TOPIC: FUN WITH MATERIAL PROPERTY

Think a ton!!

1. Why does light behave differently with different objects?
2. Why do red tomato and red capsicum taste different though they are of same colour?
3. How can we see through glass but not through wood?
4. How does knowledge of material properties help us build and construct new things?

Know what's inside

Activity	Description
Engage	Brainstorm the behavior of different materials with respect to light.
Elaborate	Build your own wheel scope using the Opaque tube, Reflecting mirrors, transparent cap, and translucent wheel.
Explore	Conduct experiments to understand properties of materials.
Explain	Learn the material properties related to light and its effect.
Evaluate	Test your understanding here.

ENGAGE:

Know to question;Question to know!!

ELABORATE

ACTIVITY: WHEELSCOPE

A. Materials Required

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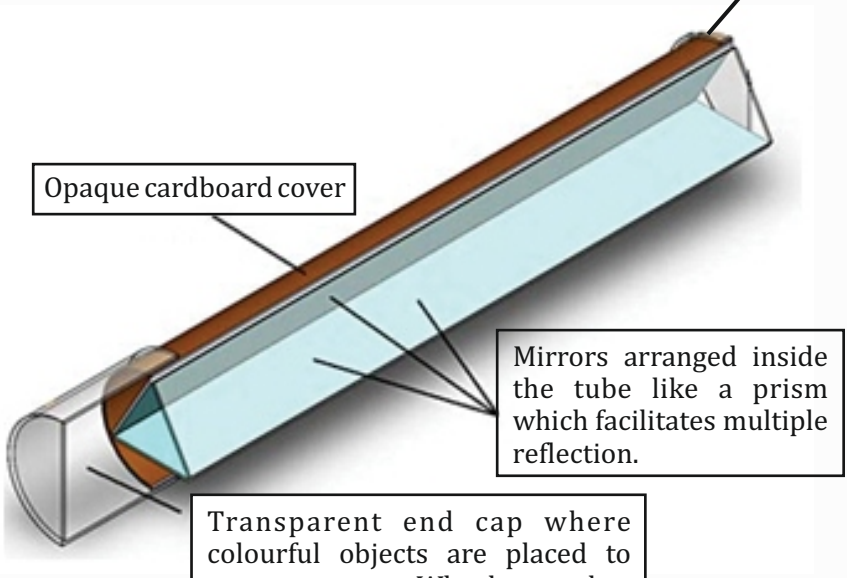
B. About this Project.

A Kaleidoscope is a toy consisting of a tube containing mirrors where one end of the tube is covered and pieces of coloured glass, papers, colourful beads, pebbles or small pieces of glitters are put inside the tube whose reflections on the mirror produce changing patterns when the tube is rotated and viewed from the hole on the other end. A kaleidoscope can be made in a variety of designs one of which is a Wheel scope in which one, two, or more wheels comprise the end piece. A kaleidoscope wheel has a center axis that is attached to the kaleidoscope at the end of the mirrors. The wheels turn in front of the mirrors and create the beautiful patterns.

C. How does it work?

Kaleidoscope's beautiful patterns are created by an assembly of mirrors arranged in prism format. As the viewer looks into one end, the light enters the other end and creates a colorful pattern, due to the multiple reflections of the mirrors. The object placed at the opposite end of the kaleidoscope creates symmetrical patterns when viewed from the other end. Rotation of the tube/wheel causes movement of the materials resulting in an ever-changing viewed patterns.

Types of Kaleidoscope and its working



Wheel Scope

Marble scope

Cell Kaleidoscope

Tube scope

EXPLAIN

1. The behavior or the characteristics of the materials is called as property. Every material around us has properties of their own which makes them unique from each another.
2. Properties of the materials help us identify them and also make use of them in the right way.
3. Materials can be described by using words such as hard and soft, rough or smooth, weak or strong, waterproof, transparent, opaque, tall, small, shiny etc.
4. Knowledge of materials and their properties help us make new machines, instruments, toys and many other things.
5. We can recognize the properties of the materials by looking at them or by touching them and by other sensory perceptions.

   Examples:

a. Materials that do not absorb water are called waterproof. Examples: umbrella, raincoat, swimming suit etc.

b. Materials which can make a notch on others or which cannot be compressed are called Hard. For example, Knife is harder than vegetables, so it is used to cut them.

6. Properties which are related to light are called Optical Properties

   Examples:

a. Materials that allow light to pass through them completely are called Transparent. Examples are Glass, Pure water etc.

b. Materials that allow partial light to pass through them are called translucent. Examples are tinted glass, wax paper etc.

c. Materials that do not allow light to pass through them are Opaque. Example: wood, metals, concrete etc.

Transparent

Translucent

Opaque

EXPLORE

ACTIVITY 1: Is RED really RED??Do others see the same color as you see?

Observation

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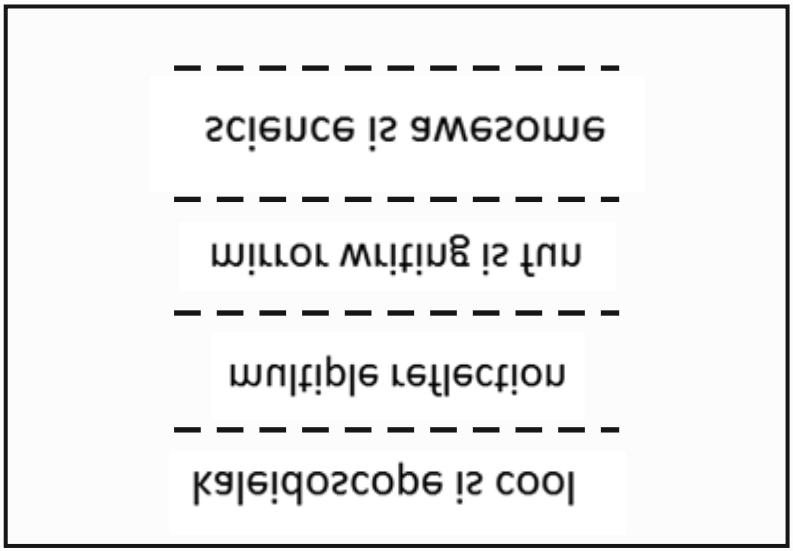
Activity 2: Fun with Mirrors



EVALUATE

Material properties

E	Z	R	Z	G	M	I	R	R	O	R	M
P	R	O	P	E	R	T	Y	Z	H	E	M
T	R	A	N	S	P	A	R	E	N	T	C
R	E	F	L	E	C	T	I	O	N	X	O
T	R	A	N	S	L	U	C	E	N	T	L
D	Q	O	P	T	I	C	S	F	F	L	O
H	C	M	A	T	E	R	I	A	L	Z	R
O	P	A	Q	U	E	L	I	G	H	T	T

Find the following words in the puzzle.
Words are hidden → and ↓ .

COLOR
LIGHT
MATERIAL
MIRROR
OPAQUE
OPTICS
PROPERTY
REFLECTION
TRANSLUCENT
TRANSPARENT

NOTES