

Obscura experimentation (Holes)

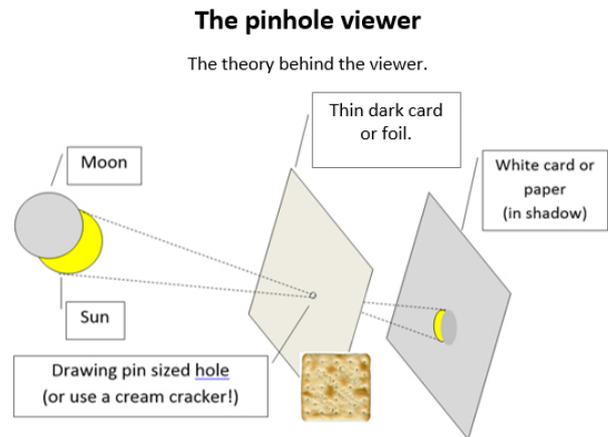
Outdoor and Indoor, Age - 5-16. Cost per student in £– 0-30

Curriculum areas - Art, Optics, Citizenship, Biology

It still amazes me that an image can be projected through something as 'empty' as a hole but something as basic as this can open up quite a bit of wonder. Holes, as well as being cheaper and safer than lenses, don't require focussing, so making it easy to create hand held devices as well as opening up creative experimentation with everyday objects which have multiple holes.

One issue people have with making hole based pinhole cameras is when it doesn't work or often 'it isn't bright enough'. This is often comes down to the hole being too long a distance from the viewing screen or the 'shoe box convention' as I call it. You *usually* want the hole to be close to the screen.

Here are several designs which can work in environments ranging from a sat down classroom to viewing a partial eclipse.



Discovering a pod of dolphins in a cream cracker

Indoor, Age - 4-16. Cost in £ per student 0-30

Curriculum subjects covered: Science, Optics, History, Astronomy.

For this you will need:

- a torch,
- a cut out shape, (a hole stamp of a dolphin is, unsurprisingly, good for the discovering dolphins!
- some tape (to tape the cut out onto the torch)
- a cream cracker
- a dark (but not blacked out) room



One torch per table will work.

A single hole will work and project a single dolphin but crackers are useful because of: their popularity, how cheap they are, the multiple images created and the relative lack of allergies (do check!). Be aware that the more expensive crackers don't have holes! The cheaper thinner crackers do!



Video of [discovering dolphins here](#)

Hand held pinhole obscura

Outdoors and Indoors, Age 5-16, Cost in £ per student 0-30,

Curriculum subjects covered: Maths, Science, Art, Optics, Recycling, Citizenship, History, Astronomy.

The further the hole from a screen the dimmer the image (an opportunity to teach the inverse square law!)

As well as the hole needing to be close to the screen, the screen needs to be enclosed for the image to be bright enough to see. The best free object easy to find in a recycling box is a cardboard tube (which also opens up the opportunity of eating 30 packets of Pringles!).

Instructions [here](#).

As well as useable outdoors, these obscuras can also be used to view filament lightbulbs (or the dolphin – torch combination described above)



Viewing a solar eclipse through the holes of a cracker

Outdoor, Age - 4-16. Cost in £ per student 0-30

Curriculum subjects covered: Science, Optics, History, Citizenship, Astronomy

<https://www.timeanddate.com/eclipse/list-partial-solar.html>

Will show you when the next eclipses are in your part of the world. Have a look now and write it on your calendar.

After the realisation that the next eclipse is tomorrow, have a look at the resources for eclipses [here](#):

Viewing a partial solar eclipse through the holes of a cream cracker 2014

