Have You Ever Been in A Volcano?

Joyful science discoveries in a preschool classroom

By Jill Raisor and Tony Maria
What happens when a teacher nurtures children’s curiosity and excitement to deepen their understanding of a topic? The result is a joyful learning experience that will likely be remembered for a lifetime. One such example is our exploration of volcanoes in a preschool classroom. It was a memorable moment when a child shouted the question, “Have you ever been in a volcano?” This excitement is exactly what we strive for in today’s classrooms. Children are born curious. As they mature, they often seek opportunities to make sense of the world around them. And we should not underestimate their abilities, as “We now know that very young children are much more capable of learning about STEM concepts and practices than originally thought. When we wait to start STEM subjects, students miss opportunities for early learning and later success in those subjects or in school generally” (McClure et al. 2017, p. 14).

In this article, we highlight how the teacher nurtured the children’s natural curiosity by inviting an expert visitor into the classroom, resulting in many possible investigations. The setting of this activity was an early learning facility at a university with a volcanologist on faculty who was able to share his expertise with children. The volcanologist visited the classroom for approximately one hour and interacted with the children as a group. The children were accustomed to project work that encouraged them to pose questions about the world. This activity was primarily initiated by the interest of one child who was preparing for a family trip overseas. At the time, the media was focused on Hawaii’s Kilauea volcano and the lower Puna eruption, which was producing lava flows that ultimately destroyed hundreds of homes. The child proposed the idea that travel was safe because there was an ocean to cross, and surely there were not volcanoes in the ocean. This discussion spiraled into an investigation on volcanoes due to the teacher’s skill in nurturing this natural curiosity. The teacher started the investigation by asking the children what they wanted to know about volcanoes and documenting their questions. The teacher’s skill in guiding the children’s questions was evident as she acknowledged all statements. If a child stated a fact, she would ask the child how they knew that information in an attempt to spark additional learning. If the child made an incorrect statement, rather than denying the child’s contribution, the teacher would respond with a comment such as, “Well, let’s look that up together. I think you are onto something, but I am not sure all the facts are in order.” Next, the teacher introduced factual books on volcanoes and searched for age-appropriate websites for the children to learn about volcanoes. This activity helped to generate more questions and to clarify some misconceptions. The teacher and the children were co-researchers in discovering information and presenting it to the class.

An Expert Visits

In project work, there comes a point when outside expertise is needed. When the class reached this point, a volcanologist visited the class to share his expertise. According to Katz and Helm (2016), when preparing for an expert visitor, the following checklist is essential:

**FIGURE 1**

Volcanic rock samples.
• Safety: Will items brought into the classroom be safe for children to explore?
• Importance of direct firsthand experiences
• Importance of real objects, especially those with which the children can interact by using their senses
• Overview of what the children currently know and understand
• Overview of what the children are interested in learning (share some of the questions they might ask)
• Explanation of how children will record what they see, what they think, and what they find out (tape recording, video, clipboards, writing, photography)
• Opportunities for demonstration of a task or activity
• Possible items for the expert to bring that children may sketch or record
• Artifacts (tools, equipment, products, etc.) that can be borrowed and kept in the classroom for further investigation
• Importance of using language that young children can understand.

The planning and preparation that occurs prior to the visit will ensure that the expert visitor knows what to expect, and that the children will have an opportunity to explore answers to their questions.

**FIGURE 2**

Suggested centers to encourage hands-on exploration of volcanoes.

**Dramatic Play Center:**
• Safety goggles
• Dress up clothes such as boots and safety vests
• Hard hats
• Clipboards for recording information
• Writing utensils
• Recording devices
• Walkie-talkies

**Art Center:**
• Modeling clay
• Posters of volcanoes
• Art mediums such as paint, coal, and chalk
• Slime as pretend lava

**Sand/Water Table:**
• Rocks of all shapes and sizes
• Tools such as magnifying glasses
• Rock cleaning tools such as paintbrushes and toothbrushes
• Sorting containers or baskets to categorize rocks

**Reading and Writing Center:**
• Factual, age-appropriate books
• Digital photo display of different volcanoes
• Tablet to research age-appropriate websites for more information
When the volcanologist arrived in the classroom with a cart full of igneous rocks in tow, he was met by a rush of excited students and simultaneous shouted questions. The samples (Figure 1) were chosen to represent the spectrum of rock types that might be associated with a volcano and included intrusive gabbro, diorite, and granite, and their extrusive equivalents basalt, andesite, and rhyolite, respectively, as well as a lava bomb, glassy obsidian, a pyroclastic tuff, pumice, and scoria. The particular specimens presented were selected for their relatively large size and colorful, readily visible minerals and textures. Seeing and handling these samples and discussing their origins allowed students to visualize and comprehend different volcanic phenomena and styles of eruption.

Classroom Extensions

After the expert’s visit, conversations continued and excitement surrounding the topic continued to grow. Centers are wonderful learning opportunities for children to enhance vocabulary and explore new concepts to gain a better understanding. In this classroom, the teacher added nonfiction books about volcanoes to the classroom library. In the art center, the children were given the opportunity to construct a volcano out of clay. The children also explored maps of where volcanoes are located. We’ve shared some ideas for centers for further exploring volcanoes in Figure 2.

Conclusion

Excitement about STEM learning is evident through the question posed and used as the title to this manuscript, “Have you ever been in a volcano?” Preschool-age children are naturally filled with curiosity about the natural world and seek opportunities to explore natural phenomenon, such as volcanoes, to formulate their own hypotheses of how to make sense of the world around them. It is our responsibility as science educators to integrate this excitement and curiosity into curriculum. STEM activities such as the ones shared in this manuscript truly create a foundation for later academic success and possibly the inspiration to pursue a career as a volcanologist, so they too might one day not be in a volcano but rather study them!

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REFERENCES


ONLINE RESOURCES

Explore Volcanoes with National Geographic Kids https://youtu.be/Xtkys3-T-YB?list=PLQlnTldJs0ZQmYcKNCBTiv2Ea64QgO6Jo

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