principia SPACE DIARY

ACTIVITY 4.1
SPACE GARDENING

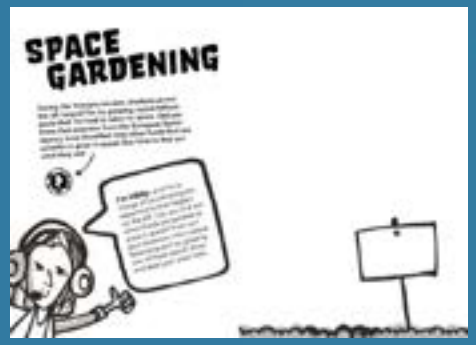
From Chapter 4 of the Principia Space Diary
http://principiaspacediary.org/activities/space-gardening

LEARNING LEVEL

KS1, KS2, P1-5

CURRICULUM LINKS & DIFFERENTIATION IDEAS

View detailed curriculum links for England, Scotland, Northern Ireland and Wales, plus differentiation ideas for your region and year level.
principiaspacediary.org/curriculum-planner/



Resources Required

- Coloured pens and pencils
- Access to internet
- Some of the space foods: soybean, tomato, wheat and rice (optional)

Background to this Activity

Growing plants on the ISS is an important research area as it has the potential to help future exploration. Growing edible plants in space would add variety to the food on board for astronauts, and would also reduce the amount of provisions needed for long duration fights. The emotional benefit of having and caring for plants is also a factor that could help astronauts who are in space for long periods of time.

The International Space Station is not your typical garden. The ISS garden does not have the things a garden usually needs: soil, oxygen and direct sunlight. So astronauts are finding new ways to grow plants. On Earth, stems and leaves grow towards the light (called phototropism), while roots follow gravity, heading towards Earth's centre (called gravitropism). This is why scientists are particularly interested in what happens to plants in space, where there is no gravity and no direct sunlight.

Running the Activity

In this activity, students will consider the different elements that impact the growth of plants. Lead a class discussion about the benefits of bringing seeds into space instead of the grown plant.

A team of European Space Agency (ESA) scientists has created a list of the top 10 plants to grow in space: soybean, potato, wheat, tomato, spinach, lettuce, beetroot, onion, rice and spirulina. You can find out more about why these plants are useful for astronauts at http://principiaspacediary.org/veg-in-space/.

In groups, students can rank these plants based on:

- Best for growing in space
- Tastiest
- Most nutritious

Students can then choose their own favourite plant in the box and label the features of it.

Questions for the Class

- Why do we want to grow plants in space?
- Can you design a greenhouse (or biodome) that could grow plants in space?
- Which plant would you choose to grow and why?
- Why might you want to send seeds into space, rather than actual plants?

Extensions & Digital Resources

ZAP! Students can use the Zappar app to see photographs of the food that can be grown in space. These foods are shown while growing and also after being harvested so children can see them in different states. See Zappar instructions at the link below and note that the mobile/tablet will need to be connected to the internet: http://principiaspacediary.org/using-zap-codes-to-strengthen-digital-literacy/