EUREKA! SCIENCE + DISCOVERY

Information for teachers and group leaders

What will the show involve?

KaleidoLab is an entertaining 30 minute show where children discover what light is and how it travels through a series of interactive demonstrations.

Please note that the show may contain elements of the curriculum not yet covered by some pupils, or can be used as a refresher for those studying the topic of light in Y6.

Is there anything I need to do to prepare the children before the visit?

Not really – We cover all the basics in the show. There are points during the show where the lights are turned off. We will inform the class when this is about to happen, but please let us know if you have any questions about this.

Risk assessment

- Please visit our website education.eureka.org.uk/resources to download both the general museum risk assessment and the one for your chosen session.
- We advise you to make a preview visit to carry out your own risk assessment for the overall visit.

Additional resources & information

Please find the following documents in this pack:

- Teacher's assessment chart - this outlines the aims and objectives of the show and their learning outcomes.
- A list of resources and instructions to make your own hologram

Evaluation

Eureka! Science + Discovery constantly aims to improve its programmes for school groups and feedback from adults and children is an essential part of this. We value all comments made and will always try our best to act upon them. You will be sent a link to an online survey following your visit and we'd be extremely grateful if you could complete and return as soon as possible after your visit.

Aims and objectives – by the end of this science show children should have learned:

- Understand that it is dangerous to look directly at the sun.
- Learn that light travels in straight lines.
- Learn how rainbows are formed.
- Learn about refraction and reflection.
- Learn how and why we see colours.
- Learn what shadows are, and why they change size.
- Learn that our brains can trick us into seeing things that aren't really there!

KaleidoLab Learning Outcomes

Overview: Through a series of interactive activities, powerpoint presentation and discussion, children will learn about what light is, how our brains process light, how light travels, how we see colour, and what shadows are.	
Activities	**Learning Outcomes**
Introduction to light and dark, and what we mean when we say 'at the speed of light'.	The opposite of light is dark. Light is a form of energy that travels very fast.
How we see light – use of laser pointer and PPT slides.	Light travels in straight lines, but when it hits an obstacle, it can change.
Reflection – laser pointer on disco ball and PPT slides.	Reflection is what happens when light bounces of a surface.
Refraction – rainbows. Use a glass prism to make a rainbow appear on the screen.	When light hits raindrops, it slows down and bends in different directions. This splits the light into different colours like in a rainbow.
Seeing colours. Using coloured torches, we demonstrate that different surfaces reflect different colours.	Light is made up of all colours, and the absence of colour is what we see as the colour black.
Making shadows. Starting with shadow puppets, we play with shadow sizes	A shadow is seen when an object blocks the path of light. The size of a shadow change depending on the location of the source of light. They can get bigger or smaller.
Making colourful shadows. Not all shadows have to be black! We experiment with different coloured shadows using the same coloured torches as before.	We can create new colours when we mix primary colours.
Sometimes our brains trick us into seeing something that isn't there – we end with a tabletop hologram demonstration.	If we create the right conditions, sometimes light can be reflected and refracted in such a way that it turns a 2d image into something that looks 3d. Our brains often fill in missing bits of data that it thinks should be there.

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KaleidoLab
Resources used in the show

Everything you'll see in our science show can be easily repeated in the classroom. The following pages provide a basic list of resources needed and instructions for each demonstration used in the show.

Equipment needed:

- Laser pointer
- Coloured torches – red, green, and blue.
- Instructions to make your own hologram are below.

My Holographic Pyramid

Materials:

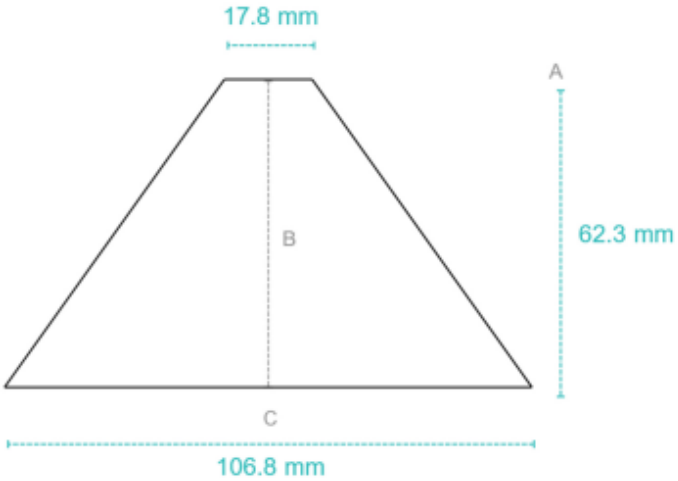
- Transparent plastic. If you can't find any plastic, cut a plain plastic bottle and iron it flat with a towel between the iron and the plastic.
- Clear tape
- Scissors

Instructions:

- Cut 4 sheets of the plastic according to the measurements below.
- Seal them together with clear tape and you have your holographic pyramid!
- From any phone that can play videos, go to YouTube and search for: "Hologram video".
- Open any of the ones with a 4 part image.
- Play the video in full screen
- Place your pyramid in the middle of your phone in the darkest place possible

Share your holograms with us online!

#EurekaDiscovery



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