KALEIDOSCOPE

The Purpose Of The Activity:
To explore lighting tools used from the past to the present and understand the differences between them. To observe how mirrors create different shapes and colors through reflection.

Theme Beyond Disciplinaries:
How the World Works

CURIOUS BOX

INQUIRY CYCLE

TUNING IN

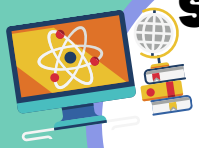
Let's Arouse Curiositym

FINDING OUT

What Should Little Science People Discover?

SORTING OUT

Let's Start Discovering! Scientific Explanation For The Curios, Video



GOING FURTHER

What else can we do?

MAKING CONCLUSIONS

Activity pages, Exit Card

TAKING ACTION

Question of the day?

CURIOUS BOX

KALEIDOSCOPE

Let's Arouse Curiosity

Following questions will be directed to students:

- How do we see the objects around us?
- Why are lighting tools important?
- Where are lighting tools used? Can you give examples?
- Have you ever heard of a telescope called a kaleidoscope?

"Throughout history, people have used light sources to see their surroundings during dark nights and to explore the colorful world. Candles, lamps, and later on, the magnificent bulbs, were wonderful ways to light up our rooms. Now think about the sources we use today... LED bulbs consume less energy, and solar-powered lighting systems stand out as eco-friendly options. But how does light reflect, and how do we perceive brightness? Shall we explore this in a fun way?" After asking these questions, the event materials are taken out and examined.

Let's Start Discovering!

The activity video is wathced by pausing. Before proceeding with the activity the content of the set is checked. All lid and package opening stages are done at the same time with students.

Content Of The Set

- [ ] Kaleidoscope body
- [ ] Bead container
- [ ] Perforated wood
- [ ] Mirror sticker
- [ ] Scissors
- [ ] Colorful beads
- [ ] Mirror
- [ ] Kaleidoscope label
- [ ] Mirror paper
- [ ] "What is the Name of the Lighting Tool?" activity page

CURIOUS BOX

How Do We Do It?

1. Cut the mirror paper along the lines.
2. Remove the transparent stickers from the mirrors and attach them to the paper.
3. Remove the transparent sticker from the mirror.
4. Place the mirror face down.
5. Attach three small mirror stickers to the edges of the paper, leaving part of them outside.
6. Fold the mirrored paper into a triangular prism and join the outer sticker parts.
7. Remove the adhesive from the kaleidoscope label.
8. Place the transparent kaleidoscope body on the adhesive side of the label and wrap it around.
9. Pour all the beads into the bead container.
10. Carefully attach the bead container to the end of the kaleidoscope body.
11. Insert the triangular prism mirror paper into the kaleidoscope.
12. Remove the stickers from both sides of the perforated mirror and place it inside the non-beaded end of the kaleidoscope.
13. Take the kaleidoscope and observe different shapes by moving it left and right.

What Should Future Scientist Discover?

Following questions will be directed to students:

- What tool did people first use to light up their surroundings?
- What are some examples of lighting tools used in the past?

We need light to see. People invented tools to light up their surroundings when it got dark. At first, they used fire as a lighting tool. Then, with the discovery of electricity, developments in lighting technologies rapidly advanced. The invention of electricity also led to the invention of many other devices. For example, the light bulb. Over time, the light bulb was developed into energy-saving bulbs, halogen lamps, spotlights, and more. Before the invention of the light bulb, lighting tools were weak in illumination, emitted heat and smell, and often had a high risk of causing fires.

However, with the invention of the light bulb, tools were developed that did not emit heat or smell, were strong in illumination, and posed no fire hazards.

Past Lighting Tools

- Torch: A lighting tool using fire. Initially, fire was used for warmth and cooking. As people noticed that fire also illuminated their surroundings, they began using it as a lighting tool.
- Lamp: After shaping clay and firing it, people added animal fats to create lamps. These lamps provided more comfort and longer-lasting light.
- Oil Lamps: Lighting tools that used oil placed in hollowed stones.
- Gas Lamp: A lighting tool that gave little light and used kerosene as fuel.
- Candle: A substance that melts over time. It eventually runs out.
- Light Bulb: A tool that illuminates using energy and is the most commonly used lighting tool today.

Indoor lighting refers to the illumination of spaces like homes, offices, restaurants, and warehouses. Outdoor lighting includes areas like gardens, parks, streets, sports fields, and uses lamps, projectors, street lights, signal lights, and lighting fixtures.

For the Curious: Scientific Explanation

Following questions will be directed to students:

- What is a kaleidoscope?
- How are images formed in a kaleidoscope?

What is a Kaleidoscope?

A kaleidoscope, also known as a "flower telescope," is a tool that allows you to see colorful patterns inside it. These patterns are formed through light reflection, and as you move the telescope in different directions, the patterns change. The images formed in a kaleidoscope are artistic and symmetrical. Each image is an original design due to this symmetry.

How Are Images Formed in a Kaleidoscope?

A kaleidoscope contains two or more mirrors arranged at an angle to each other. It works by reflecting light off the mirrors. One end has a viewing hole, and the other contains pieces such as beads of various colors.
These reflective surfaces create a triangle or V-shape. When the kaleidoscope is rotated, the pieces move, and a different design can be seen. The reflections bounce back and forth inside the tube, creating various images. What someone sees through the viewing hole is never exactly the same twice, due to the symmetry of the images. All repeated images are symmetrical in relation to the ones beside them. The combination of reflective surfaces creates symmetrical images. Since the pieces inside the kaleidoscope move, the arrangement of the pieces is never the same after rotating or shaking the container. It's impossible to have two identical designs.
.

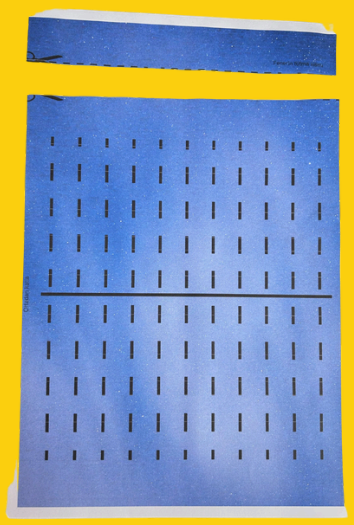
Where is a Kaleidoscope Used?

It's used in films or programs as a camera trick. On television or digital screens, it can also be used as a blur effect, which turns the image into polygons and different colors. Additionally, the kaleidoscope allows you to see various colors at the same time.
It's also used to see different images in art exhibitions. Some art centers place kaleidoscopes in certain areas for viewing various artworks.

What Else Can We Do?

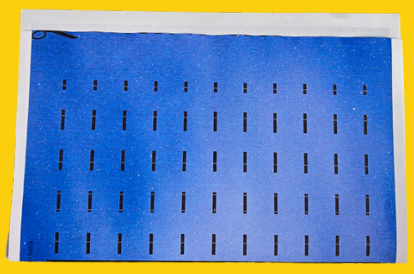
Dear Teacher,
With future scientists, you explored lighting tools and created a kaleidoscope. You can observe the various designs made by the kaleidoscope and discuss them. You can also use the template below to create a flashlight.

1



The area where the flashlight will be held is cut.

2



The paper is folded in half at the line in the middle.

3

It is cut from the dotted lines.

4

paper with glue corners and
The handle is glued.

Question of the Day?

What is the speed of light, and why is it so fast?

CURIOUS BOX

What Did We Discover? / Exit Card

Today, we explored the light technologies that have evolved from the past to the present and observed colorful designs through the kaleidoscope we created. Since we will discover new designs every time we look, don't forget to check back from time to time, okay? So, how did you feel during this activity?" The activity page titled "What Is the Name of the Lighting Device?" and an exit card are prepared.

Exit Card

WHAT DID YOU LEARN TODAY?

Draw three things you learned today!

Draw two things you're curious about!

CURIOUS BOX

The handle of the flashlight

Ortadan katla

CURIOUS BOX

miniskop

www.curiousbox.co