

Imaging Partnership

STEAM TEACHER RESOURCES

The background is a dark blue gradient. It features several bright, glowing horizontal lines in a cyan-blue color. A faint, translucent, flower-like or star-like shape is centered in the background, composed of several elongated, petal-like segments. The overall aesthetic is futuristic and digital.

The science of the selfie

What you will learn:

- How glass was discovered and developed and the impact it has on our lives.
- That light can bend.
- How lenses are manufactured.
- How lenses can be manipulated to affect photographic outcomes.
- How mirrors were developed.
- Something of the history of self portraits.
- How to take creative self portraits.

What you should be able to do:

- Demonstrate your understanding of where glass comes from and the impact it has on our lives.
- Demonstrate your understanding that light bends as it passes through substances.
- Demonstrate your understanding that the development of self portraits in Art was dependent on the invention of the mirror.
- Take photograph using correct techniques as required

The History of Glass



- 26 million years ago, in the intense heat of North African deserts, grains of silica melted and fused together.
- When they cooled, vast areas of the desert were covered in a layer of what we now call glass.
- Some 10,000 years ago, a fragment was found and carved into a brooch, which eventually found its way into the tomb of Tutankhamun.

The History of Glass



- Glass first made the transition from ornament to technology under the Romans, when glassmakers worked out how to make it stronger and less cloudy.
- Glass windows were made for the first time.
- Wine was stored in glass vessels and stored in glass bottles.

The History of Glass



- In 1204, a community of Turkish glassmakers sailed to Venice and set up workshops.
- The furnaces for smelting glass were incompatible with the wooden structures of Venice, so the glassmakers were sent to the Isle of Murano, which became an intense hub of innovation.
- After years of trial and error, one man took burned seaweed ash and mixed it with molten glass. When it cooled, the mixture was extraordinarily clear and he called it *cristallo* or crystal glass as we know it today.

The History of Glass

- Most materials absorb the energy of light – hence objects become hot on sunny days, but glass allows most energy to pass through it. But light doesn't just pass through glass, it gets bent and distorted and this is where it gets interesting!
- (We'll come back to this in a moment!)

The History of Glass - Spectacles



- In the 12th and 13th centuries, monks working on manuscripts would use chunks of glass as a reading aid.
- Then, somewhere in Northern Italy, glassmakers made small discs of glass that bulged in the centre, placed each one into a frame and joined the frames together to create the first spectacles.

The History of Glass - Spectacles



- The discs were called 'lenses' as they were similar in shape to lentils ('lentes' in Latin).
- When reading materials became widely available in the 1440's, due to the invention of the printing press, people found that they were farsighted and needed spectacles to be able to read.
- It was at that time that spectacles became widely available.

The History of Glass - Microscopes



- From then on, people became excited about the possibilities for using lenses.
- In 1590 a father and son working in Holland, lined up two lenses, not side by side, but one in front of the other, hugely magnifying objects and so inventing the microscope.

The History of Glass - Telescopes



- Some twenty years later other Dutch glassmakers were responsible for the invention of the telescope.
- It is said that one of them had the idea after watching his children playing with lenses!

The History of Glass



- Most materials absorb the energy of light – hence objects become hot on sunny days, but glass allows most energy to pass through it. But light doesn't just pass through glass, it gets bent and distorted and this is where glass gets interesting!
- Light will always bend when it passes from air to a different material.
- We can see this quite clearly in materials such as glass and water... Try it for yourselves!

How Lenses are made

Recommended video:

https://www.youtube.com/watch?v=X7_wL0ZZi6k

How Lenses are Made

- Record the main stages in manufacturing below:

Using Lenses

- Now it's your turn!
- Working in pairs and with different sizes and numbers of lenses, I want you to record magnified images of objects around the room on camera.
- You'll need to be quick though – you have 10 minutes!

The History of Mirrors



- The earliest mirrors were just pools of dark still water, but the first manufactured mirrors were pieces of polished stone, such as obsidian, which is a naturally occurring volcanic glass and which were used around 8000 years ago.
- Mirrors of polished copper date from 3-4000 years ago from Mesopotamia and Egypt.

The History of Mirrors



- Metal coated glass mirrors are said to be found for the first time in Sidon (now Lebanon) in the 1st century AD. The Romans tried coating glass with lead and also with gold leaf.
- The Chinese also worked on producing mirrors with a backing of silver and mercury in 500AD,

The History of Glass - Mirrors



- It wasn't until the Turkish glassmakers in Murano found a way to coat their cristallo glass with a mixture of tin and mercury to create a highly reflective surface that the modern mirror was perfected.
- For the first time, people could actually see what they looked like, rather than just seeing distorted images in pools of water or on polished metal.

Self Portraits



- We make fun of 'selfies' these days, but in fact, self-portraits have a long history in Art.
- They really took off around the time of the Renaissance in Italy, which was of course, when the manufacturing of mirrors was perfected in Venice (Murano).

Self Portraits

- Famous artists Such as Leonardo da Vinci, Rembrandt and Van Gogh have all been fascinated by the idea of capturing detailed images of themselves on canvas. Rembrandt in particular painted over 40 self-portraits in his lifetime.



Get Creative With Your Own Self Portraits



1. Put your selfie in context

- try to prevent people from seeing your selfie as simply narcissistic.
- give them a reason to care about your.

2. Make the selfie composition GREAT!

- Use a “rule of thirds” grid to improve your positioning.
- Be deliberate in how you leverage symmetry or asymmetry.
- Crop out irrelevant or distracting elements.

3. Optimize your lighting

- Find good ambient light to illuminate your face without exposing every detail.
- Don't take photos with light behind you.
- Be careful with your phone's “automatic white balance” setting.

4. Optimize your background

- Avoid strange objects behind your head.
- Avoid accidentally revealing things you don't want shown.
- Try using blank walls as backgrounds.
- Take test photos to vet the background.

Get Creative With Your Own Self Portraits



Now try taking a self portrait of your reflection.

So what have we learned?

- Well, we learned about the history of glass and what useful stuff it is.
- We learned that light bends when it passes through different materials
- We learned how lenses are made
- We learned about mirrors
- And we took photographs using lenses to magnify objects and pictures of ourselves using mirrors
- Creative Selfies