

Anamorphic Projection activity

You will need:

- Digital projector
- Boxes of different sizes, or an interesting shaped room or corridor
- Pens/paint/markers, or brightly coloured masking tape
- Big sheets of paper
- Table, chair, stepladder or tripod to place the projector on

Arrange some boxes in a room, or find an interesting shaped wall or corridor. The corner of a wall, or a place where you can see parts of different walls work well. Use the paper to cover all the parts of the wall you're going to write on.

Set up a projector to project a simple shape or word onto the wall/ceiling. Without moving the projector at all, trace the shape it is projecting on to the paper. Use tape to fill in the outline, or draw the outline first in pencil, and turn the projector off to colour it in. **Be careful not to move the projector before you've finished drawing!**

Remove the projector and view the image from where the projector was. It should look correct! If you walk around the room the image will change - you can use a video, made while walking around, to record how it moves.



Images by Thomas Quinn

Can you explain:

- Why does the image look correct if you stand where the projector was?
- Why does the image look wrong when viewed from other places?

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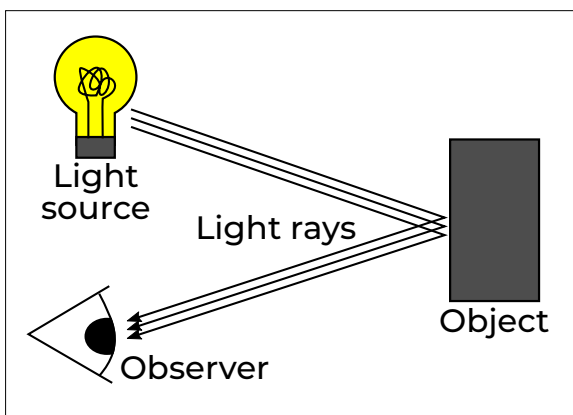
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Anamorphic Projection

Anamorphic images have been distorted, so that they only look correct when viewed in the right way. In the case of the Mirror Pillar, the distorted image needs a curved mirror to look correct, but it's possible to make anamorphic images without mirrors, using perspective.



When you look at an object, you can see it because light rays from a source are bouncing off the object and going towards your eye. This is why you can only see things when there isn't something in the way, as light moves in straight lines and can't go round corners. It also means that things will look different depending on where you're standing.

You can use objects like boxes, walls and ceilings to create an anamorphic image - use the projector to project a simple image from your eye height, draw the shape you get onto the walls and boxes and then take away the projector.

You'll find that if you're standing where the projector was, the image will look correct, but from anywhere else in the room it'll be made up of separate bits and won't look right.

The projector reverses the process of light coming in to your eye, by projecting light out from a single point and creating the image you see.



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Anamorphic Projection activity - teacher notes

This activity will give students the chance to create an anamorphic artwork in their school, and to learn about light and perspective.

The activity involves projecting onto a wall, ceiling or floor and drawing the shape on to the walls. You can pencil in the outline first, then fill it in later with markers or paint; you could also use coloured masking tape to create the shape on the wall. If you aren't able to secure permission to draw or tape directly on the walls, or if the walls are not light enough to draw on, you can use large sheets of paper to cover the parts of the wall you'll be drawing on (use sticky tack to hang the paper). Alternatively, an arrangement of large cardboard boxes and a paper floor/background will allow you to create your own interesting arrangements - the more interesting, the better!

To create an image to project, you could ask students to make a Powerpoint or Keynote slideshow with a black background, and create the shape or text in white, so it shows up well. Use chunky fonts for clearly readable text, and keep shapes simple - Powerpoint and Keynote have sets of icons you can use.

When you are setting up the projector, make sure it's at a point you can comfortably look from - if you project from down on the floor, you'll have to lie on the floor to see the image, so make sure you put the projector at around eye level, or on a table if your boxes are on a table. Eye level for your students may vary, so err on the side of it being slightly lower - taller people can always crouch to see the image. Using a chair on a table, or a stepladder, might be a good way to get the right height - but be careful with balancing expensive projectors on high up objects! Use a strap or tape to hold it in place, and make sure it doesn't move until you've finished tracing out the whole shape.

When the projector creates the image, it sends rays of light out from a single point in straight lines, hitting nearby objects to create an image. When a person stands at that same point, light reflecting off the surfaces comes towards their eye, reversing this process. This is why the image looks correct from that point. From anywhere else, parts of the surface may be a different distance from the eye, and will therefore look larger or smaller, or they may be on a surface angled differently, so they may be stretched or distorted.