

Hook Activity -- Paper Twists

Summary

Students will use Möbius strips to investigate the relationship between structure and function.

Time Frame

1 class periods of 60 minutes each

Group Size

Individual

Materials

sheets of newspaper
scissors
tape/glue

Background for Teachers

We make many assumptions about the structure of Earth and its interior. We can do this because we know that many things continue to work in predictable ways. Once we can reliably predict what will happen, we can use models and other means to learn about the interior of Earth, even though we can't really see it.

Instructional Procedures

Ask the students to cut the sheet of newspaper into long strips, the entire length of the newspaper in length and about 1 to 1 ½ inches in width.

The teacher, using one strip, will bend it into a loop and tape or paste the ends together so the strip is made into a ring. Use the scissors to cut paper strip in two, lengthwise. Dramatically finish cutting the strip, so that it falls into two narrower rings of paper. Ask students if this was surprising or not.

The teacher then takes a new strip and bends it into a ring, but before connecting the ends, put a 180° twist on one end. Again, cut down the center of the strip. Just before you cut the strip completely in two, ask the students if the twist will make any difference. When you cut, the ring won't be in two pieces, but one long loop. Have the students make hypotheses about how this could happen.

Ask the students to make a prediction about what would happen if you twisted the strips additional turns. Do they think there will be a pattern in the results? If so, what might be a pattern?

Have the students use their own strips and scissors to try making rings with 2 twists (360° total), 3 twists, and so on until they are sure that there is or is not a pattern. Warn them that more twists can get pretty tangled, so they have to be very gentle with the paper. (The answer will be that even numbers of twists will result in two loops, although sometimes they are interlinked, and an odd number will make one large loop.)

Ask students that if a person could carefully make 207 twists, what would the paper loop make? Why can they make that prediction? Do they really have to do the experiment? Why not?

Tie the hook experiment into the study of matter and the Earth by stating that we will use results from experiments we CAN see to predict what happens in places we can't, such as in the interior of the earth.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)