to flatten the clay. Next, they removed the top layer of the wax paper and gently pressed leaves, toy insects or toy dinosaur feet in the clay. They carefully removed to create the impression. The clay was left to harden overnight. The children were super excited to see the fossils they created. Later, they painted it with light brown paint to highlight the fossils.

This fossil activity was a playful way of learning. It also helped in the development of fine motor skills and imagination. During this activity the children perform crucial tasks of grasping, rolling, tracing and eye-hand coordination. It also helped them to explore more about fossil formation, rocks, the formation of the earth and what Paleontologists do.

Phase 3: Concluding the Project

We were ready to conclude our project we covered the questions the children had listed in Phase 1 - “What do we want to know about Rocks”. The children completed many hands-on activities such as rock models, volcanoes and fossils. They explored the formation of rocks and watched and read many resources on this topic.

Our guest speaker, Ken Dardano a gemologist, gave us a virtual tour via Zoom of his warehouse which displays a large collection of crystals, minerals and fossils. Some of the fossils we saw include (ammonite) snail shell, giant fossil squid, (honey calcite) fossilized tree sap that contains insects, seeds, leaves or feathers trapped in them, dinosaur's teeth, (coprolite) dinosaur's dung, and petrified wood. Ken informed us that a paleontologist is a scientist who studies the fossilized remains of plants, animals and other living things to help understand what the environment was like long ago and how animals have evolved, their external appearance, behaviour and diet of these extinct creatures. Ken also showed us different types of minerals and talked about how we use them in our everyday life. As he picked up each mineral to show us, he would tell us which country the mineral was found in, and would inquire if any of the children had ever seen that mineral or what did they think it was used for. We learned that fluoride(fluorite) is used in toothpaste, added to drinking water, mouthwash and dental rinse to prevent tooth decay. Desert Rose/Gypsum is used to make drywall to build our homes, Copper is used for wiring, pipes and coins, Quartz used for flooring or countertops, Pyrite or fool’s gold is used for roads, Salt crystals is used for salt and Obsidian which is form from a volcanic rock is used for tools such as arrowheads and spearheads for hunting. Meteorite and Tektite are rocks from outer space. Long ago natives used these metallic rocks to make weapons. The children enjoyed learning about the different types of rocks and minerals

and their uses, especially the existence of dinosaur's fossilized dung! Ken sent several pieces of Rose Quartz crystal to RisingOaks so each child can have a beautiful rock crystal of their own.

Teacher Reflections

Josephine

Completing the Rock project has been quite a learning experience for the children and me. From exploring how the Earth was formed, the continuous shifting of the plate tectonics causes earthquakes, volcanoes and tsunamis, which in turn changes the land-forms, and unearth hidden treasures beneath the earth's surfaces. Everyday things that we take for granted come from rocks and minerals that we mined from the Earth such as fluoride in toothpaste, lithium in phones, aluminum in cars, rocks that are harvested to build our homes, schools and roads, and gemstones used in jewelry or for its healing powers. The children enjoyed learning and singing the Continents song, making volcanoes with recycle materials and erupting them and making their own gemstones, but most of all they enjoyed collecting rocks!

Ruchi

I was amazed to see the children's keen interest in rocks and how their creativity and knowledge expanded. The children had fun playing with the rocks during their time outside, and they worked in groups to try new ideas. They had many questions and wanted to learn more about rocks. They were our partners in doing more research about rocks and their formations. The children had many ideas, needed resources and materials, and as an Educator, I was able to assist them with any help they needed. The children creatively used rocks for Christmas and other crafts. This Project was fun and full of learning; in the end, I was happy to see the children use the new scientific vocabulary words to explain and share their ideas with their peers. I am proud of their achievement and glad that they learnt a lot about rocks through play and inquiry, engagement, socializing and practicing their fine and gross motor skills. This was a great project, and I am happy I was a part of this group