principia SPACE DIARY

ACTIVITY 4.3
EXPERIMENTALLY YOURS

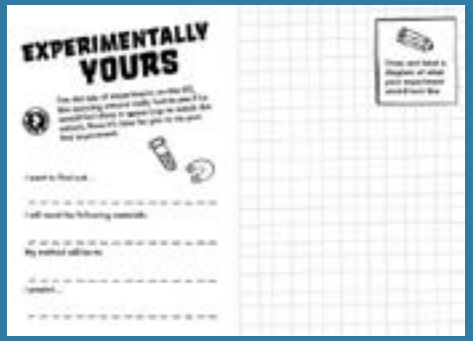
From Chapter 4 of the Principia Space Diary
http://principiaspacediary.org/activities/experimentally-yours

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

- Paper and markers for brainstorming (optional)

Background to this Activity

At any given time on the ISS, more than 150 experiments involving researchers from around the world are active. Tim's experiments included some that have been suggested by UK school children through the AstroPi programme, through the cosmic rays experiment and the Rocket Science experiment that saw thousands of schoolchildren help Tim to grow space lettuce. Tim's body is an experiment too! When he returned from space, doctors took blood and other medical samples from him for analysis.

Running the Activity

This activity would work well alongside a series of lessons covering the investigative process.

Begin by leading a class discussion on the different things they would like to investigate. Guide the children to think about questions they could investigate in space – perhaps they could consider how the results could vary depending on where the experiment takes place.

Gather lots of ideas, such as these experiments that have already taken place on the ISS:

- Can a spider spin a web in space?
- Does the smell of a rose change in space?
- What happens to a rat during a long duration mission in space?
- What happens to fire in space?
- How can we make a cup of coffee in space?

In groups, children should discuss some of the ideas gathered, thinking about what equipment might be needed to carry it out and what they would expect he results to be. Again, some children may be able to explain how they expect the results to vary between the ISS and Earth.

Guide the children through the steps of an experiment so that they get a sense of how an investigation is planned – the amount of guidance necessary will depend on the age of the children.

This website has some good tips: http://www.sciencekidsathome.com/science_fair/index.html

Questions for the Class

- What are some of the factors that limit what experiments can be done in space (cost, ethics, size of equipment, risk factors for the crew members, training, sample return, difficulties of analysing results)?
- Why would we want to conduct science experiments?
- What are the main steps of conducting an experiment?
- What are some of the scientific tools you have at school? What kinds of tools do you think Tim Peake might use on the ISS?
- Why might it be important to conduct the same experiment a few different times?
- Design an experiment you can do at school at least three times, and see if the results are consistent.

Extensions & Digital Resources

To help with this activity we have prepared some extra materials that you can download from http://principiaspacediary.org/activities/experimentally-yours. These have been developed by teacher Claire Loizos.

ZAP! Students can use the Zappar app to watch a video of Tim Peake doing an experiment to test how dizzy he would get in space. 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/