 Are we alone?

Stage 5 Earth and Space

Outcomes

Values and attitudes

SC5-1VA appreciates the importance of science in their lives and the role of scientific inquiry in increasing understanding of the world around them

Working scientifically

SC5-9WS presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations

e. presenting scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations for specific audiences (ACSIS174, ACSIS208)

Knowledge and understanding

SC5-12ES describes changing ideas about the structure of the Earth and the universe to illustrate how models, theories and laws are refined over time by the scientific community

ES1 Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community. (ACSHE157, ACSHE191)

a. outline some of the major features contained in the universe, including galaxies, stars, solar systems and nebulae (ACSSU188)

b. describe, using examples, some technological developments that have advanced scientific understanding about the universe

Learning across the curriculum

Cross-curriculum priorities

[x]  Aboriginal and Torres Strait Islander histories and cultures

[ ]  Asia and Australia's engagement with Asia

[ ]  Sustainability

General capabilities

[x]  Critical and creative thinking

[x]  Ethical understanding

[x]  Information and communication technology capability

[ ]  Intercultural understanding

[ ]  Literacy

[ ]  Numeracy

[x]  Personal and social capability

Other areas of learning

[ ]  Civics and citizenship

[ ]  Difference and diversity

[ ]  Work and enterprise

Teacher notes

This is a research and presentation task. It is an open-ended task which allows students the choice to present in any format their interpretation of the focus question. The marking rubric has been intentionally separated to reflect the different components of the presentation, including structure, visual and oral, and can be modified as needed.

Teachers may provide details for each different presentation task or choose to modify the task to dictate certain presentation formats and focus on certain skills, such as oral communication. Additionally, teachers can choose to apply more parameters to the task including a time limit. They could also provide a rubric for peer review.

There is scope to extend the marking criteria and add other components such as body language and referencing.

Introduction

Earth is one planet. It sits in the solar system and resides in the Milky Way galaxy. The Milky Way contains many solar systems each with a central star or stars and surrounded exoplanets. And the Milky Way is one of about 200 billion galaxies in the known universe. It is estimated that the number of galaxies could be at least 10 times as many as previously thought.

Task

You are asked to design and present a presentation on the focus question “Are We Alone?” You can present in any form you wish. For example, this may include a:

* skit or sketch
* video presentation, such as documentary style
* multimedia platform, such as PowerPoint, Prezi, website, etc.

In your presentation, you must include the following:

1. The features of the universe that allow you to answer the focus question
2. Any technological developments that have occurred to help humans understand the universe.
3. Historical developments in our understanding of the universe including beliefs of indigenous cultures which may influence the answer to the question.

Marking guideline/rubric

| Depth of information | Marks |
| --- | --- |
| Accurate information that is extensively detailed, exceptionally clear and logical. All information included: features of the universe, developments in technology, indigenous cultural beliefs.  | 5 |
| Accurate information that is detailed, clear and logical. All information included: features of the universe, developments in technology, indigenous cultural beliefs. | 4 |
| Accurate information that is sound, fairly clear and logical. | 3 |
| General information about the topic which is quite accurate. | 2 |
| Basic information that is superficial and some incorrect information. | 1 |
| No attempt at presenting information. | 0 |

| Knowledge | Marks |
| --- | --- |
| Shows extensive knowledge and understanding of the topic. | 5 |
| Shows a thorough knowledge and understanding of the topic. | 4 |
| Shows a reasonably sound knowledge and understanding. | 3 |
| Shows a basic understanding of the topic. | 2 |
| Shows very little understanding of the topic but some relevant points. | 1 |
| Shows no understanding of the topic. | 0 |

| Structure | Marks |
| --- | --- |
| Logically structured with clear introduction, body and conclusion, uses allocated time effectively. | 3 |
| Logical structure present but is disjointed in parts. | 2 |
| Very little organisation of information. | 1 |

| Visual presentation | Marks |
| --- | --- |
| Excellent visual aids (originally shown) used appropriately and consistently throughout presentation. | 2 |
| Good visual aids used less frequently throughout presentation.  | 1 |
| No visual aids present or visual aids not used at all throughout the presentation.  | 0 |

| Oral presentation | Marks |
| --- | --- |
| Clear, well projected voice supported by changes in pace and expression, smooth flowing, engaging and humorous (effort made to engage with audience), eye contact maintained.  | 3 |
| Clear voice with changes in pace and/ or tone, generally smooth flowing, eye contact attempted but not maintained. | 2 |
| Voice difficult to hear, monotone or very hesitant, no attempt to make eye contact or engage with audience.  | 1 |