

### Living in Space

Level: S2

Topic: Life of an astronaut in space (Section 9.5 of Unit 9)

#### **Introduction:**

This set of ELA materials is designed as supplementary materials for those schools which select Section 9.5 of Unit 9 to be taught in English. Many students are interested to find out how astronauts carry out their daily activities in space; they will try hard to explore this even when materials are only provided in English.

The lesson begins with the teacher raising questions about how astronauts carry out their daily activities in a space station and eliciting some suggestions from students. Then students watch short video clips downloaded from the NASA website about some activities of astronauts in the International Space Station. After that, students have to complete a worksheet about the solutions to the problems that astronauts encounter when they live in space.

The ELA lasts for one period.

## ELA Lesson Plan – Living in Space

- Content                    After completing the activity, students should be able to:
- Objectives:
- list some of the problems faced by astronauts living in space;
  - suggest solutions to these problems.
- Language
- Objectives:
- After completing the activity, students should be able to:
- understand and use the English terms related to this topic (e.g., *International Space Station, living in space, space station, orbit, astronauts, force of gravity, solve problems, water droplets, float around, sponge bath, shower, a meal tray, Velcro, packaged food, foot restraints, sleeping bag, attached to, muscle, bone mass, doing exercise*); and
  - understand and use the English expressions for discussing problems and solutions related to astronauts living in space, e.g.,
    - *Because there is nearly no force of gravity in space, astronauts face many problems when they live in a space station.*
    - *Astronauts have problem with taking a bath or a shower when water droplets float around in the space station.*
    - *Astronauts solve this problem by taking a sponge bath instead of a shower or a bath.*
    - *Astronauts have problem with eating and drinking when food and drinks float around in the space station*
    - *Astronauts solve this problem by using a meal tray with Velcro to hold packaged food.*
    - *Astronauts have problem with working when they float around.*
    - *Astronauts solve this problem by putting their feet in foot restraints.*
    - *Astronauts have problem with sleeping when they float around.*
    - *Astronauts solve this problem by sleeping in a sleeping bag attached to a wall.*
    - *Astronauts have the problem of losing muscle and bone mass rapidly in space.*
    - *Astronauts solve this problem by doing two hours of exercise each day.*
- Activities:
1. Introducing the International Space Station – whole-class activity (10 min)

2. Watching videos about the daily life of astronauts in a space station – whole-class activity (10 min)
3. Completing worksheet – pair work (20 min)

Materials:

Worksheet, Slides showing pictures of the International Space Station, Computer with Internet access, Video clips downloaded from the NASA website:

- Spend a typical day in space aboard the International Space Station  
[http://www.spaceflight.nasa.gov/gallery/video/living/real56/work\\_56.rm](http://www.spaceflight.nasa.gov/gallery/video/living/real56/work_56.rm)
- A narrator describing living in space in this tour of the International Space Station  
[http://spaceflight.nasa.gov/gallery/video/living/real56/work\\_iss\\_tour\\_56.rm](http://spaceflight.nasa.gov/gallery/video/living/real56/work_iss_tour_56.rm)
- See how astronauts eat in space.  
[http://spaceflight.nasa.gov/gallery/video/living/real56/food\\_montage\\_56.rm](http://spaceflight.nasa.gov/gallery/video/living/real56/food_montage_56.rm)

*Steps:*

**Introducing the International Space Station – whole-class activity (10 min)**

1. The teacher should first show the class PowerPoint slides of the International Space Station (ISS) and ask them what they already know about it. During the discussion, the teacher may review the following facts about the ISS:
  - The ISS is a joint project of 16 countries, including the United States, Russia, Japan, Canada, Brazil, and some European countries.
  - The ISS orbits the Earth, allowing astronauts to live in space for a long period of time and carry out some experiments.
  - There is almost no gravitational force in the ISS.
2. During the discussion, the teacher may draw students' attention to the terms in the vocabulary list on the last slide.

**Watching videos about the daily life of astronauts in a space station – whole-class activity (10 min)**

3. The teacher should encourage students to think what it is like to live in the space station by considering how astronauts carry out everyday activities such as eating, sleeping, taking a shower, going to the toilet, etc. He/she jots the points on the blackboard while students are suggesting some difficulties that astronauts may face.
4. The teacher should then show short videos about the everyday life of astronauts living in the space station, and asks students to watch and see if there are any problems they did not realize in the previous discussion:
  - Spend a typical day in space aboard the International Space Station  
[http://www.spaceflight.nasa.gov/gallery/video/living/real56/work\\_56.rm](http://www.spaceflight.nasa.gov/gallery/video/living/real56/work_56.rm)
  - A narrator describing living in space in this tour of the International Space Station

[http://spaceflight.nasa.gov/gallery/video/living/real56/work\\_iss\\_tour\\_56.rm](http://spaceflight.nasa.gov/gallery/video/living/real56/work_iss_tour_56.rm)

- See how astronauts eat in space.

[http://spaceflight.nasa.gov/gallery/video/living/real56/food\\_montage\\_56.rm](http://spaceflight.nasa.gov/gallery/video/living/real56/food_montage_56.rm)

5. The teacher should then summarise the major problems faced by astronauts living in space.

### **Completing worksheet – pair work (20 min)**

6. The teacher should distribute the worksheet to students, telling them that the pictures provide the answers to some of the problems they have mentioned.
7. Students should be asked to complete the worksheet in pairs,. They should write their answers in complete sentences using the words/phrases provided. Students should be asked to crosscheck each other's answers to identify and correct any grammatical mistakes.
8. The teacher should then check the answers by asking some students to write the answers on the board and have the class check for any mistakes in terms of grammar and content.
9. Finally, the teacher should round up the lesson by suggesting solutions to the problems astronauts face living in space, other than those listed in the worksheet.





## Living in Space 生活在太空

### Vocabulary:

space station 太空站	orbit 軌道/繞軌道運行	astronauts 太空人	force of gravity 重力
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There is nearly no force of gravity in space. Astronauts face many problems when they live in a space station. How do they solve these problems?

*Using the hints provided by the pictures, write the solutions in complete sentences.*

<p><b>1. Problem with taking a bath:</b></p> <p>Water droplets float around in the space station.</p> <p><i>Solution:</i></p>	 <p>sponge bath</p>
<p><b>2. Problem with eating and drinking:</b></p> <p>Food and drink float around in the space station.</p> <p><i>Solution:</i></p>	 <p>meal tray with Velcro (魔術貼); packaged food</p>
<p><b>3. Problem with working:</b></p> <p>Astronauts float around while they are working.</p> <p><i>Solution:</i></p>	  <p>foot restraint 足部固定扣</p>

**4. Problem with sleeping:**

Astronauts float around while they are sleeping.

*Solution:*



sleeping bag; attached to a wall

**5. Problem of losing muscle(肌肉) and bone mass (骨質):**

Astronauts lose muscle and bone mass rapidly in space.

*Solution:*



two hours of exercise; each day

## Living in Space 生活在太空

Answer





Note: Alternative answers are accepted as long as they are correct in terms of content and grammar.

### Vocabulary:

space station 太空站	orbit 軌道/繞軌道運行	astronauts 太空人	force of gravity 重力
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There is nearly no force of gravity in space. Astronauts face many problems when they live in a space station. How do they solve these problems?

Using the hints provided by the pictures, write the solutions in complete sentences.

<p><b>1. Problem with taking a bath or a shower:</b></p> <p>Water droplets float around in the space station.</p> <p><i>Solution:</i></p> <p><i>Astronauts take a sponge bath instead of a shower or a bath.</i></p>	 <p>a sponge bath</p>
<p><b>2. Problem with eating and drinking:</b></p> <p>Food and drink float around in the space station.</p> <p><i>Solution:</i></p> <p><i>Astronauts use a meal tray with Velcro to hold packaged food.</i></p>	 <p>a meal tray with Velcro (魔術貼); packaged food</p>
<p><b>3. Problem with working:</b></p> <p>Astronauts float around while they are working.</p> <p><i>Solution:</i></p> <p><i>Astronauts put their feet in foot restraints.</i></p>	  <p>foot restraint 足部固定扣</p>



**4. Problem with sleeping:**

Astronauts float around while they are sleeping.

*Solution:*

*Astronauts sleep in a sleeping bag, which is attached to a wall.*



a sleeping bag; attached to a wall

**5. Problem of losing muscle(肌肉) and bone mass (骨質):**

Astronauts lose muscle and bone mass rapidly in space.

*Solution:*

*Astronauts do two hours of exercise each day.*



two hours of exercise; each day

Slides showing picture of the International Space Station:

Living in Space  
太空人在太空的生活

ELA Research Team, OUHK  
February 2010

International Space Station (ISS)  
國際太空站



International Space Station (ISS)  
國際太空站



Vocabulary

Space station	太空站
Orbit	軌道 (n.) / 繞軌道運行 (v.)
Astronauts	太空人
Force of gravity	重力