



FUTURE U.

Employee Guide

GRADE RANGE 6–8

Share your passion for aerospace innovation with the next generation of industry professionals! The employee activities available through *FUTURE U.* were developed as grab-and-go activities to empower Boeing employees to visit a local middle school classroom.

This guide was created to help employees bring *FUTURE U.* resources to classrooms and prepare you to work with students in small and large-group settings. It provides tips and suggestions for employees to engage, explain, discuss, and effectively facilitate STEM activities to help students in grades 6–8 embrace their potential to make an impact and innovate for the future.

In advance of contacting an educator or after school program leader, please read this employee guide in its entirety. Also, please take a moment to contact your local BGE focal (<https://govops.web.boeing.com/index.aspx?com=5&id=18>) and let them know of your plans. BGE keeps track of employee community engagement activities at all sites and may have additional resources to offer for your visit with students.

ABOUT FUTURE U.

Boeing and Discovery Education have launched *FUTURE U.* to inspire and equip the next generation of STEM professionals in aerospace by providing standards-aligned, STEM-focused educational resources for middle and high school students. Through leveraging Boeing employee expertise and volunteerism, students have the opportunity to meet with real aerospace professionals and learn about the vast possibilities for careers in this arena.

Preparing for your visit

Once you have connected with an educator or after school program leader, you will want to work together to ensure a seamless visit. Set up some time together to discuss key details that will make your visit both smooth and successful. A few items you may want to cover:

Pre-visit checklist:

- Thank them for their interest in the program and provide an overview of the program and activity ideas.
- Ask if there are any advance requirements or paperwork needed by the school office or afterschool club in order for you to visit.
- Learn about the setting of your visit, how many students you will be working with, and ask if there is anything that would be helpful to know in advance.
- Discuss how much time is available for your visit.
- Decide together which one of the activities will be used.
- Determine what the educator would like your role to be in facilitating the activity that day.

- Ask the educator to print and copy the student worksheets.
- Learn what technology will be available and use that to determine together how the activity will be facilitated.
- Ask for any tips! Educators have a honed expertise for connecting with students. Consider your educator a valuable resource!

Virtual Participation

When a visit is requested by a group in an area not easily accessible to an employee, there may be an opportunity to participate virtually instead of going to the site. There are several free platforms, such as Google Hangout or Skype, that would allow you to share materials, visuals, and chat with students as they are working.

Work with your assigned educator to determine the applicable items from the checklist above, along with which platform will be used to connect online. Download all software in advance and test your connection to the computer in advance of your presentation. You may want to ask the educator, based on the set up in their learning space, how you can help by sharing your screen and walking students through the directions.

Regardless of whether your visit is virtual or in-person, practice a couple of times in advance. Walk through the information you will be presenting, and time yourself to help work within the time you have available for your visit that day.

The day of your visit

Many community centers and schools will require visitors to sign in and out at the main office and wear a visitor pass. Be sure to arrive early enough to find the office. To ensure an efficient sign-in, have your ID ready, and have a printout of the activity you will be facilitating on hand for reference when you need it.

Presenting to students

The Discovery Education resources have been designed to follow the below agenda. However, every group is unique and different factors, like available timeframe, will affect the exact nature of how **FUTURE U.** resources are used.

Step 1: Volunteer Introduction (2–3 minutes)

Step 2: Activity (35–40 minutes)

Step 3: Wrap-up (2–3 minutes)

Volunteer Introduction: Take a few minutes to introduce yourself. Start off by telling students your name and why you are visiting their class. Tell them about your experience with STEM and aerospace, what your interests were at their age, and what inspired you to pursue the career you have today. Explain to them what you will be learning together and be sure to keep things brief, friendly, and relatable.

Students are going to be very interested and curious with having a special guest and will likely have a lot of questions! Work with the educator to determine the best method for inviting students to ask questions before, during, and throughout the activity.

Activity

When previewing the activity materials, note opportunities to share real-life stories that make connections to the topics. Some of the resources may exceed the amount of time allocated for your visit. You may need to select relevant information for the specific situations in which you will be interacting with students. Practice pacing sections of the activity and make note of areas to pause for questions, engage with a personal story, or point out parts of a visual.

Activities for FUTURE U.—Designed for grades 6–8—Science, math, and engineering classes, or for children ages 11–14. Each activity has an expected duration of 45 minutes and includes an overview, materials, procedure, and capture sheets. You will want to review these activities with the educator or leader to determine which activity to facilitate.

Activity 1

Celestial Discoveries

Overview: After learning about the qualities of other celestial bodies, the class will work together to create a list of celestial traits. Using these traits as a starting point and a Make-Your-Own Celestial Body handout as their guide, student groups will design their own new celestial body, create a GIF of its orbit, and write a short blog post detailing the discovery. Each student will then take on the role of a particular Boeing career and will consider how their position could be involved with or affected by the discovery of this new celestial body.

What do you need before you visit the classroom? (all of these materials are also listed in the activity)

- Device with the ability to project
- Celestial Discovery [video](#)
- Make-Your-Own Celestial Body handout (two pages), one per student
- Career Overviews handout, one per student
- Playdough or modeling clay (several colors), enough for the class to share
- Roll of clear fishing line and scissors, one
- Wooden clay sculpting tools, 15
- Smart phone with free GIF app such as GIF X, GIF Maker, or Giphy Cam, at least one

Preparation:

- Check with the educator about projection capabilities. In some cases, it may be easiest for you to send the video link to the educator in advance. In other cases, you may be able to easily connect your laptop.
- Connect with the educator ahead of time to copy all handouts, as well as to determine if students should be allowed to use their own phones to create their GIFs or whether you should use your device to help with this step.
- Take a moment to read through the lesson directions, but don't worry about following all directions precisely. If student engagement leads you briefly in another direction, that's fine. Just make sure students are able to begin Step 2 of the Make-Your-Own Celestial Body handout when there are at least 35 minutes left in class.

Activity 2

Moon Tourism

Overview: The CST-100 Starliner is working toward bringing astronauts to the International Space Station... but what could come next? After watching a video about the CST Starliner and calculating how long a trip around the moon and back to Earth would take, students will contemplate the idea of moon tourism. In doing so, students will be tasked with designing a marketing campaign to get American tourists interested in taking one of the first trips around the moon! Students will be encouraged to consider the unique-ness of this trip as well as the traveling conditions in order to create a marketing campaign that targets consumers. They will then create the campaign's first "buzz" as they launch a model rocket!

What do you need before you visit the classroom? (all of these materials are also listed in the activity)

- Device with the ability to project
- CST-100 Starliner video
- White board and marker or chart paper and marker—whichever the classroom already has available
- Moon Tourism Handout, 15 copies
- Article Excerpts Handout, one per student copies
- 5 x 8-inch notecards, 15

Rocket Supplies

- Empty film canister with lid that snaps inside, at least 12
- Transparent tape rolls, at least 6
- Alka-Seltzer Original tablets, at least 6
- Water, at least 2 cups

Preparation

- Check with the educator about projection capabilities. In some cases, it may be easiest for you to send the video link to the educator in advance. In other cases, you may be able to easily connect your laptop.
- Connect with the educator ahead of time to copy all handouts.
- Take a moment to read through the lesson directions, but don't worry about following all directions precisely. If student engagement leads you briefly in another direction, that's fine. Just make sure students are able to begin working on the Moon Tourism handout when there are at least 30 minutes left in class.
- Find a place outside where you will be able to safely launch your mini rockets. You will need a flat surface for the rocket launching, as well as an area at least two meters away where student bystanders can assemble.

Activity 3

Citizen Astronaut

Overview: Students will investigate how using technology connects scientists, engineers, and citizens across the country and around the globe by contributing to an out-of-this-world citizen science project! Students will first explore the term “citizen scientist” and learn about the variety of important ways that they, as students, can contribute to the world of science. The facilitator will preview a few of NASA’s citizen science projects before one is selected through a class-wide vote. Students will then take the first steps in contributing to this project and will wrap up by developing a plan that outlines how they will continue contributing to this project in the future.

What do you need before you visit the classroom? (all of these materials are also listed in the activity)

- Device with internet access and the ability to project
 - Note: At least one device will be needed. If the school has enough devices available for students to work in groups of three, two, or independently—even better!
- Citizen Astronaut Action Plan handouts, one per student

Preparation

- Check with the educator about projection capabilities. In some cases, it may be easiest for you to send the website link to the educator in advance. In other cases, you may be able to easily connect your laptop.
- Check with the educator about device availability. Will there be one classroom device or will there be other devices available for students to use? Discussing this with the educator ahead of time, if possible, may increase the likelihood that students will have devices to use.
- Familiarize yourself with NASA’s Citizen Scientist [Homepage](#) and the gist of the projects below:
 - [Aurosaurus](#)
 - [Backyard Worlds](#)
 - [CosmoQuest](#)
 - [Disk Detective](#)
 - [Measure and Map Our Galaxy](#)
 - [Stardust](#)
- Take a moment to read through the lesson directions, but don’t worry about following all directions precisely. Student engagement may lead you temporarily off-course, and that’s okay! Just make sure you choose your class project by the time there are 25 minutes left in class.

What do you need to do when you get there?

- Ensure that all materials are available.
- Confirm how devices will be distributed or if students have their own. Determine how the classroom is setup and how to use the space.
- Introduce yourself!
- Follow the procedure in the activity.

What can you do while students are working?

- Say hello! Ask them what excites them about STEM and what questions they may have about your career or aerospace.
- Share a brief story! Students enjoy hearing stories about what you do for fun and what kinds of things you do at work.
- Be available for questions. Rotate to the different groups to help where needed.

Know Your Audience

The students you are working with are considered adolescent learners. They are intellectual, social, and emotional learners. They are very curious and enjoy interacting with peers during learning activities. They like to be active learners and are still experimenting with ways of talking and acting as they learn and grow.

A student environment may include a handful of students or up to 40! Sometimes educators will have students seated in small groups and others will have students in rows. Large groups can be challenging to effectively assess if students are engaged or understanding the information presented. It is also difficult to build relationships and visit with students individually in the short amount of time. Walking around the space and making eye contact with different students can help personalize the experience. As students enter the room, or as you enter, say hello and introduce yourself.

And lastly, have fun! This is a great opportunity for you to reach and inspire students in your community and beyond. We hope you find it rewarding, and we thank you for your time and interest in being an ambassador of this program.