James Webb Space Telescope
DEEP SPACE DIARY

ACTIVITY 5.3
VISUALISING THE UNIVERSE

From Chapter Five of the Deep Space Diary discoverydiaries.org/activities/visualising-the-universe/

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.

discoverydiaries.org/resources/teacher-toolkit/

Learning Objective

To research, plan, create and evaluate a scientific poster.

Resources Required

- Smartphone/device or computer to access Zap code (optional)
- Resources for poster creation
- Reference materials for research
- Desktop publishing tools (optional)

Background to this Activity

Representing scientific findings and data visually is one way to quickly and effectively communicate and is therefore an important scientific skill. While we often encounter visual representations of data in everyday life, like graphs about our household energy usage or charts about the weather, scientists have a special way of sharing data visually in what's called an academic poster.

The purpose of an academic poster is to summarise the key information arising from research. It should be clear and attractive, so that it generates interest and encourages discussion. It is often used to support a talk or presentation but should also stand alone without verbal explanation, if it is displayed.

The most successful posters:

- have a short, compelling title
- have a total word count of 300-800 words
- use headings, bullet points and numbered lists to make it easy to read and follow
- use colour graphs, charts, infographics and other visual representations of data to communicate
- have a clean and consistent design and layout.

This activity challenges students to create an academic poster, using findings from work they've already completed in their Deep Space Diary. This may include information about new galaxies identified by Webb's infrared cameras (see Activity 5.1: First Findings: discoverydiaries.org/activities/first-findings/), new planets and their atmospheres (see Activity 5.2: Data Detective: discoverydiaries.org/activities/data-detective/) or even information about the James Webb Space Telescope itself.

Running the Activity

This is a largely open-ended task which will fit in well with various areas of focus within the Space topic. Prior to planning their own posters, students should be given lots of time to study examples of scientific posters, noting particular features which set them apart from other types of expository writing. This task would fit nicely into a unit of work on expository writing.

Exposure to the Genre

Remember that students are unlikely to have significant experience of scientific posters, but will be very familiar with posters more generally (e.g. adverts, signage etc). Relate this task to prior learning, both in terms of poster design and presentational devices.

Allow the class to explore examples of scientific posters. Some examples with a space theme can be found at:

https://mars.nasa.gov/classroom/pdfs/EarthMars_poster_front.pdf https://eospso.nasa.gov/sites/default/files/publications/Earth%20at%20Night%20Poster_508.pdf

This is a very relevant example of an informational poster on 'big telescopes'. Please note and point out to student that this poster includes an outdated launch date for the James Webb Space Telescope: https://stfc.ukri.org/files/educational-publications/big-telescopes/

It may be useful to look at other topic areas:

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https://www.iris.edu/hq/inclass/search#type=6

https://water.usgs.gov/outreach/OutReach.html

Identifying Features

Show students examples which demonstrate the standard of poster you expect from them.

Identify those features which students will include in their own posters. This will vary depending on the age and ability of the class but may include the following:

- title
- subtitles
- paragraphs around themes
- graphs
- tables
- photographs
- captions
- bold/italic text
- definitions
- a careful balance between images and text.

Research

Following this familiarisation with the writing genre, students will be ready to carry out research into their chosen area of focus. This could be related specifically to something they've learnt during their Deep Space Diary work, or another aspect of the Universe which they are interested in. Encourage them to use note-taking, book and e-research to compile information.

Planning/Design

Students should use the information they have gathered to draft a plan for their poster. They can be encouraged to evaluate and edit their plans. This is a nice opportunity for teacher, self or peer-led formative assessment.

Writing

Allow several sessions for the poster creation. Students could produce their poster on large sheets of card or could use desktop publishing software if appropriate.

Presentation/Assessment

Depending on age/ability it may be appropriate for the class to present their posters to their peer group or another class. Encourage constructive peer feedback in line with current practices in your school.

Questions for the Class

- Where have you seen posters before? What have they been used for? What is their purpose?
- What are the main features of the scientific posters you have looked at?
- What makes scientific posters different/similar to other posters you have seen?
- What is your area of focus going to be?
- How will you find out more about that?
- How can you present this information on your poster?
- What worked well in the poster and what could be improved?

Additional Challenges / Extension Activities

Have more-able students complete a related scientific experiment and present their findings in poster form.

Students could build models and/or present their work in a semi-permanent display for parents/other students to visit.

Ideas for Differentiation

Support:

- You may decide to use different strategies depending on the needs of the class. Consider voice-recordings as a way to engage reluctant writers at the planning stage.

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- Consider the assistive technology available at your school to support dyslexic students. Typically, these students have lots of fantastic ideas, knowledge and understanding but may struggle with reading extended pieces of text or with organising their thoughts and ideas so they may be understood by others.

Challenge:

- Digital tools such as the Pic Collage app or MS Publisher could be used to extend more able students and enhance ICT skills.

Useful Links

Example of an excellent academic poster produced as part of NASA's JWST art competition: https://c1.staticflickr.com/1/773/32826923170_64226d3e3c_o.jpg

This webpage includes an academic poster about the development of space telescopes over the ages: https://apd440.gsfc.nasa.gov/tech_about.html

This NASA site provides tips and information about creating academic posters: http://www.waspacegrant.org/for_students/student_internships/wsgc_internships/posterdesign.html

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: discoverydiaries.org/toolkit/discovery-diaries-zappar-instructions/

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.

GET ZAPPAR
ZAP THE CODE
zappar
Download on the App Store · GET IT ON Google play

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