



# Teleporter

## Teacher briefing notes

### What's the experiment?

Students look into one of the viewers in this exhibit and see a real-time video stream showing a 360° view of a location somewhere else in the world. Beside the Teleporters students will be able to see snapshots created by online visitors to the locations they have 'visited'.

### Learning outcome

Understand that compression allows information to travel faster and more efficiently by packing the same information into smaller pieces.

### Lab Tag activity

By using their Lab Tag students will be able to collect snapshots from the location they viewed, along with information such as where the snapshot was taken and how many Museum and online visitors were viewing the location at the same time.

### Glossary

**Compression** – A way of reducing the storage space required for data by changing the way it's organised.

**Frame** – Videos are made up of individual pictures shown quickly one after another to give the impression of movement. Each individual picture is called a frame.

**Decode** – To convert an encoded file into a format that can be universally understood, for example a plain text document.

**Frequency** – Sound is made when something vibrates. The vibration can vary in speed: a fast vibration produces high-pitched sounds and a slow vibration produces low-pitched sounds. The name for the speed of the vibration is frequency.

## What does it show us?

The video we see when we look into the Teleporter has been compressed. Without compression it would be very slow for us to send information such as videos over the internet, or download songs to our phones or put films on DVDs. Systems such as Skype or Google+ 'hangouts' require compression too. Any time vast amounts of data need to be sent using the internet we need compression.

Pictures, videos and songs contain lots of information. If we want to send that information somewhere we have to compress it so that the size of the file is reduced. When we compress the information we have to balance the quality we lose when we compress with the size of the file we need.

Compression means that some information is removed from the file so that the file size can be decreased. With the videos that you can see through the Teleporter several different types of information could have been removed. Some of the frames of the video could have been removed as well as some of the frequencies in the sounds that you heard.

When your information has been compressed to the right size it is sent from the location you can see in the video to the Museum. The computer in the Museum then takes the compressed information and decodes it so that you get the video you can see in the periscope.

By using this compression and decoding technology we have access to millions of places all over the world that we may never have the chance to visit for ourselves.

## What could we discuss?

- Come up with examples where data may need to be compressed other than sending a picture over the internet.
- Discuss the different methods that we use to communicate information using the web.
- If you could see anywhere through the periscope, where would you like to see?
- In the future do you think it will be possible to compress humans so that you could travel long distances very quickly?

## Museum web links

[sciencemuseum.org.uk/weblab](http://sciencemuseum.org.uk/weblab)

The on-gallery animation which introduces the topic of compression can be found here.