

XX's journey around the universe

Objective

- Recognize the relationship between Earth and all living things, including humans, from the perspective of the material cycle.

Points

- Through solving a mystery expressed with a proposition of the question “People come from XX and return to XX”, participants can deepen their understanding of the material cycle.
- Human bodies are made of the elements that make up the universe.
- From consideration of a long stay in space, the importance of “Circulation on the Spaceship Earth” is spontaneously realized.
- After watching the video, participants can review viewpoints on the material cycle by group study using the "post-study card".

* When using slides, please hide this page.

◆ Overall configuration

Pre-learning

1. **Warm up!** (5 minutes)
2. **Lecture "A journey of XX over the universe"** (30 minutes)

Video

3. **Video "Encounter with Earth"** (30 minutes)

Post-learning

4. **Group study "Sort Cards"** (20 minutes)
5. **Presentation** (10 minutes)
6. **Summary** (5 minutes)

Sample

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People come from XX,
Return to XX

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Q1

What are you made of?



13.8 billion years ago

After the Big Bang,
the only substances in the universe
were hydrogen and helium

Sample

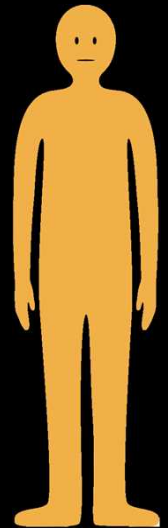
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Once the materials
separate, they come
together again

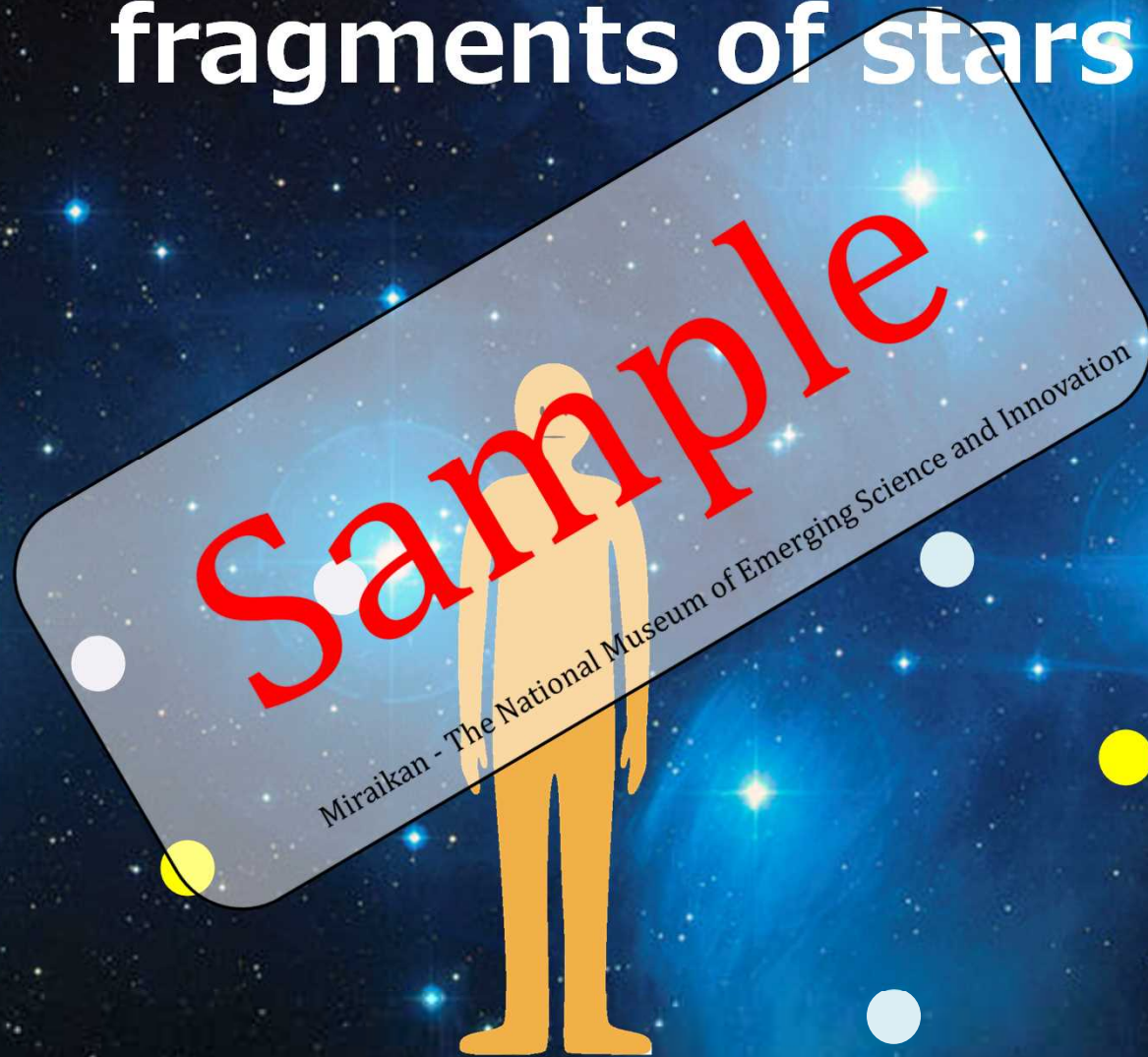
The Earth was created

I was created.

About 4.6 billion years ago



You were made from fragments of stars



Today, we go to space



NASA/Tony Gray and Tom Farrar

Q2

What is the farthest humans ever traveled ?

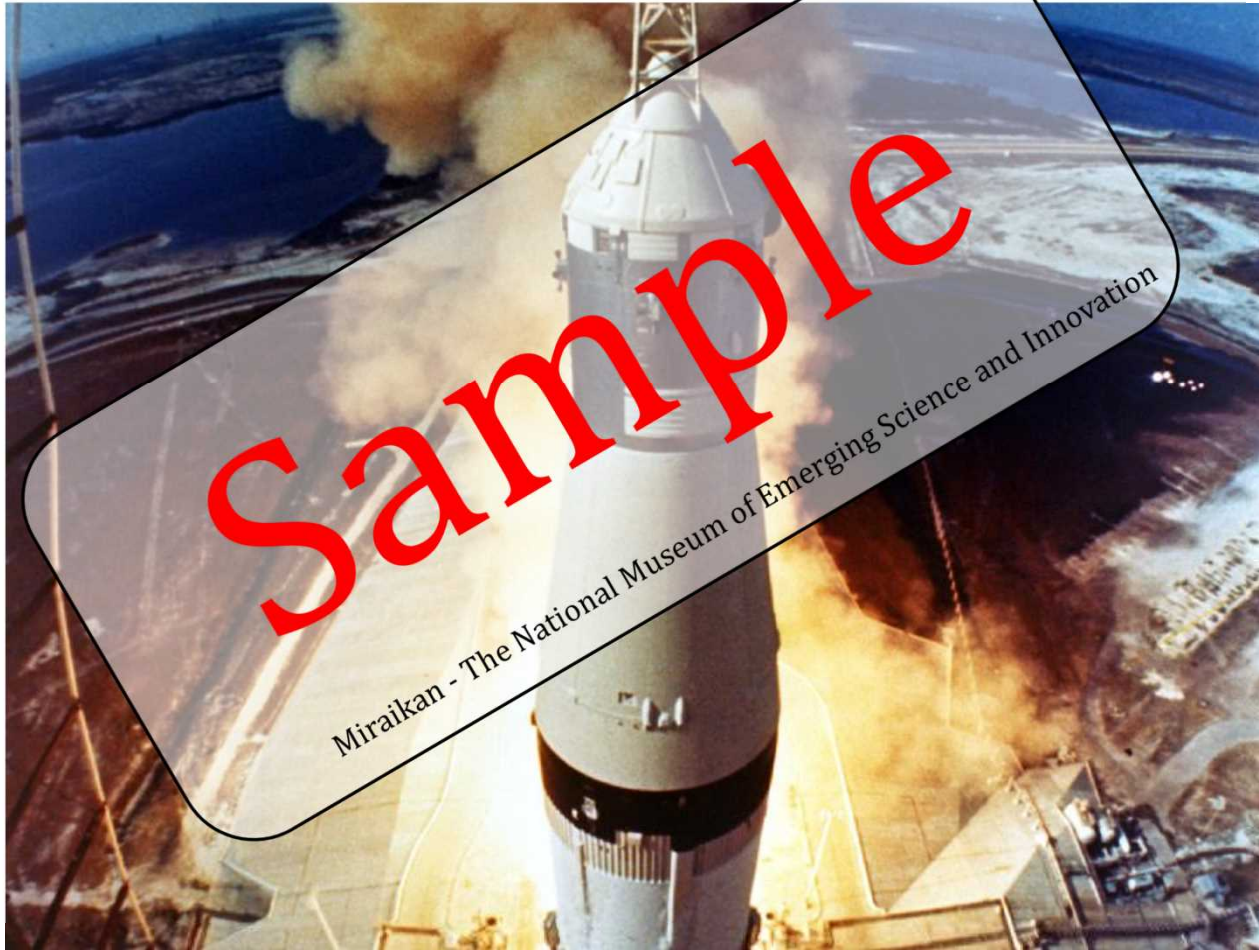
- a. Space Station (400 km above the ground)**
- b. Moon (380,000 km from Earth)**
- c. Mars (230,000,000 km from Earth)**

Sample

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Q4

8-day trip to the moon, How did they get food?



©NASA

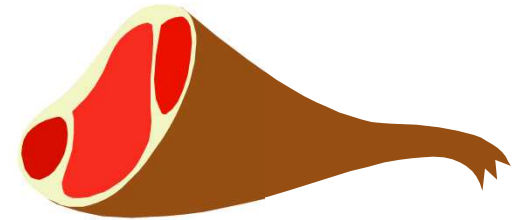
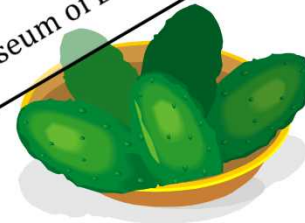
Q6

If you travel for 1000 years into space, how would you get food?



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What happens after eating?



Earth

"Spaceship Earth"



© JAXA/NHK

Group Learning

Sample

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◆ The next time ...

Let's look back on the contents of classes and videos through work!

◆ What kind of work do you do?

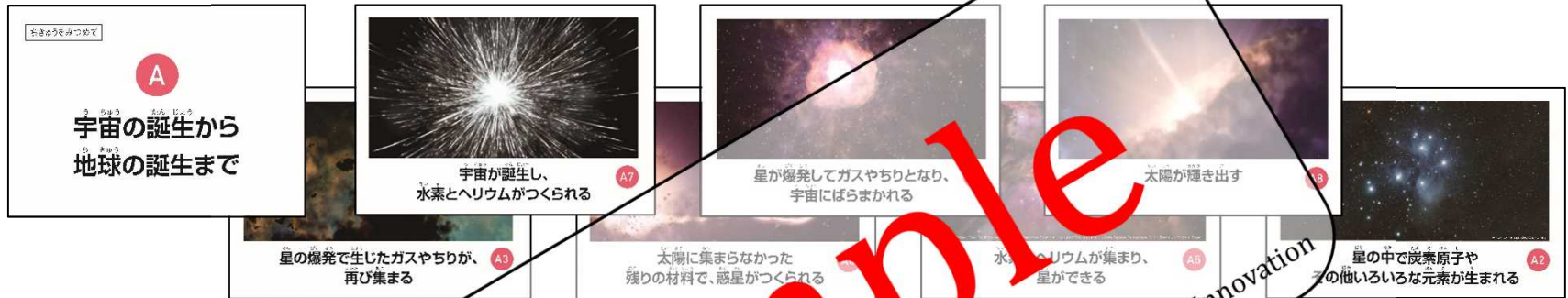
Complete the story by rearranging the cards!

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* **Not a test** *

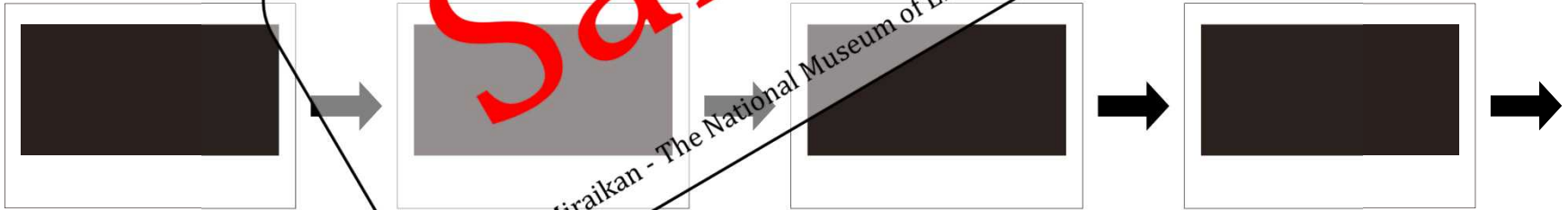
It is important to think for yourself.

◆ What kind of card?

➤ One set is 7-12 sheets



➤ Arrange them in order to connect the story



➤ Cards have five different themes.

- A** From the birth of the Universe to the birth of Earth
- B** The birth and evolution of life
- C** Eat donut
- D** Drink milk
- E** Eat sushi

"Encounter with Earth" Teacher's Guide

We developed an educational kit on the Earth environment to distribute to educators. The teaching materials consist of an animation movie entitled "Encounter with Earth" (Planning, Production, and Copyright: The National Museum of Emerging Science and Innovation), pre-learning, and post-learning programs. The main theme of the animation movie depicts the relationship between the Earth and all living things, including humans, from the perspective of a material cycle.



The Story

Naoko, the main character, is a young girl and an enthusiastic observer of various objects under her microscope. One day Naoko learns from her friend Satoru that aliens are visiting Earth to do research. At that point, a strange camera suddenly appears in front of Naoko and Satoru that shows them a string of images and then disappears. Ten years later the mysterious camera once again appears in front of the pair and displays images showing a yellowish gleaming particle making a journey while passing through the bodies of a range of living things... Naoko recalls the gleaming particle and gradually realizes her connection with it. Naoko becomes an astronaut and when she views the Earth from space her intriguing experiences up to then begin to link up, and she arrives at an important truth.

The materials we will share are

- Blu-ray disc
 - Main story [30 minutes]
 - Supervisor's message[9 minutes]
- Slides data(PowerPoint)
- Review Cards (pdf data)
- Work Sheet(word data)

How to get materials

Please contact us at the address below with

Title: Request of the materials (Encounter with Earth)

Text: 1. Name, 2. Affiliation, 3. e-mail address, 4. Purpose for using these materials

open-contents@miraikan.jst.go.jp

Open contents team

Learning and Collaboration Development Division

National Museum of Emerging Science and Innovation (Miraikan)



Primary school

Junior high school

High school

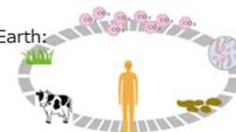
University

A wide range of lessons can be developed by combining teaching materials

Learning Objectives

To understand the nature of the material cycle that drives activities of all life on Earth:

- ① Notice that you are in the circulation
- ② Understand that disruption of circulation due to human activities leads to environmental problems
- ③ Think about the Earth environment in the future, expressing and exchanging perspectives



Class structure

[examples]

- Quiz 1: How far have humans ever traveled?
Quiz 2: What is the longest time record spent in space?
Quiz 3: What do you bring to space?

Pre-learn on the theme of "the journey of XX over the universe"

• Learn the following while imagining XX of "People are made from XX and return to XX":

- What are all features, including you, made of?
- What happens after elements were born in space?
- What is the material cycle on Earth around you?

Video learning
30min.

While keeping in mind what you learned in the pre-learning, think about the "yellowish gleaming particle" as it appears in the video and to where it passes.



Learning
by group
30min.

① Card work

-Arrange cards, review the circulation of each scene, and make presentations for each group.



② Group discussion

Discuss the theme (issue) for each group, share and present. Example theme:

- How does the "yellowish gleaming particle" travel around the Earth in the future? Think ahead of the story.
- How is the balance of circulation lost or stopped?
- In what scene of life is carbon dioxide generated?
- What comes to mind about the time scale of circulation, considering the life of a person (about 100 years), the life of a tree (about 1000 years), and the life of plastic (about 1000 years)?

③ Write an impression

- Add headlines in the form of mini-newspapers and state your opinion on how to maintain the balance of circulation.

Worksheet -Encounter with Earth

Date[]

Class	Team name	name
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(1) Warm-up: If you go on a space trip, what do you bring with you?

Q1. What are we made of?

Q2. How far into space has humans traveled?

Q3. What is the longest time period record spent in space?

Q4. 8-day trip to the moon, how did they get food?

Q5. For a 1 year stay on the Space Station (ISS), how do they get food?

Q6. If you travel for 1000 years into the Galaxy, how would you get food?

Q7. What is the name of a spacecraft carrying humans and traveling in space for a long time?

(2) "People come from XX, return to XX" What word is appropriate for X?

People come from ,

return to .

Post-learning

(3) After watching an animated movie, write your thoughts on circulation.

New learning...

Having interest or doubt...

Relationship between circulation and yourself...

Other thoughts

(4) "People come from XX, return to XX" What word is appropriate for X?

People come from ,

return to .

(5) What word is appropriate for Z in the title "Z's Journey around the Universe"?
 's Journey around the Universe

Sample

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