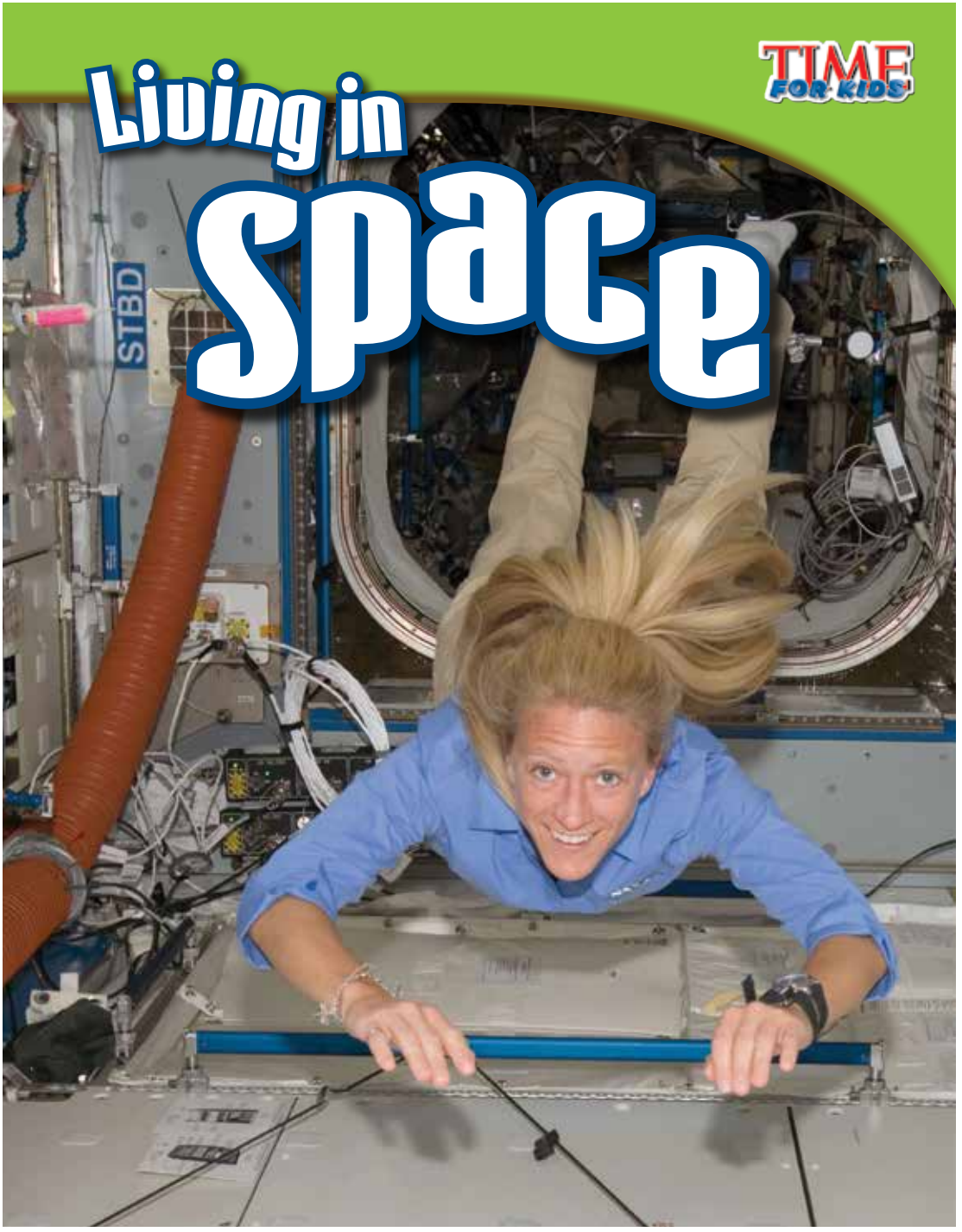
TIME FOR KIDS

Living in Space

Christine Dugan

Living in Space



TIME FOR KIDS

Christine Dugan

Consultant

Timothy Rasinski, Ph.D.
Kent State University

Publishing Credits

Dona Herweck Rice, *Editor-in-Chief*
Robin Erickson, *Production Director*
Lee Aucoin, *Creative Director*
Conni Medina, M.A.Ed., *Editorial Director*
Jamey Acosta, *Editor*
Heidi Kellenberger, *Editor*
Lexa Hoang, *Designer*
Lesley Palmer, *Designer*
Stephanie Reid, *Photo Editor*
Rachelle Cracchiolo, M.S.Ed., *Publisher*

Image Credits

Cover NASA; p.3 kcv/Shutterstock; p.5 Bruce Rolff/Shutterstock; p.6-8 NASA; p.9 JSC/NASA; p.10 Kim Shiflett/NASA; p.11-14 NASA; p.15 NASA; p.15 inset: RusGri/Shutterstock; p.16 NASA; p.17 top to bottom: NASA; Scott David Patterson/Shutterstock; p.18-27 JSC/NASA; p.29 Andreas Meyer/Shutterstock; p.32 Toria/Shutterstock; background: Bruce Rolff/Shutterstock; Hunor Focze/Shutterstock; resnak/Shutterstock; back cover: Bruce Rolff/Shutterstock

Based on writing from *TIME For Kids.*

Teacher Created Materials

5301 Oceanus Drive
Huntington Beach, CA 92649-1030
http://www.tcmpub.com

ISBN 978-1-4333-3675-1

Table of Contents

Life in Space

Since the beginning, people have looked into the sky and wondered what it would be like to travel into space. Today, we don't have to wonder anymore.

What is life like when you travel into space? Nobody knows better than the people who have been there. **Astronauts** can help answer many of our questions about living in space.

Astronauts must work hard and study for a long time before they can travel into space. They are usually picked from many people who want to train for this kind of work. It can take many years to become an astronaut. But where do they start?

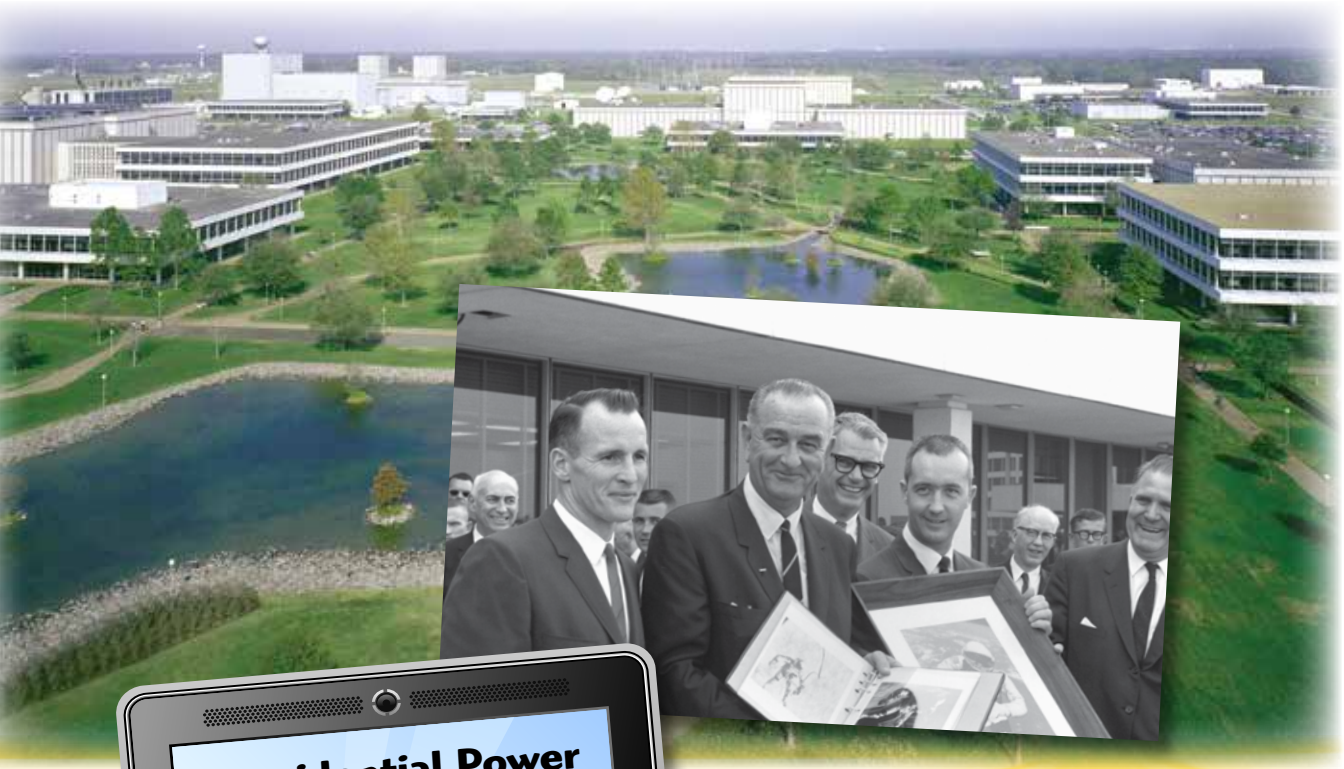
▲ Astronauts train for years before they can go into space.

Brave Explorers

An astronaut is someone who travels from Earth to learn more about life in space. The word *astronaut* comes from the Greek words meaning *star sailor*.

Johnson Space Center

The United States is one of the leading countries for training astronauts. Astronauts in the U.S. begin their training at the **Johnson Space Center** in Houston, Texas. The center first opened in 1961.



▲ President Johnson congratulates astronauts in front of the Johnson Space Center.

Presidential Power

The Johnson Space Center was named in honor of former President Lyndon B. Johnson, a Texas native. He was president in the 1960s during a worldwide push to land people on the moon for the first time.

The Johnson Space Center has a famous room called the **Mission Control Center**. This is where people on Earth direct the space missions and talk to astronauts in space. They help the astronauts with the work they are doing. The Mission Control Center also watches over the astronauts and their spacecraft to be sure they are safe.

▼ The Mission Control Center is where people on Earth talk to astronauts in space.

NASA

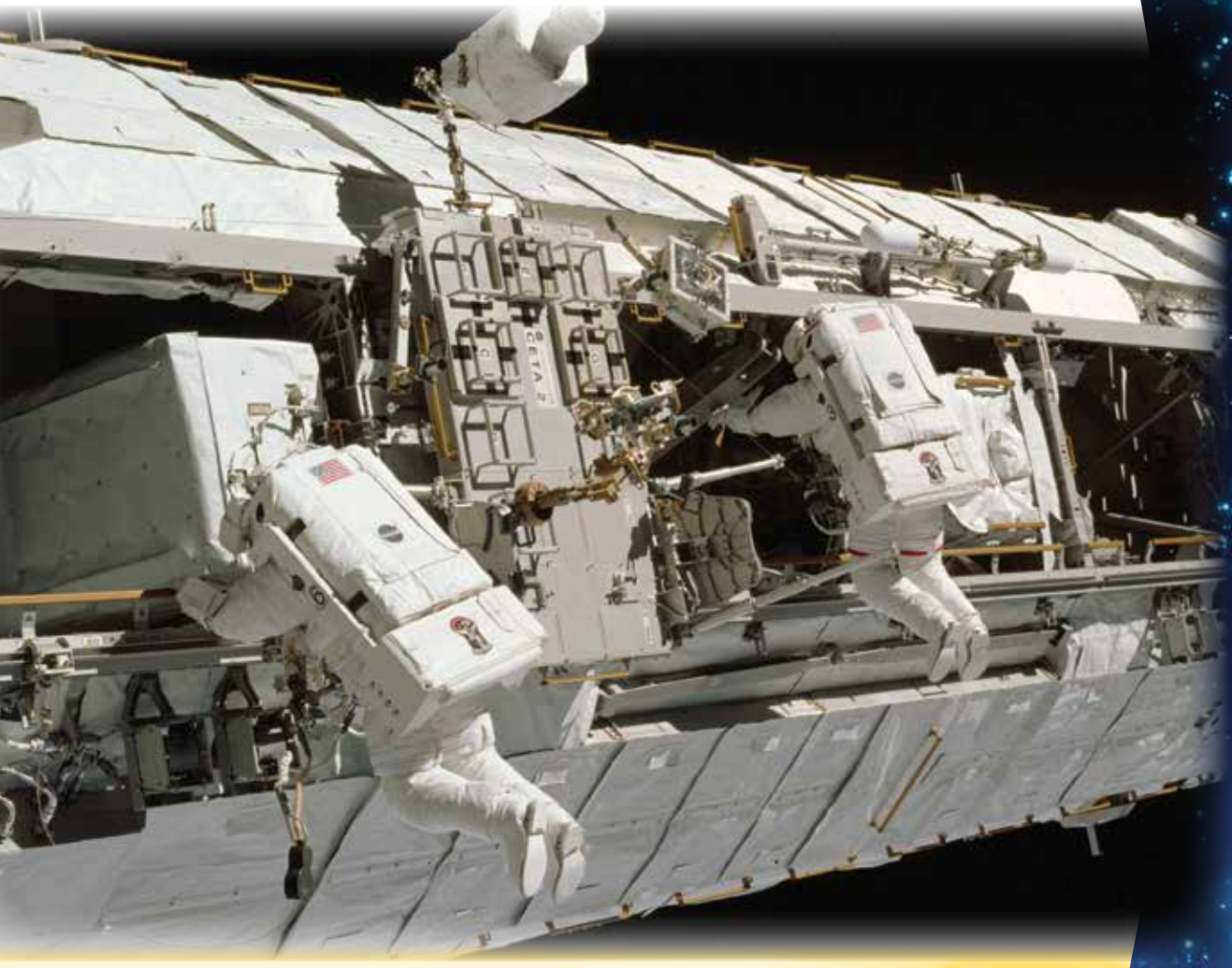
NASA is the National Aeronautics and Space Administration, founded in 1958. The Johnson Space Center was created to be NASA's main center for the design, development, and testing of spacecraft.

What do astronauts do at the Johnson Space Center? They spend a lot of time in class, just like you do in school. They must learn the many skills they will need during their space travels.

Astronauts travel into space in groups. They train with the people they will work with in space. It is very important astronauts work well together as a team. Every person has his or her own job to do. They succeed or fail together, just as any team does.

▲ A team of astronauts prepare to board their space shuttle.

Astronauts also have to work with the people on Earth who help them during their trips into space. Those people work in the Mission Control Center. There is a lot of teamwork needed for space travel!



▲ Two astronauts work together to repair the International Space Station.

Space Gear

Astronauts use many special pieces of equipment while they are in space. They also wear different kinds of clothing, depending on what their jobs are for the day.

Some days, astronauts may leave the spacecraft and go out into space. This is called a **space walk**. They practice space walks on Earth by working underwater in a huge swimming pool.

Keeping Track

NASA must keep track of millions of parts and pieces of equipment. So, they developed barcodes. Today, most businesses use barcodes to keep track of what they've sold and what's in stock.

Floating in water may be the closest we can come to feeling **weightless** on Earth. ▼

Astronauts wear space suits when they go on space walks. The suits protect the astronauts from the harsh conditions of space. In space suits, astronauts won't get too hot or too cold. They are also protected from too much pressure during parts of their space flights.

Astronauts use special equipment to help them survive away from the spacecraft. ▶

EMUs and MMUs

The suit astronauts wear outside the spacecraft is called an *extravehicular mobility unit*, or EMU. It has a headphone and a microphone, so the astronaut can talk to the team inside the ship. It also has oxygen to breathe and water to drink. In order to move around outside, the astronaut also wears a special backpack called an MMU, or *manned maneuvering unit*.

Astronauts need clothing for other situations besides space walks. When they are working inside the spacecraft, they choose what to wear so they are comfortable and warm. They may wear long pants or shorts and T-shirts. Their clothes have many pockets sealed with **Velcro**, so they can keep things with them without worrying about them floating away.

Cordless Tools

Do you and your family own any cordless tools? Such self-powered tools were first developed by NASA to help astronauts drill for moon samples without needing an outside power source.

▲ There are many pieces of equipment in a spacecraft. If nothing was fastened down, astronauts would never be able to find what they needed—unless it happened to float past them!

During takeoffs and landings, astronauts wear special suits to protect them in case of an emergency. The suits come with a **parachute** in case an astronaut is **ejected** from the spacecraft.

The suit also has a **survival kit** in case an astronaut is stranded. This survival kit includes a life raft, drinking water, a radio, and a smoke flare. These things will help the astronaut stay alive until rescuers arrive.

◀ Mae Jemison, the first African American female astronaut, in her launch suit

The suit completely covers the astronaut. A helmet worn over the head provides oxygen in case the astronaut needs help breathing.

Astronauts wear a bright orange suit during takeoffs and landings, so rescuers can easily see them in an emergency. ▶

Astronauts and Firefighters

Astronauts and firefighters have something in common. The protective suits worn by firefighters today are made of fire-resistant fabric first developed for space suits.

Eating in Space

When you are working very hard each day, you sure get hungry! Astronauts must be sure to eat properly while they are in space. But since there is no **gravity** there, eating can be tricky. If you were to sprinkle salt or pepper on your food in space, it would float away! Astronauts must prepare foods that don't have many pieces, so they can keep them under control.

▼ Some foods are too difficult to eat in space. Imagine eating spaghetti with no gravity!

A spaceship has an oven for cooking. Some foods are made simply by adding water. Other foods, such as fruit, are eaten the same way we eat them here on Earth.

It's very important for astronauts to eat three healthy meals each day. They need the nutrition and energy to do their work. In that way, they are no different from you and me.

Gravity

Gravity is the invisible force that pulls everything toward Earth. It takes a force bigger than gravity for things to lift away from Earth. But once something has reached space and is away from Earth's gravitational pull, it will just float away like a balloon. Even the heaviest things on Earth become weightless in space because there is no gravity to give them weight.

It's Bedtime!

Astronauts get very tired from all their hard work, and they need a lot of rest. So, just like you, astronauts sleep every day. But, since there is no gravity in space, they can't just lie down in a bed.

Astronauts usually sleep in sleeping bags. They use seatbelts to attach themselves to something so they don't float around the ship. The bags may be attached to a wall or a seat in the cabin of the spacecraft.

◀ The Mission Control Center schedules sleeping hours for astronauts.

Space Pens

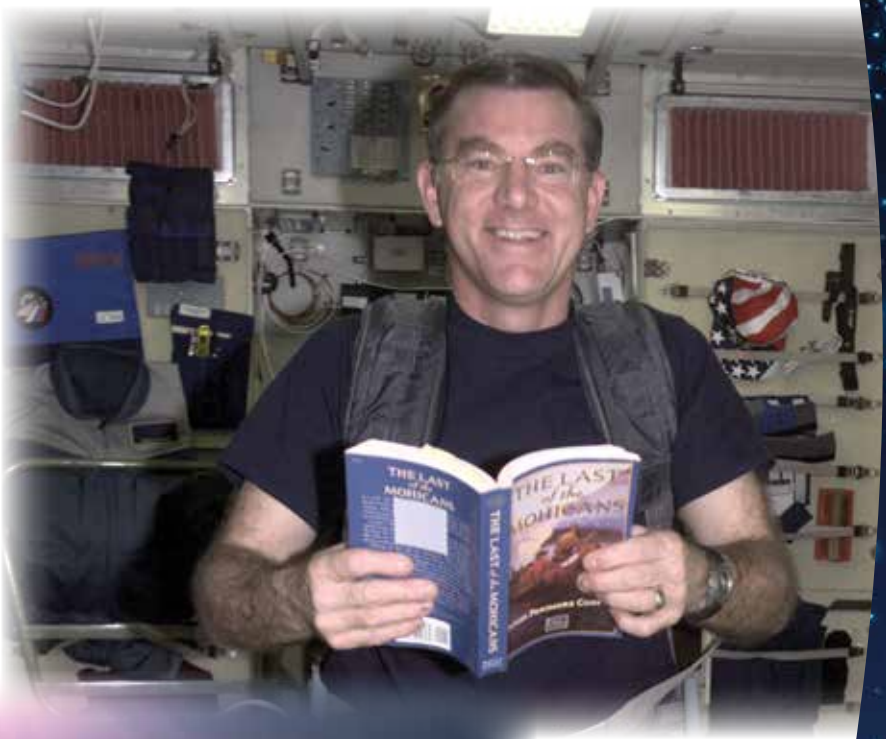
Have you ever tried to write while lying down? Most pens won't work that way. But the space pens developed for astronauts will. Most pens use gravity to make the ink flow into the ball point. The space pen contains pressured gas that pushes the ink toward the ball point. So, you can lie in bed and write upside down.

free Time

Astronauts don't just work, eat, and sleep in space. That would be a hard life. Some trips last weeks or months. Astronauts try to have some fun, too!

Astronauts play music during their free time. ▶

Many astronauts who have traveled into space say they play games with other crew members while there. They also watch movies and read books. Sometimes, they just look out the window to take a quick break, daydream, or stare at beautiful Earth far away. Astronauts can see amazing sunsets and sunrises from space.



Imagine reading your favorite book in space! ▶

◀ Astronauts photograph a sunset over Earth, as seen from space.

Exercise is another very important part of free time in space. Astronauts must be sure their bodies stay strong while they are unable to walk or run, as we do on Earth. If they don't exercise, their muscles will become weak.

▼ This astronaut uses a weight machine to keep her muscles strong.

Astronauts exercise each day. A spacecraft can have different kinds of exercise equipment on it, such as an exercise bike. Astronauts strap themselves to the bike and start pedaling!

Space Bike
This may not look like a traditional bike, but it gives the same workout.

Staying Clean

How do astronauts take care of their bodies? Well, they do many of the same things we do on Earth. Astronauts can brush their teeth and comb their hair like we do. They do not take showers, however. Instead,

Astronauts can't use water to brush their teeth. The drops of water would just float into the air. ▶

these travelers use special soaps and shampoos that don't need to be rinsed off. They can be rubbed off without using water. It's important for astronauts to stay clean, especially since they are in close **quarters** with others!

Astronauts must be careful while washing their hair. A loose drop of shampoo could do serious damage to electrical panels. ▶

How in the World?

How do you use the toilet in space? It sure isn't easy! Astronauts must strap themselves onto the toilet. The toilet works like a vacuum cleaner to suck up waste so there is no mess. This is just one of the ways life in space is a bit more challenging than life on Earth.

Since most people on Earth have never been to space, we have to be thankful for the brave men and women who have risked their lives to travel and live in space. They have taught us so much about what life is like beyond our own planet. Perhaps one day, we can all find out for ourselves!

Many things are happening today that may allow the average person to one day live in space. New methods of travel are being developed, and experiments about living in space are going on all the time. Maybe you, your children, or your grandchildren will live in space one day!

Glossary

astronaut—someone who travels from Earth into space to learn more about life in outer space

ejected—to be launched out

gravity—a natural, invisible force that causes objects to be pulled toward each other

Johnson Space Center—the training center for all astronauts in the United States

Mission Control Center—a place where communication between astronauts in space and engineers and scientists on Earth occurs

NASA—the National Aeronautic and Space Administration of the United States

parachute—a special device used to land safely when falling from the sky

quarters—shared living spaces

space walk—working and moving around outside while in space

survival kit—everything an astronaut needs in case of emergency during takeoff and landing

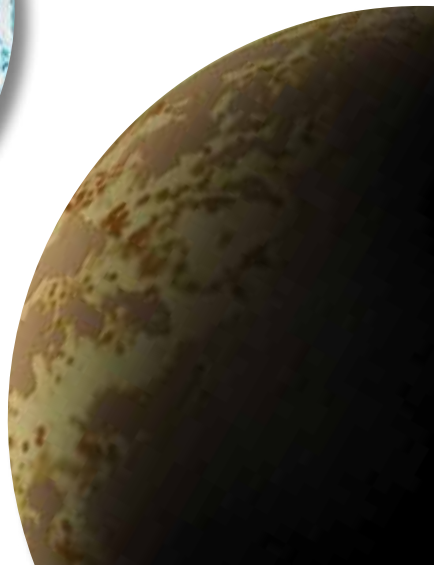
Velcro—nylon tape with two strips that is covered with tiny loops on one side and tiny hooks on the other, used to fasten clothes and other products

weightless—being without weight

Index

About the Author

Christine Dugan earned her B.A. from the University of California, San Diego. She taught elementary school for several years before deciding to take on a different challenge in the field of education. She has worked as a product developer, writer, editor, and sales assistant for various educational publishing companies. In recent years, Christine earned her M.A. in Education and is currently working as a freelance author and editor. She lives in the Pacific Northwest with her husband and two daughters.



For further information about our products and services, please e-mail us at: **customerservice@tcmpub.com**.

"Thank you for helping us create a world in which children love to learn!"

Teacher Created Materials PUBLISHING | SHELL EDUCATION | Teacher Created Materials LIBRARY | Teacher Created Materials TODAY

5301 Oceanus Drive ▪ Huntington Beach, CA 92649-1030 ▪ 800.858.7339 ▪ FAX 714.230.7070 ▪ www.tcmpub.com

Lesson 6: Living in Space

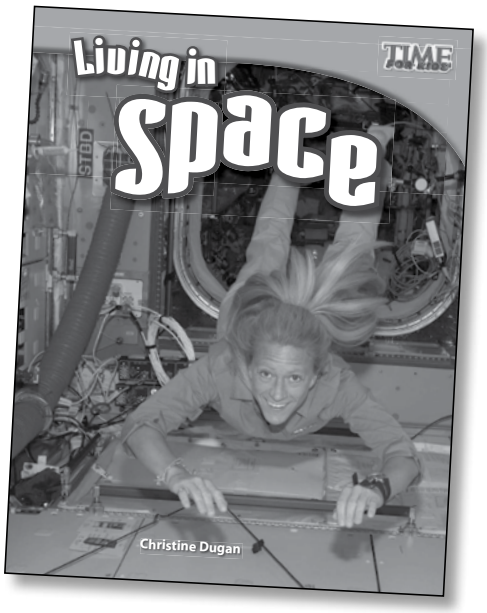
Focus Objectives

Students will be able to:

- make, confirm, and revise simple predictions about a text.
- use text organizers to determine the main idea and to locate information in a text.

TESOL Objective

Students will use appropriate learning strategies to construct and apply academic knowledge.



Word Work

- **High-Frequency Words:** *travel, clean, work, own*
- **Word Study:** syllabication
- *Syllabication* activity sheet (page 87)

Academic Vocabulary

- *ejected*
- *gravity*
- *parachute*
- *quarters*
- *space walk*
- *weightless*

Comprehension

- Making Predictions
- Using Text Organizers
- *Predict It!* activity sheet (page 88)

Writing

Write a descriptive paragraph from the point of view of a space dweller.

Cross-curricular Connections

- **Health:** Students understand the influence of rest, food choices, exercise, sleep, and recreation on a person's well-being.
- **Mathematics:** Students understand relationships between measures.

Building Fluency

- **Reading the Book:** repeated readings with audio support; choral reading
- **Reading the Poem:** poetry folder; repeated readings; performance
- "Waving as I Go By" poem (page 86)

Word Work

1. **High-Frequency Words**—Write the words *travel, clean, work,* and *own* on the board. Read each word aloud.
   - Give students lined paper and a variety of colored pencils. Read each word. Have students repeat the word and write it on their papers using a different color for each letter.
   - If you have a classroom word wall, have students add the high-frequency words to it. If time permits, read the word wall together to reinforce mastery of high-frequency words.
2. **Syllabication**—Explain to students that syllables, just like letters, are parts of words. A syllable is the uninterrupted sound that a group of letters makes.
   - On chart paper or the board, make two columns. Label the first column *Two Syllables* and the second *Three Syllables*.
   - Say the word *astronaut* aloud and demonstrate how to count the syllables by either clapping or holding a hand palm-side down below the chin. Have students repeat the word and count the syllables. Write *astronaut* in the *Three Syllables* column.
   - Repeat with the following words: *Velcro*, *rescuer*, *vacuum*, *oxygen*, *gravity*, *cordless*, and *equipment*. You may also wish to add your own words to the chart.
   - For additional practice with syllabication, have students complete the *Syllabication* activity sheet (page 87).

Tip: When done with the syllabication activity, add another column onto the chart titled *One Syllable*. Then work as a class to find additional words from the text, such as *space, train, live,* and *safe*.

Academic Vocabulary

1. Develop students' vocabulary by having them list words related to living in space. Your chart may look similar to the chart on the right.
2. Instruct students to add high-frequency and vocabulary words to their dictionaries. Encourage them to write a word, phrase, or sentence for each word and include a word web.

Living in Space	
ejected	quarters
gravity	space walk
parachute	weightless

Comprehension

Before Reading

1. **Making Predictions**—Show students the cover of the book. Invite them to describe what they see in the pictures.
   - Read the title of the book to students. Ask them to predict what the subject of the book will be.
   - Create a KWL chart with students. Ask them to tell you what they already know about space. Record that information in the *K* column. Ask students what they would like to learn when reading the book. Record their responses in the *W* column. When you have finished reading, record what students have learned in the *L* column.
2. **Using Text Organizers**—Take a text walk with students. Show them the chapter titles, headings, and typeface and how the size of the font helps convey the importance of the ideas within an organizational framework. Point out graphic features, such as captions (which label pictures) and sidebars (which provide interesting facts).

English Language Support

Brainstorm students' daily activities. Tell them that since the title of the book is *Living in Space*, you expect that the book will be about an astronaut's daily activities. Teach students to scan the text to find the sections related to daily activities in space. Point out text organizers that support scanning.

During Reading

1. **Making Predictions**—Discuss the importance of making predictions while you are reading the text. Ask students why making predictions will help them better understand and remember the text. Explain that even if their predictions are not correct, they will be actively reading and looking for information.
   - Read pages 4–7 of the book aloud to students. As you read the last paragraph on page 7, pause and have students predict what the following pages will be about. Ask them to justify their predictions with textual clues.
   - Read pages 8–9 together. Allow students time to reflect on their predictions. Continue reading and modeling making predictions to actively read the text.
2. **Using Text Organizers**—Reread the book aloud once more. Point out to students how the text is organized with headings, main ideas, and details in order to help the reader understand the information presented. Remind students that the headings were listed in the table of contents and the main ideas and details are found in the body of the text.

Assessment Opportunity—Monitor students to ensure that they can read the high-frequency and vocabulary words accurately. Audio or video recordings may be used as supporting documentation.

Comprehension *(cont.)*

After Reading

1. **Making Predictions**—Review the KWL chart you created prior to reading.
   - Invite students to share what they learned about living in space. Ask students to share one important fact from the book and explain why it is an important fact. Add the facts to the *Learned* column.
   - Let students explain in their own words how living in space is the same as or different from their predictions prior to reading.
   - For additional practice with comprehension, have students complete the *Predict It!* activity sheet (page 88).

English Language Support

Make a copy of pages 12–17. Cut the text from the photographs. Then ask each student to match the photos with the corresponding text. This will help students use picture clues and infer meaning from the text.

2. **Building Oral Language**—Pair students and have them discuss living in space, using the sentence frame *If I lived in space, I would enjoy* _____. Have students take turns sharing and asking each other questions.

Writing

Read the following to students: *Maybe you, your children, or your grandchildren will live in space one day!* Have students write a descriptive paragraph in the first person, telling what this life might be like.

- Encourage below-grade-level students to write a one-paragraph description about life in space.
- Have on-grade-level students write two or three paragraphs.
- Encourage above-grade-level students to write paragraphs about working, having fun, and living in homes in space.

Cross-curricular Connections

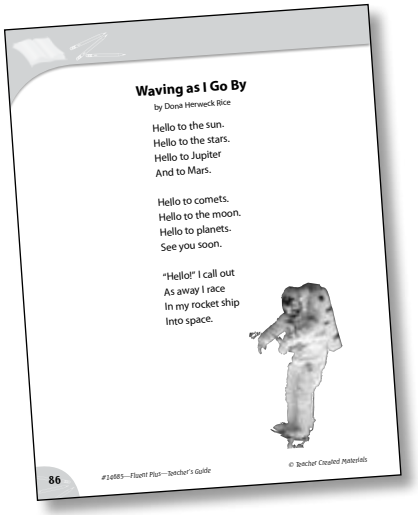
Health—Spend time discussing the importance of rest, food choices, exercise, sleep, and recreation on a person's well-being. Discuss how astronauts do these activities in space.

Math—Have students pretend they are preparing for a trip into space. Remind them that astronauts need special space suits to protect their bodies during takeoffs and landings. Have students work in pairs to measure the length of their arms, legs, fingers, hands, etc., in order to fit the suit properly.

Building Fluency

1. **Reading the Book**—Use one or all of the following methods for fluency practice:
   - Use a copy of the book (provided on the Teacher Resource CD) along with the professional audio recording (provided on the Audio CD) so students can practice reading the book to build fluency. Listening to the book being read aloud will give students an idea of how to use proper intonation, expression, and pacing when reading.
   - Use the choral-reading strategy to read the book several times with students, and encourage them to practice reading the book silently and in pairs.
2. **Reading the Poem—**Use one or all of the following methods for fluency practice:
   - Display the poem "Waving as I Go By" (page 86). Ask students how the poem and the book are both similar and different.
   - Provide copies of the poem for students to place in a poetry folder. They can practice reading the poems in this folder during free-choice time and independent- or paired-reading time.
   - Write the poem on a sheet of chart paper. Take time to reread it throughout the day to build fluency. Encourage students to create actions, gestures, or a tune to go along with the poem. Have the class rehearse and perform the poem for an audience.

Assessment Opportunities—Use the oral reading record and the fluency rubric provided in the Assessment Guide to assess students' ability to read the book and poem fluently and accurately.



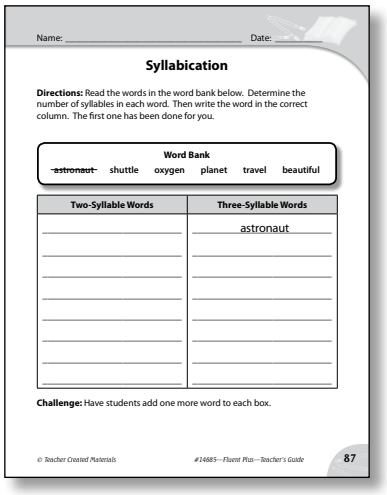
Waving as I Go By

by Dona Herweck Rice

Hello to the sun.
Hello to the stars.
Hello to Jupiter
And to Mars.

Hello to comets.
Hello to the moon.
Hello to planets.
See you soon.

"Hello!" I call out
As away I race
In my rocket ship
Into space.



Name: _____ Date: _____

Syllabication

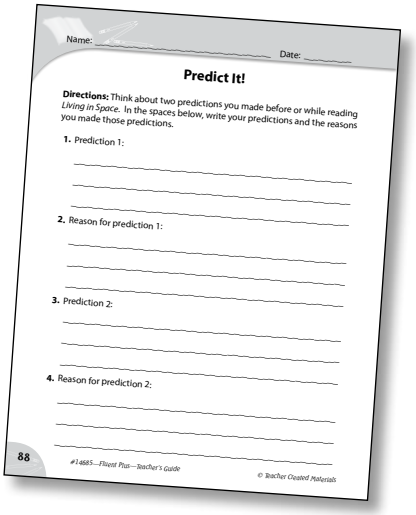
Directions: Read the words in the word bank below. Determine the number of syllables in each word. Then write the word in the correct column. The first one has been done for you.

Word Bank

~~astronaut~~ shuttle oxygen planet travel beautiful

Two-Syllable Words	Three-Syllable Words
	astronaut

Challenge: Have students add one more word to each box.



Name: _____ Date: _____

Predict It!

Directions: Think about two predictions you made before or while reading *Living in Space*. In the spaces below, write your predictions and the reasons you made those predictions.

1. Prediction 1:
2. Reason for prediction 1:
3. Prediction 2:
4. Reason for prediction 2:

Waving as I Go By

by Dona Herweck Rice

Hello to the sun.
Hello to the stars.
Hello to Jupiter
And to Mars.

Hello to comets.
Hello to the moon.
Hello to planets.
See you soon.

"Hello!" I call out
As away I race
In my rocket ship
Into space.

Name: _____ Date: _____

Syllabication

Directions: Read the words in the word bank below. Determine the number of syllables in each word. Then write the word in the correct column. The first one has been done for you.

Word Bank

~~astronaut~~ shuttle oxygen planet travel beautiful

Two-Syllable Words	Three-Syllable Words
_____	astronaut
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Challenge: Add one more word to each column.

Name: _____ Date: _____

Predict It!

Directions: Think about two predictions you made either before or while reading *Living in Space*. In the spaces below, write your predictions and the reasons you made those predictions.

1. Prediction 1:

_____

_____

_____

2. Reason for prediction 1:

_____

_____

_____

3. Prediction 2:

_____

_____

_____

4. Reason for prediction 2:

_____

_____

_____