

**Project FOCUS
Best Lessons
SECOND GRADE**

Title of Lesson: Making a Kaleidoscope

Theme: Physical Science

Unit Number: 3 **Unit Title:** energy/ Pushes and Pulls

Performance Standard(s) Covered (enter codes):

S2P2

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Light energy, reflection, mirrors

Learning Activity (Description in Steps)

Abstract (limit 100 characters): Allows kids to observe how light is reflected and how a mirror functions.

Details: Background Information

It helps if light energy and reflections are discussed prior to making the kaleidoscopes. This activity helped them to understand and process information from previous lessons. Some concepts we had gone over previously are:

1. White light is made up of all the colors of the rainbow.
2. Light bounces off mirrors and is not absorbed (I compared it to a bouncing ball).
3. A mirror is made of glass with silver behind it.
4. Mirrors reflect objects backwards and this is what you see.

Preparation:

Buy a mirror from Lowe's and once it is purchased they will cut it for you. 2 x 4 dimensions work well. Then set up materials at each chair for the kids. They each got a piece of paper with a hole already punched in the middle, a square of tracing paper, crayons, scissors, and the mirrors.

Procedure:

Divide into groups of 5- small groups are easier. First, hold up the mirrors with the mirror facing inward and tape them together, forming a triangular-shaped cylinder. Have them trace the top of the triangle shape onto both the thick and tracing paper. Tell them to cut out the thick paper with the hole as close to the middle of the paper as possible. As for the tracing paper, they need to leave extra paper outside of the shape they draw. Tape the top to one end and fold the tracing paper over to the other end and tape it all the way around to secure it. Then let the kids choose 10-20 beads to put in the hole at the top of the kaleidoscope. Warn them not to get too many or they won't be able to see the reflection in the mirrors. At this point the kaleidoscope is functional and it looks really cool to point a flashlight into the bottom as they look at the beads. Since the kids were young my teacher and I decided to take an extra step beyond what the lesson called for. We set aside a separate station and wrapped bubble wrap around the kaleidoscope and taped it securely. This step is optional and if you feel the children are old enough to handle mirrors without hurting themselves it is definitely not required.

Possible Questions:

1. Why do you see so many more beads than there really are?
2. What part does light play in this experiment?
3. What colors make up light and how does this relate to the colored beads?

Assessment/Evaluation:

At the end of the lesson the kids are so excited about looking through their kaleidoscope that they have trouble paying attention. It is wise to teach this lesson at the end of the light/mirror/color section and to establish a previous understanding of light with the children. This experiment was really neat not only because it turned out well, but because the kids had something that they could take home and show their parents.

Materials Needed (Type and Quantity):

3 2x4 sized mirrors for each child (Lowe's will cut the mirror free once you buy it)

Thick paper

Tracing paper

Tape

Bubble Wrap

Assorted Beads

Time: 30 minutes for 5 children

Notes and Tips (suggested changes, alternative methods, cautions):

Take care to make sure the children know not to touch the edges of the glass mirror and to use care when handling the kaleidoscope. Also, it is probably best to use children's scissors.

Sources/References:

- 1)
- 2)
- 3)