

Your Mission MARS DIARY

ACTIVITY 4.2 ROVER'S DISCOVERY

From the Chapter Four of the Mission Mars Diary
marsdiary.org/activities/rovers-discovery

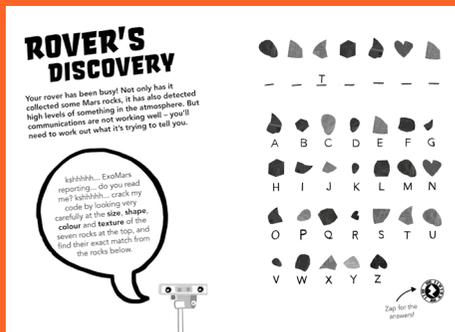
LEARNING LEVEL

KS2, P5-7, Y4-6

CURRICULUM LINKS & DIFFERENTIATION IDEAS

View detailed curriculum links for England, Scotland, Northern Ireland and Wales in the Teacher Toolkit, plus differentiation ideas for your region and year level.

marsdiary.org/resources/#teacher-toolkit



Resources Required

- Smartphone or device for Zap code (optional – see Useful Links)
- Images from the ExoMars rover
- Access to outdoor area to collect rock samples (optional)
- Laptops to research and collate evidence (optional)

Background to this Activity

This activity uses the premise of rock samples collected by the ExoMars rover to help students practise their visual differentiation skills to crack the code. It also provides an opportunity for students to consider the differences between robotic and human exploration. What are the strengths and weaknesses of the two different types of explorer – and how could they best work together on the surface of Mars?

The ExoMars mission is a true collaboration between humans and robots. Robots like the ExoMars rover can withstand conditions on Mars more easily than humans, because they do not need oxygen, food or the same level of protection against radiation like us. They can refuel themselves with solar panels and do not have the psychological or emotional needs of a human, so exploring Mars alone for a long period of time is not an issue. But robots do not possess the same kind of intuition as humans. The ExoMars rover will be guided by humans to collect the most scientifically useful rock samples, so that we can discover whether there is – or was – life on Mars.

Running the Activity

In this activity the children will crack a code from Mars.

Explain to the children that the job of the ExoMars rover is to collect data to send to Earth so we can develop our understanding of the solar system. Look at some of the images and findings that have been sent back to Earth

by the previous Mars missions. Explore what scientists have learnt.

Tell the children that the rover communicates its messages to Earth, which are received by Mission Control. Once the information has arrived it is a human's job to access and analyse the data.

One aspect of this close relationship between human and machine is that the controller needs to interpret the data sent by the ExoMars rover. Introduce the code cracking activity.

Solution to this Activity

METHANE

Questions for the Class

- How are messages from the ExoMars rover received?
- Are the rocks on Mars the same as those on Earth?
- Why do you think it is important to collect samples from planets like Mars?
- Can you investigate/research the most significant finds from expeditions to Mars?
- What do you think are the benefits and challenges of the close relationship between human and machine?

Additional Challenges / Extension Activities

Create your own message from the code to test a friend. Ensure the word is connected to Mars (e.g. rover, Olympus Mons etc.).

Look for Earth rocks outside. Photograph them and assign letters. Spell out words in the rocks for the class to solve.

Research. Find out why methane is the solution to the code. Investigate the discoveries that have been made on Mars. Collate these ideas into a poster or PowerPoint presentation.

These ideas could be combined in a display.

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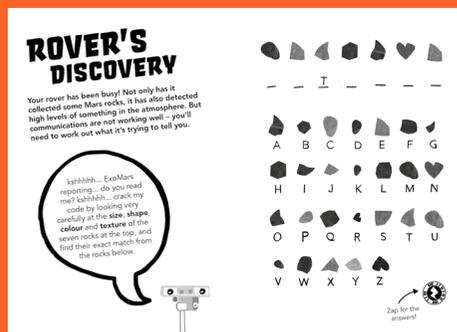
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Ideas for Differentiation

Lower:

- Add further letters to the completed code before the children start.

Upper:

- Number the letters (A=1, B=2 etc). Children will then match the number to a letter and discover its place in the code.
- Develop a similar code based on rock samples. Children can draw their own rock samples for each letter of the alphabet and create words for others to solve.

Useful Links

Zappar Content: Download or view the Zappar content for this activity on its webpage (URL to the left) or access it via the Zap.

Clip made on the third anniversary of Curiosity's launch (2015) which shows how humans control the rover from Earth (includes good footage of Martian landscape and rover in action): <https://www.youtube.com/watch?v=Txti0XLxOzI>

ZAP! Students can independently access multimedia resources using the Zappar mobile/tablet app. See Zappar instructions at the link below and note that the mobile/tablet will need to be on a WIFI connection: marsdiary.org/resources/#teacher-toolkit

If you don't have access to the internet in the classroom, all Zap code content is available to download on the activity's web page (see link to the left) as a PowerPoint presentation or as bundles of images.



Find more great space-themed STEM resources at <https://www.stem.org.uk/esero>