

# Obscura experimentation (Pinholes)

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 and that something as basic as this can open up so much wonder. Holes, are cheaper than lenses and don't require focussing, this makes it easy to create hand held devices as and opens up creative experimentation with everyday objects.

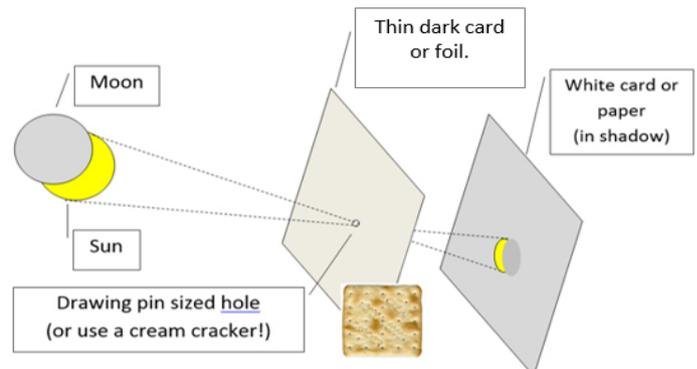
To create a really bright image the hole needs to be positioned close to the screen. If the image 'it isn't bright enough'. This is often due to the distance to the viewing screen or the 'shoe box convention' as I call it

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

[See Eclipse experimentation.](#)

## The pinhole viewer

The theory behind the viewer.



## Discovering a pod of dolphins in a cream cracker

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

Curriculum subjects covered: Science, Optics, History, Astronomy

Video of [discovering dolphins here](#)

For this you will need:

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

A single hole will 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! Its also a popular experiment to do before lunch!



## Hand held pinhole obscura

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

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

Instructions [here](#)

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

To see the image, not only does the hole need to be close to the screen, the screen needs to be enclosed. The best free object is a cardboard tube (an opportunity of eating 30 packets of Pringles!) As well as outdoors, these obscuras can be used indoors 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 per student in £ 0-30

Curriculum subjects covered: Science, Optics, History, Astronomy

[This website](#) 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

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