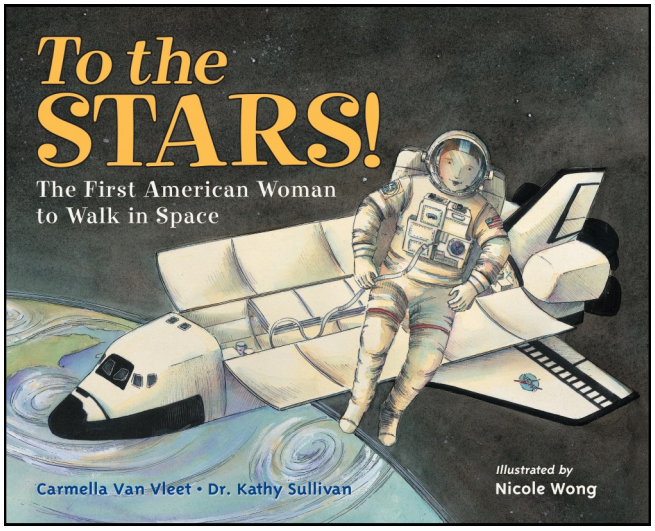
To the STARS!

The First American Woman to Walk in Space

Carmella Van Vleet & Dr. Kathy Sullivan
Illustrated by Nicole Wong



978-1-58089-644-3 HC $16.95
Ages 5–8 • 10 x 8 • 40 pages

Educator's Guide

A Common Core Compatible Activity Guide for Grades K-3rd

Brief synopsis

Young Kathy Sullivan loved to explore. She daydreamed about having a pocketful of airplane tickets. She thought maybe she'd be a spy or a diplomat. Most people told her that girls don't do those jobs. But Kathy knew what she liked.

By the time she was older, her adventurous spirit and willingness to embrace new experiences took her into space. Kathy became one of the first six women astronauts to train with NASA and the first American woman to walk in space.

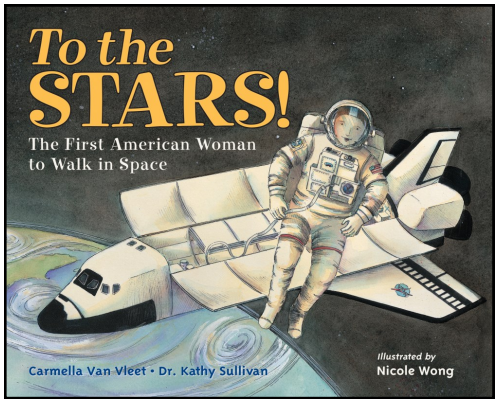
In this book's alternating scenes, Kathy's childhood adventures and grown-up goals together show what can happen if someone always looks . . . to the stars!

Carmella Van Vleet *is a former kindergarten teacher who has been writing full-time for more than fifteen years. She is the author of numerous hands-on science and history books and the middle-grade novel* Eliza Bing Is (Not) A Big, Fat Quitter *(a Junior Library Guild selection and 2015 Christopher Award winner). Carmella lives outside Columbus, Ohio, and has three kids, a regular dog, and a dog who thinks he's a cat.* To The Stars! *is her first picture book. You can visit her at www.carmellavanvleet.com.*

Dr. Kathy Sullivan *is a distinguished scientist and renowned astronaut. She was one of the first six women selected to join the NASA astronaut corps in 1978 and holds the distinction of being the first American woman to walk in space. Dr. Sullivan flew on three shuttle missions during her fifteen-year tenure, including the mission to deploy the Hubble Space Telescope. She was confirmed by the Senate as the Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator in 2014.*

Nicole Wong *has illustrated many books for children, including* No Monkeys, No Chocolate*;* Maxwell's Mountain*;* Wild Rose's Weaving*; and* "L" Is for Library*. She lives in Fall River, Massachusetts. You can visit her at www.nicole-wong.com.*

ENGLISH LANGUAGE ARTS



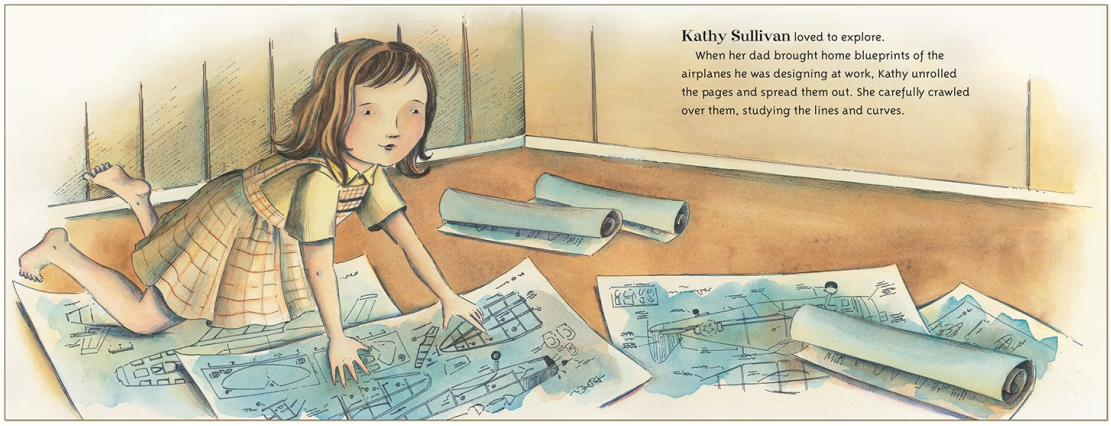
Pre-Reading Questions

- Based on the front cover, what do you think the book will be about?
- What kind of vehicle is on the front cover? If you don't recognize it, does it remind you of another kind of vehicle that *is* familiar?
- Do you have any predictions about where the story (or at least part of the story) will take place?
- Who are the authors? Who is the illustrator? What's an author's job? What's an illustrator's job?
- Open the book to the title page. What job do you think the person on this page has?
- What do astronauts do?

Comprehension Questions By Spread

"Kathy Sullivan loved to explore" and "When she was older" spreads

- What is young Kathy doing?
- What are blueprints?
- What does "explore" mean?



- What's grownup Kathy doing?
- Besides books, what else is on the table?
- Under the lamp there's a letter with the letters NASA on it. Do you know what NASA stands for?

"Whenever an airplane flew overhead," and "But what job lets you do that?" spreads

- What is young Kathy pointing at?
- What did young Kathy daydream about?
- Where do you think grownup Kathy is headed? Does the ticket gives us a clue?

"Young Kathy loved maps" and "By the time she was an adult" spreads

- What jobs did most people think girls should do?
- Why do you think they said that?
- How do you think young Kathy felt about what her friends said?
- What is young Kathy holding? What are her friends all holding?
- What do you think Kathy meant when she said she was going to "follow that compass?"
- Do you notice anything about the three people Kathy is with?

While growing up, Kathy often went fishing" and "Kathy loved the water" spreads

- What did Kathy like to do with her dad and older brother?
- How does your body move underwater?
- Where do astronauts prepare for working in space?
- Why do you think they use pools?
- What do you think the divers' job is?

"When Kathy was a teenager" and "Years later Kathy studied" spreads

- How did Kathy feel when she first sat in the cockpit of a plane?
- Is the plane she's flying big or small? What makes you think so?
- What kind of instrument panel is grownup Kathy studying?

"*On the weekends" and "On another bright blue day"* spreads

- What kind of plane did young Kathy jump on?
- Young Kathy says, "Boy, I sure could!" What does that tell us about her?
- What's happening in the picture when Kathy is a grownup?
- What's Mission Control?

"Leaving her dad behind" and "Lift off!" spreads

- How did young Kathy feel as the Breezy took off?
- What's happening in the second picture?

"Higher! Faster!" and "And one day, she really would" spreads

- What does young Kathy compare riding on the Breezy with?
- What does the area she's flying over look like?
- What can grownup Kathy see out of the space-shuttle window?
- Why are the wires on the control panel floating?

"When she became" spread

- What is grownup Kathy doing?
- How do you think she feels? Does the illustration give us any clues?

Writing Activities

Why I Want To Be an Astronaut

After Kathy applied to NASA to be in the space-shuttle program, she flew to Houston, Texas for an interview. If someone asked you why you wanted to be astronaut, what would you say? After discussing the elements of a letter, invite students to write their own Why I Want To Be an Astronaut letter. Ask them to include three reasons why they think they'd be good at that job. To integrate art, have students draw themselves as an astronaut.

Going further: invite students to write interview questions for astronauts (either before they get the job or after they've come back from space). Next, let them interview each other.

Favorite Book Blurb

As a young girl, Kathy Sullivan loved to read. Books transported her to exotic places and helped inspire her desire to travel. Ask students what their favorite books are. Invite them to write a blurb promoting the book. Videotape the blurbs or ask students to recreate or reimagine the cover of their favorite book along with their blurb. Compile the blurbs into a bulletin board or class video. (Book cover template/worksheet available at www.carmellavanvleet.com/free-stuff.html)

Going further: Kathy had a knack for learning foreign languages. Read a favorite book in another language or invite someone who speaks another language to visit and teach students some common words or phrases.

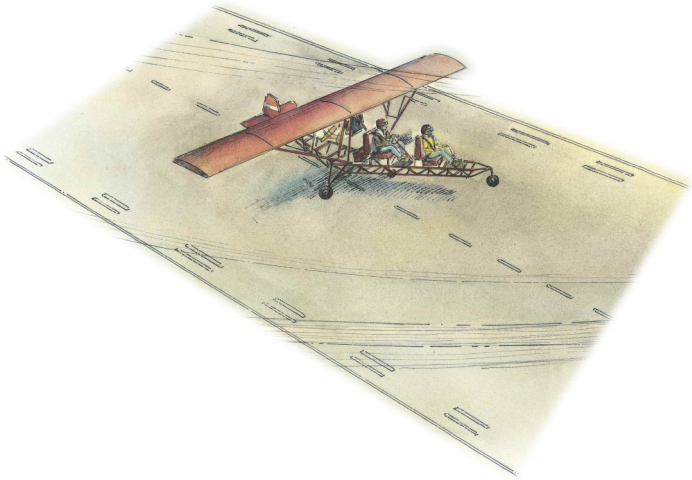
What I Want to Be

When people asked Kathy what she wanted to be when she grew up, she thought maybe she'd be a diplomat or spy. It didn't occur to her that she could be a space-shuttle astronaut because, at the time, there was no such thing as a space-shuttle! (And women weren't part of the Apollo space program.) Reread Kathy's note at the end of the book. Ask readers what they'd like to be when they grow up. Have them fold a large piece of construction paper in half (you can recycle a manilla folder, too). On the outside, have students draw or glue a picture of themselves. On the inside, have them write or draw about what they'd like to do in the future. Display results on a bulletin board so others can "Take a Peek Into the Future."

Going further: Kathy Sullivan grew up at a time when girls were expected to do certain jobs like be a nurse, stay-home mom, or teacher. Discuss what it would be like if only boys or only girls could do certain jobs. Do you think girls/boys should be able to do any job they want? Why?

Where's the Plane Going?

Kathy has had a fascination with airplanes her entire life. In fact, one of her earliest memories is going to the airport with her family when she was around three. There, she came face to face with a Cessna. Kathy thought it looked like it was smiling! After discussing the parts of a fictional story, have students imagine they've seen an airplane and ask them to write a story about where the plane is going and about the people onboard. (Worksheet available at www.carmellavanvleet.com/free-stuff.html). Variation: ask readers to recall a time they've been on an airplane and write a non-fiction story about it.



Other Firsts

In the end material, there is a list of other women who were the first to do something in NASA's history. Using this information (or additional information found online or in books), have students write and illustrate a short book about another female space pioneer. Invite students to share their books with each other or younger grades. Variation: challenge students to write a story about something they'd like to be the first person to do.

Going further: use the end material to create a scavenger hunt. For instance, who was the first mother in space? Or print and use the scavenger hunt available at www.carmellavanvleet.com/free-stuff.html

MATH

What I Like To Do

Kathy Sullivan had many interests as a young child and as a grown woman. She loved reading, looking at maps, learning new languages, traveling, being outdoors, flying airplanes, and learning science. Ask readers to make a list of their interests or hobbies. Next, ask them to put those interests and hobbies into a pie chart, breaking it up into pieces based on their level of passion or the amount of time they spend doing those activities.

Going further: have students compare their pie charts. Ask: Are there any similarities or differences? Do boys and girls like the same things in our sample? Do you think where you live plays a part in what kinds of things you like to do?

"200 Miles Up!"

As noted in the end material, after earning her doctorate Kathy had two amazing opportunities: the interview with NASA and a chance to work with deep-sea submersibles. She told her mom it meant she was either going, "ten thousand feet down or two hundred miles up!"

Have students predict if most people would rather explore space or the bottom of the ocean. Next, take a poll (either by hand or ballot) to see who would rather go "Up" (in space) and who would rather go "Down" (in the ocean). Make a bar graph of the results. Discuss if their predictions were close.

Going further/extending into science: have students draw themselves exploring space or the ocean. Discuss: in what ways are the two environments different? In what ways are they similar?

Paper Airplane Contest

Kathy loved airplanes and learned to fly when she was a teenager. Have students investigate online or in books for various paper airplane designs. Students may also play around with their own design. After folding or constructing an airplane (don't forget to add custom art!), hold a paper plane flying competition. Experiment to see which design flies the farthest. Measure and record the results. Experiment with various launch methods as well. Does holding and releasing a paper airplane affect its loft time?

Going further: check out this video of the world record for longest paper airplane toss http://thekidshouldseethis.com/post/18498052283

How Many Days?

Kathy Sullivan was the first *American* woman, but Soviet cosmonaut Svetlana Savitskaya was the first woman to do an extravehicular activity (EVA). She did her space walk on July 25th, 1984. Using the information in the back of the book, write and solve a word problem that answers this question: how many days did Savitskaya do an EVA before Sullivan?

Going further: discuss Sputnik and the race for space. Why do you think other countries wanted to be first? Are there risks in trying to always be first? Do you think countries should work together? Talk about the International Space Station and how countries work together to man this mission, currently in its fifteenth (and record-breaking) year.

SCIENCE

Propulsion Experiment

The space-shuttle works on propulsion. In basic terms, an engine uses pressure caused from the waste of burning fuel (exhaust) that's forced out of the rear of the craft to push the craft up. To see a simple version of propulsion in action, gather: a balloon, a straw, masking tape, enough yarn to stretch across the room, and a measuring tape. First, thread the yarn through the straw. Set aside for the moment. Next, blow up the balloon but don't tie it shut, just pinch it closed. Tape the straw horizontally onto the balloon. Have a friend tape the ends of the yarn across the room. Stand near one end of the yarn. Predict how far the balloon will travel along the yarn once it's released. Release the end of the balloon. Measure the distance it traveled along the string and record the results.

Dehydrate Apples

While in space, astronauts eat rehydrated meals. You can make your own "astronaut food" with a dehydrator. (If you don't have a food dehydrator, you can use an oven.) After slicing apples into rings, sprinkle them with lemon juice (which will help them from turning brown) and place in the dehydrator. Follow dehydrator instructions and times for drying the fruit. Before starting the dehydration process, invite students to observe and record their findings about what the apple slices look like. Each day, invite them to study the fruit and record their observations. Ask: what changes does removing moisture from the fruit cause? What do you think would happen to different kinds of fruit? Would the dehydration process look the same? Dehydrate various fruits and record your results.

Going further: try "Astronaut Ice Cream" which is available at many camping supply stores and online.

Salt Relief Map

Go back and look at the scene when young Kathy rode the Breezy. She's flying over fields and a river. Relief maps are used to show a landmass's terrain. After exploring some relief maps, invite students to create their own 3-D version. They'll need: piece of cardboard, flour, salt, water, paint, pencil or marker. Begin by lightly sketching out the desired land area (you can recreate the scene in the book or choose another landmass). Next, mix two parts flour to one part salt together and add just enough water to make a dough that's the consistency of Playdough. (Depending on how big your map is, this may use an entire box of salt or approximately 4 cups.) Use the dough to build mountains and valleys and other land features. Place the map in the sun or dry in an oven set at 200 degrees for several hours. When dry, use paint to add color and details.

GEOGRAPHY

As a young girl, Kathy wanted to "see the whole world!" And now she has! On a map, find and mark some of the places listed in *To The Stars!*: Houston, Texas, New Jersey, California, Nova Scotia, Canada, the South Pole. (Though it's not identified, the country Kathy is floating over during her EVA is Venezuela.) As a group, discuss the places readers hope to visit someday and mark those on a class world map as well.

Going further: invite students to create a travel brochure for the places they'd like to travel to someday.

ART

Each NASA mission has its own patch. These patches, designed by the crew themselves, feature the astronauts names and often included symbols of the mission's particular elements. Invite students to create their own mission patches. Here's the patch for Kathy Sullivan's first mission, STS-41G.

Make your own blueprints for a custom airplane or spacecraft or home.

Create a space-shuttle instrument panel with recycled materials such as old milk caps, drawer pulls, and switches.

Design your own space suit.

Make a new cover for *To The Stars!* Worksheet available at www.carmellavanvleet.com/free-stuff.html

Mae Jemison, the first African American woman to go into space, took a poster of the Alvin Ailey Dance Company with her on her mission. Make a poster of something you like to do to take into space with you.

Make Space Playdough. Recipe found at www.carmellavanvleet.com/free-stuff.html

DRAMA/MOVEMENT

Astronauts had to wear spacesuits and gloves while they worked outside of the space-shuttle. To get an idea of how challenging this was, put on a pair of thick, oversized gloves and try to change the battery in a flashlight or some other task that requires fine motor skills.

Make an "airplane" with kitchen chairs and imagine you're flying on a Breezy.

Pretend you're floating or working in space. Move slowly and deliberately.