Learning about Eruption Type in Mt.Usu with "the Volcano Lottery"

Hikaru Yokoyama (Hokusho Univ.)

What's the Eruption of Volcano ?

This is a simple question that children often have. In order to prevent volcanic disasters, we need to know exactly what happens when a volcano erupts. Mt. Usu is an active volcano in Hokkaido, Japan (Fig.1). Because of its long eruption cycle (about 20 to 30 years), children don't know what happened during past eruptions. Also, there is a bad image in the term "volcanic disaster," so many of people living around Mt. Usu do not mention eruptions much in their daily lives. Residents, especially children, need to know about Usu in order to prepare for the next eruption. So, I have developed some teaching materials that will help children enjoy learning about volcanoes.

Fig.1 Mt.Usu eruption in 1977 (photo by Takesako)

Let's learn about Mt. Usu's past eruptions !

We devised a game called "**the Volcano Lottery**" for children. We carried out this game at an event held near Mt. Usu and other Geoparks (Fig.2). Children were interested about Mt. Usu's past eruptions. With the "Volcano Lottery", they enjoyed learning about the four types of Mt. Usu's past eruptions: plinian eruption, phreatic explosion, lava flow and forming a lava dome. There is one caveat. These eruption models show only the superficial phenomenon of the real eruptions, so we can't learn the mechanism.

Fig.2 at Geopark Festival in Hokkaido Museum

How to make the "Volcano Lottery"

Plinian eruption (Fig.3)
Make a crater on a mountain model and attach a tube with a narrow end. Put soybean flour in the crater and push the air pump. The air will make a tall eruption column.
This type of eruption has happened several times in the past. The eruption in 1977 was a Plinian eruption.

Phreatic explosion (Fig.4)
This device is almost the same as the Plinian eruption. However, do not narrow the end of the tube. Then, plug the tube with a stopper. When the air pressure in the tube increases, blow off the stopper and the soybean flour above it.
This type of eruption has also happened several times in the past. The eruption in 2000 was a Phreatic eruption.

forming Lava dome (Fig.5)
Connect a vinyl bag to the tube in a tray. Cover the vinyl bag with soybean flour. When the air is pushed in, the vinyl bag swells and the ground (soybean flour) rises up. Finally, the vinyl lava dome appears.
In the past, this type of eruption formed Mt. Showa-shinzan, as well as other lava domes.

Lava flow (Fig.6)
When pumping air through the tube, colored water, representing lava, rises. The lava fills the crater and finally flows out of the top.
This type of eruption has not happened recently. However, it is thought that it occurred during the formation period of Mt. Usu.

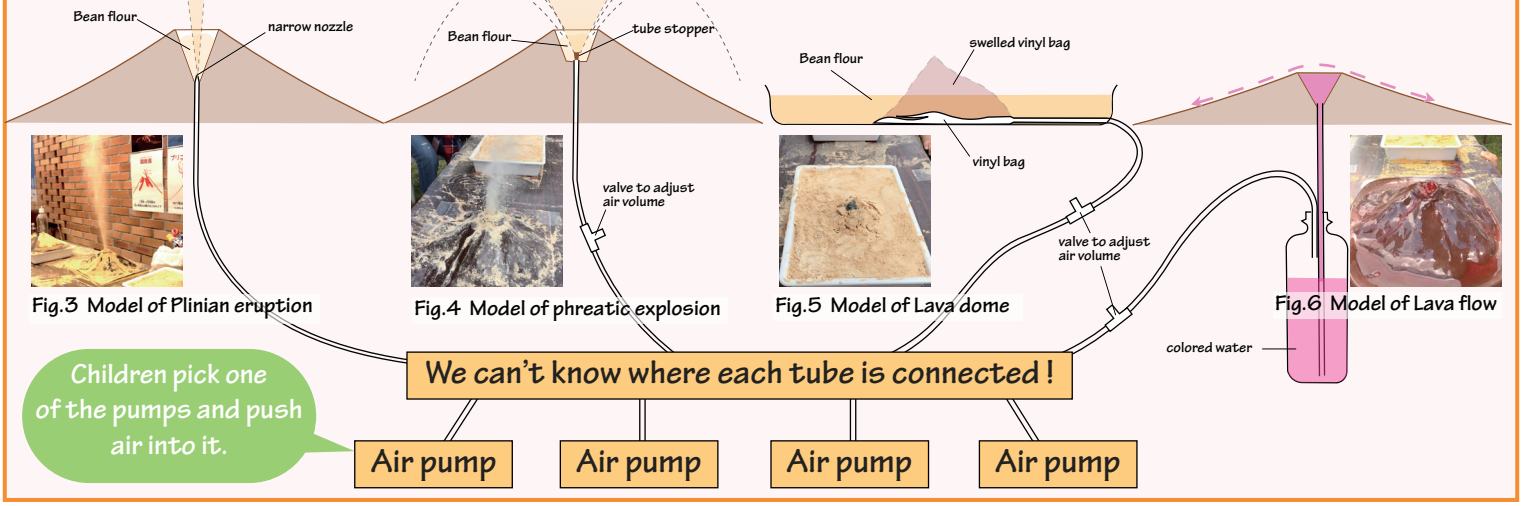

Fig.3 Model of Plinian eruption

Fig.4 Model of phreatic explosion

Fig.5 Model of Lava dome

Fig.6 Model of Lava flow

Look this smile !!

The Volcano Lottery was based on the string lottery, a common game at local Japanese festivals. Every time we played this game at an event, the children broke out in smiles every time (Fig.7,8,9). They enjoyed this game and learning about the different types of eruptions. I hope that they will want to study more about volcanoes as a result of this experience. Moreover, I hope that they do their best whenever the next eruption occurs.

Fig.7 Wow, the mountain came up !

Fig.8 Let's shout, Nice Plinian !

Fig.9 Is this lava very hot ?

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