Picture News

Do you think it is important for us to know the history of our universe?

The $10bn (£7.45bn) James Webb Space Telescope, thought to be one of the most impressive and ambitious, has been sent into space on top of a huge rocket. On Christmas Day, scientists confirmed that the observatory, which has faced many delays, was operating well following a nerve-wracking lift-off. Described as a time machine by scientists, the telescope will allow astronomers to study the beginning of the universe shortly after the Big Bang, 13.8 billion years ago, and to hunt for signs of life-supporting planets in our own galaxy.

Listen Think Share

- Look at this week's poster. Does anyone know what the image is? Explain that it is of the James Webb Space Telescope, which was launched into space on Christmas day. It is the most expensive telescope ever made, costing nearly £7.5bn! Its aim is to give us more information about the history of the universe. Is this something that you would like to learn more about?
- Read through the information found on the assembly resource, which provides further details about the James Webb Space Telescope. What kind of things do you think we could learn from what it discovers?
- Watch this week's useful video, which shows how the James Webb Space Telescope will work. Share your thoughts on the telescope. Have you ever used a telescope? If so, what kind of things did you see?
- Is space and the wider universe something that interests you? Share what you already know about the universe and our solar system.
- Do you think that knowing more about the past and the universe can help us in the future?

Reflection

There is so much more we can learn about the universe and the James Webb Space Telescope hopes to shine a light on the past and the history of the universe in which we live.

Picture News

KS1 focus

What is a telescope?

Listen Think Share

- Discuss some of the things we can see around us e.g. the whiteboard, a display on the wall, pens and pencils. Look a little further. Can you look through the window and see what is outside?
- Explain that sometimes there are things we might want to look at that are really far away and we can't see them unless we have some help. What might we be able to use to help us see things that are far away?
- Sometimes people may use equipment to help them see things that are further away. Have you ever used any equipment that has helped you see distant objects? What was it? When did you use it?
- Binoculars may help us view landscapes or birds but when things are even further away, like in space, we might use a telescope to help us see them.
- Look at resource 1, which shares some information about telescopes. What does the Moon look like when you look at it? Do you think it looks different through the telescope?
- Explain that scientists who study space are called astronomers. They use telescopes to help them explore space as they are much better than our eyes!

Reflection

A telescope can be used to help us see things that are very far away, such as in space. Telescopes have helped us learn much more about the universe.

Picture News

KS2 focus

How is the James Webb Space Telescope different from existing telescopes?

Listen Think Share

- Write 'telescope' on the board. What are telescopes used for? Have you ever used a telescope? When? What did you view through it?
- Explain that astronomy is the study of objects and matter outside of the Earth's atmosphere. Telescopes are used by people who want to view objects in space either as a hobby or as a scientist wanting to discover more about the universe.
- Look at resource 2, which shares some information about different types of telescope. What are the similarities between each of the telescopes e.g. they all help us see distant objects, they all use light? What are the differences e.g. some are used in space, others on Earth, the refracting telescopes use lenses, the others use mirrors, the size?
- Focus on the James Webb Space Telescope. How do you think it is different from all other existing telescopes? It is the largest and most powerful telescope ever built and can detect light no other telescope has before!
- Explain that the James Webb Space Telescope will orbit the Sun and capture images of the first galaxies ever formed. It will also be able to observe objects in our solar system from Mars outward, look inside dust clouds and examine the atmospheres of planets orbiting other stars. What do you think about this? Do you want to know more about parts of space never explored before?

Reflection

The James Webb Space Telescope will directly observe a part of space and time never seen before. Scientists hope it will help us understand the origins of the universe and our place in it.

Picture News

KS2 follow-up ideas

Option 1

Explain that many modern telescopes use mirrors instead of lenses as they are much lighter and easier to make. Remind the children that light only travels in straight lines but we can use mirrors to reflect the light. Use the opportunity to explore this further using mirrors and a light source (such as a torch).

- Can you reflect light from your mirror somewhere else in the classroom?
- Can you use more than one mirror to reflect light all the way round an object such as a book?
- Can you position a mirror to see round a corner in one of your corridors?
- Can you explain how a telescope might work?

Share children's responses and findings. Explain that as light enters a reflecting telescope, it gathers on a large mirror, which reflects the light to a small mirror, which reflects it again into any eye piece.

Option 2

Share some pictures of planets.

- Can you name any of the planets?
- How would you describe the way they look?
- What patterns can you see?

Explain that often the surface of planets seem to have a swirling effect. We can create this using a technique called marbling. There are many different marbling techniques but it can be done with vegetable oil, food colouring, water, thick paper or card and a shallow dish/tray. Use two tablespoons of vegetable oil with each colour (5-10 drops of food colouring). Add drops of the coloured vegetable oil to the water placed in the shallow dish/tray. If the children add too much colour it may become a grey mess! Gently press their paper/card and quickly lift.

Picture News

KS1 follow-up ideas

Option 1

Discuss some of the equipment we might use to help make objects we are trying to look at appear bigger e.g. a telescope, microscope, magnifying glass, binoculars.

- Why do you think people might want to make objects appear bigger?
- Have you ever used any equipment that makes an object seem bigger? Why? If you haven't used any, would you like to?

If possible, allow the children opportunity to explore using equipment such as magnifying glasses and binoculars. Discuss how each can be used e.g. the magnifying glass for small objects, the binoculars for distant objects. Ask the children to describe an object before and after viewing it through the equipment.

Option 2

Ask the children to imagine the James Webb Space Telescope being launched (or watch it by searching the internet to find a recording of this).

- Can you describe it? Think about what you can see, hear, smell.
- How does it make you feel?
- Does the sound get louder or softer as it gets further away?

Using a range of percussion instruments, ask the children to compose a piece of music to tell the story of the launching. Think about the instruments they will select for each part of the launch and how loud, soft, slow, fast they will play them!

Picture News

This week's useful websites

This week's news story

www.bbc.co.uk/news/science-environment-59782057

This week's useful videos

How does the telescope work?
www.bbc.co.uk/news/science-environment-59760229

This week's virtual assembly

www.picture-news.co.uk/discuss

This week's vocabulary

Ambitious
needing a great amount of skill and effort to be successful or be achieved.
*The James Webb Space Telescope, thought to be one of the most impressive and **ambitious**...*

Impressive
If an object is impressive, you admire or respect it because it is special, important or large.
*The James Webb Space Telescope, thought to be one of the most **impressive** and ambitious...*

Launched
Sent into space.
*The James Webb Space Telescope, which was **launched** into space on Christmas day.*

Observatory
A location for housing equipment, such as telescopes, used for observing natural phenomena.
*Scientists confirmed that the **observatory**, which has faced many delays, was operating well following a nerve-wracking lift-off.*

Telescope
A cylinder shaped device ,that uses either lenses or mirrors, to make distant objects look closer and larger.
*It is the most expensive **telescope** ever made.*

Universe
Everything that exists.
*There is so much more we can learn about the **universe**.*