

Kaleidoscope of Color

Grades 4 – 12

Visual Arts, Science

What is a Kaleidoscope, and where did it come from? In 1816, Sir David Brewster of Scotland was the first person to invent the concept and object called the 'kaleidoscope'. He stumbled upon it through experimentation with prisms and other optical tools. He created a tube-like instrument that contained loose pieces of glass and other objects that were reflected by mirrors and/or lenses set at different angles to create various symmetrical pattern when viewed through one end of the tube. Brewster's term for this new instrument, "kaleidoscope," came from the Greek words meaning, "beautiful-form-to-see."

Materials:

Each student will need the following –

Kaleidoscope pattern (attached)

Silver mylar, 5 x 5 in. piece (Nasco Arts and Crafts is a good source,
1-800-558-9595)

Posterboard, 5 x 8 in. piece

Transparent beads, about 6 – 8

Acetate, 3 x 3 in. piece

Tracing paper, 3 x 3 in. piece

Scissors

Glue

Craft knife

Ruler

Cutting board

Hot glue gun and glue sticks

Procedures:

1. Discuss the concept and history of a kaleidoscope.
2. Cut out pattern pieces. Trace onto posterboard and cut out pieces. Use a craft knife, ruler and a cutting board to score all pattern dotted lines. Be careful not to cut all of the way through the posterboard. Cut out the circular holes in the kaleidoscope triangular end pieces using the craft knife.
3. Glue the mylar to the unscored side of the kaleidoscope body. Bend the body into a triangular form and hot glue the edge.
4. Glue a piece of acetate to the unscored side of the small circular hole. Glue the tracing paper to the unscored side of the large circular hole. Hot glue large holed triangular piece to the end of the body.

5. Drop in the 6-8 beads. Before gluing on the final end piece, have students look through their kaleidoscope into the light. Experiment with different color combinations of beads. Try using transparent beads of contrasting color combinations such as yellow/purple, red/green, or blue/orange. Try using beads of neighboring colors on the color wheel such as red/orange/yellow or blue/purple/red. Which combinations are most striking, contrasting or neighboring colors? They can change their selection of beads if desired. Glue on the second end piece.
6. Decorate the kaleidoscope. It is now ready to admire and use!

Bibliography:

Information used in this project was obtained from the following web sites -

www.xited.co.uk/dandt/keleidoscope/make.htm

www.kaleido.com/faqs.htm

Follow-up:

The kaleidoscope made in this project has angles of 60 degrees, creating 6 images, and a 3 pointed star. Make kaleidoscopes using different angles to create more complex star patterns. See the attached mirror angle chart for reference.