

Grade 3: Rocks and Minerals

Lesson 3: Moving Through the Mantle

Lesson Objective:

- To build an extension to the Magic School Bus that will clear a path through the igneous rocks in order to travel through the mantle to transport passengers.

Learning Objective:

- Students will design a structure that is capable of moving objects.
- Students will program the Magic School Bus to travel for a given length of time.

Time:

- 45 minutes

Materials:

- Lego ROVs
- Various Lego pieces
- Pre-assembled tunnel
- Sponge igneous rocks
- Miscellaneous objects (extension)

Vocabulary:

- Mantle
- Igneous

Procedure:

- Teacher will explain that the students' challenge is to navigate their Magic School Bus through the mantle. In order to enter the mantle, students must first design and build an extension

for their ROV that will allow them to break through the igneous rocks at the beginning. They will need to program their ROV to travel through the mantle and stop once it has made its way through. At this point students will drop off their passengers and pick up others.

- Students will use various Lego pieces to design and build extensions.
- They will then test their extensions on materials available in the classroom that they feel have similar properties to the igneous rocks.
- Students will problem solve and use Pilot 4 to program their ROVs to travel through the mantle and stop exactly where passengers are located.
- The class will come together and take turns trying to get their ROVs through the mantle. Teams may revise their extensions and programming if they initially are not successful.

Extension:

- Program the ROV to play a song once it gets through the mantle.
- Try moving heavier objects in place of the igneous rocks, which may require redesigning the extension.

Assessment: Teacher observation and/or reflection sheet

Resources:

- CEEO Curriculum Website - <http://www.ceeo.tufts.edu/robohabatceeo/>