Journey to Mars

Key Stage 2

Topics covered: Space travel, the journey to Mars, planning and design.

Teacher's Notes:

We recommend that you start off by showing your students our 'Mission to Mars' video. It is available on our website (https://www.rmg.co.uk/schools-communities/teacher-resources/mission-mars-0) and on our Vimeo page (https://vimeo.com/398015506).

This activity can be broken down into stages - planning, design, build, and showcase. If you don't have materials to build with, you can focus more on the design stage, perhaps colouring and decorating the floorplans.

Planning: Students will consider the challenges of the long journey to Mars to inform their packing lists. Imagination will help - if they were in the shoes of an astronaut, what would they want in their rockets?

Design: Students are challenged to imagine and create a floor plan of their rocket interior. This activity only concerns the part of the rocket astronauts will live in for the journey to Mars, so they don't have to worry about including parts of the rocket

like the engine, or all materials being brought to Mars. Students will need a separate piece of paper for this activity.

Build (optional): This is a chance for students to get hands on and create a junk model recreation of their floorplan. It may be best to do this in small groups. This stage can be skipped if you don't have the materials.

Showcase: Once the models are built, gather everyone around for a rocket showcase. If the build stage has been skipped, this can be done using the floor plans instead. Let each student or group have 2-3 minutes to present a "show and tell" where they discuss their rocket interior designs. Encourage teams to use technical language they've learned about rockets or space, while still being fun and creative. Bonus points for groups that incorporate humour or out-of-the-box ideas!

After each presentation, allow everyone else to ask questions or challenge their design decisions.

Further exploration of the topic:

Check out our "Mission to Mars" classroom resource:

https://www.rmg.co.uk/schools-communities/teacher-resources/mission-mars-0

Visit the NASA living in space website:

https://www.nasa.gov/humans-in-space/living-in-space/

Introduction

Mars is the fourth planet from the Sun and has fascinated humankind for many thousands of years. Although no people have been to the planet, we have sent lots of spacecraft and rovers to explore this distant world.

One day, we hope to send humans to live and work on Mars. However, it would be a long journey to reach the Red Planet. At its closest, Mars is 55 million km from Earth, so it would take a minimum of about 6 months to travel there in a rocket!

Imagine you are designing a rocket for a small team of astronauts to live in (including yourself!) These astronauts will have to live in a small space for 6 months!

There are lots of things to consider. For example, the astronauts will be in zero gravity, meaning they will need to take extra steps to ensure their muscles don't lose their strength. Being in one place for a long period of time can also get boring - how would you want to make things more fun?

Planning phase

First, consider the needs and wants of your astronauts. What would you need if you were travelling in a rocket for 6 months? What would you want? Create a list of your ideas:

Needs	Wants
E.g. Somewhere to sleep	E.g. Favourite books and movies (which ones?)

Design phase

Now you have decided what you want in your rocket, it's time to design it! Create a labelled floor plan of your rocket showing where things will go and why they are there, making sure to make use of all the space.

Creativity and out of the box thinking is encouraged!

Tip: A floor plan is a drawing of an area seen from above. It can show you where the walls, doors, furniture, and any additional decorations are! More than one floor plans can be used to represent multiple stories.

Build phase (If you have recyclable materials)

Designers often build scale models of things so they can see it in action and get a better understanding of their design. Now it's your turn! Unleash your creativity and get hands on by constructing your rocket interior out of junk. You can do this in small groups or individually.

Examples for inspiration:

Shoebox to contain everything

Bottle top for a toilet

Pipe cleaners for handles

Cardboard for walls

Tinfoil for insulation

Showcase

Once the models are built, it's time for a rocket showcase!

Each group will have 2-3 minutes to present your rocket interiors and explain how it meets the challenges of journeying to Mars.

Discussion Points:

- How does your design make the most of the limited space?
- How does it address life-support needs (oxygen, water, food)?
- How will your design help the astronauts not get too bored or homesick?

When your presentation is over, get ready for some Q&As from the audience!

Happy designing!