



National Aeronautics and Space Administration

In-flight Education Downlinks

2015-2016 Guide

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Introduction

This guide offers information about the process and requirements for hosting an in-flight education downlink. Please direct any questions or comments to JSC-Downlinks@mail.nasa.gov.

What are in-flight education downlinks?

In-flight education downlinks, or downlinks, are opportunities for students and educators to interact with astronauts aboard the International Space Station during a live, 20-minute question-and-answer session. A downlink:

- Is a large-scale event serving the formal and informal education communities
- Supports a comprehensive suite of education activities proposed by host organizations designed to incorporate science, technology, engineering and mathematics (STEM)
- Is broadcast live on NASA Television and streamed live on the NASA website

Why does NASA conduct downlinks?

Downlinks provide audiences the opportunity to learn first-hand from space explorers what it is like to live and work in space. NASA's Johnson Space Center Office of Education facilitates these events on behalf of the Agency, designed to enhance student learning, performance and interest in STEM.

Should my organization host a downlink?

A downlink may be an excellent opportunity worth pursuing if your organization:

- Is a formal or informal educational organization located in the United States
- Has the flexibility to adapt to downlink date changes without a long lead time
- Can secure a large student and/or educator audience
- Can assemble a team to handle the education, outreach and logistical components

The Process

Organizations interested in hosting a downlink must submit a letter of intent. These letters are typically accepted twice per year. Following a submission period, a committee will evaluate submissions and will select organizations to interview. Following all interviews, the committee will select which organizations will be eligible to host a downlink. Being selected as an eligible

organization does not guarantee you will receive a downlink. The availability of downlink opportunities varies and is driven by mission operations.

Due to limited opportunities, NASA is not able to accommodate all requests from interested organizations. Organizations deemed eligible will receive additional contact information and instructions for how to proceed. If your organization is not deemed eligible, personnel are available to provide feedback on how to improve your standing.

What should the letter of intent include?

To be considered for further evaluation, letters of intent must be complete and no longer than three (3) pages in length. Letters of intent should address the following items:

1. Opening Summary
 - a. Provide information about your organization, its purpose, educational objectives and the population it serves
 - b. Explain why your organization wants a downlink
2. Education Plan Overview
 - a. Outline pre-, post- and/or day-of-downlink activities for students and educators
 - b. Describe any past, current or future involvement in NASA programs or activities
3. Outreach Plan Overview
 - a. Describe how you will spread the word about your downlink and surrounding events
 - b. Explain how community partnerships will be established or improved because of the downlink
4. Logistics Plan Overview
 - a. Explain how you will prepare for the technical requirements (see Logistics section)
5. Conclusion
 - a. State what dates your organization is available to host a downlink (see website for current timeline)
 - b. Include a contact name and contact information (email and phone)

What are some tips for writing a strong letter of intent?

- Integrate NASA! Links to a variety of NASA resources are provided in this guide.

- Incorporate partnerships which will have a lasting impact on the community.
- Think about ways students can be included in various ways.
- Be flexible. Downlink dates are driven by mission operations and can move around.
- Use your three pages wisely. If selected for an interview, you will have the opportunity to expand your thoughts.

Education Plan

A downlink education plan describes how host organizations will utilize the downlink to enrich STEM activities and support local education initiatives. As part of the letter of intent, organizations should outline how pre- and post-downlink activities.

What are some tips for creating a strong education plan?

- Involve students as much as possible – they should feel ownership of the event
- Utilize pre-downlink activities to help drive student questions for the astronauts
- Infuse NASA content into all subject areas to get everyone involved
- Reach out to local STEM organizations for guest speakers, potential field trips and more

What kinds of NASA resources are available?

NASA offers a variety of resources including websites, printed materials, student and educator program and professional development opportunities. In addition to the links provided below, you can check with NASA Education personnel for more information on other NASA resources.

Astronaut Biographies (LINK)

<http://www.jsc.nasa.gov/Bios/>

This website provides biographical information on all past and current astronauts at NASA.

Biographies for Russian cosmonauts as well as astronauts from Canada, Japan and Europe are also available.

International Space Station Home Page (LINK)

http://www.nasa.gov/mission_pages/station/main/

This is the main site for all things space station related. You can find the latest news on missions, activities and resources. Be sure to check out the Expedition pages for the crew you could be talking to in order to learn more about their mission. Explore the multimedia resources and learn all about how the space station was built and how the science benefits humankind.

NASA Education Home Page (LINK)

<http://www.nasa.gov/offices/education/about/#.VOTPu2OTLw4>

This site serves as a gateway to information on NASA Education programs and services across the Agency for students and educators. Check out the numerous educator guides, posters and multimedia providing information about NASA and space exploration. Learn how to connect to NASA or get involved in professional development opportunities.

NASA Exhibits (LINK)

<http://www.nasa.gov/about/exhibits/#.VOTPyWOTLw4>

The NASA Exhibit Program encompasses exhibits, artifacts and visitor centers located at each of the ten NASA Centers and the Smithsonian National Air and Space Museum. The Exhibit Loan Program offers the use of traveling exhibits, art, models and artifacts free of charge with the exception of shipping and insurance.

NASA EXPRESS Message (LINK)

http://www.nasa.gov/audience/foreducators/Express_Landing.html#.VOTP2mOTLw4

Subscribe to NASA Education's weekly e-newsletter and stay in the know about upcoming opportunities and newly released education resources.

Spot the Station (LINK)

<http://spotthestation.nasa.gov/>

NASA's Spot the Station service gives you a list of upcoming sighting opportunities for thousands of locations worldwide and will let you sign up to receive notices of opportunities via email or text message. As the third brightest object in the sky, the space station is easy to see if you know when to look up!

Teach Station (LINK)

<http://www.nasa.gov/audience/foreducators/expeditions/#.VOTQA2OTLw4>

Welcome aboard Teach Station, NASA Education's space station-focused website for students and educators. Check out the website for education resources, science and research information and crew updates. Visit often and watch for opportunities to connect with space station crewmembers and other NASA Education opportunities.

Outreach Plan

An outreach plan describes how host organizations plan to communicate information about the downlink and surrounding activities out to the community and stakeholders. As part of the letter of intent, organizations should outline promotional opportunities.

What are some tips for creating a strong outreach plan?

- Think of ways to involve students like having them design invitations
- Invite VIPs, including those in state and/or federal positions – even if they decline the invite, they will be made aware of the great things going on at your organization
- Get creative! Use social media along with local media outlets to help spread the word
- Make this a BIG event – find a space to fit a large audience – you want everyone to come and be a part of this great event

Logistics Plan

A logistics plan describes how host organizations will prepare for the downlink. As part of the letter of intent, organizations should outline technological capabilities and date availability.

What are some tips for creating a strong logistics plan?

- Think carefully about the event location – you want to accommodate a large audience but need a place conducive to technology requirements
- Keep flexibility in mind – dates and times for downlinks can change based on mission requirements
- All technology connection options are equally viable – chose the option that works best for you
- Spend time putting together a day of downlink schedule – no detail is too small!

What technology is needed to host a downlink?

There are three ways to connect to NASA for your downlink: online web applications (Skype, Vidyo or Google+ Hangout), video conferencing or NASA's Media Channel.

How do I connect with an online web application?

The following equipment is required for an online web application connection:

- Dedicated computer running the application with a hard-wired internet connection
- High-quality external microphone plugged into the computer
- Soundboard or PA system to broadcast audio to audience
- Equipment to project the video on a large screen/monitor
- Two dedicated phone lines
 - Line 1 – a dedicated telephone line to serve as a back-up for the online web application. This line will be used for the questions and answers between students and crewmembers if the online web application connection is lost.
 - Line 2 – a coordination line between the host organization's technical team and the technical team at the Johnson Space Center (includes the NASA Television producer and audio engineer)

This technology is in one part – you will send and receive everything from the computer. You will receive audio and video through the online web application. Connect the audio from your computer to your PA/sound system and the video to your projector. The questions from the students will go to the computer running the online web application, and NASA will connect this audio to the crewmembers.

How do I connect with video conferencing?

The following equipment is required for a video conference connection (note – Tandberg units cannot be used):

- Video conferencing equipment
- Soundboard or PA system to broadcast audio to audience
- Equipment to project the video on a large screen/monitor
- Digital hybrid (supplied by NASA)

- Two dedicated phone lines
 - Line 1 – questions from students to crewmembers on the digital hybrid
 - Line 2 – a coordination line between the host organization’s technical team and the technical team at the Johnson Space Center (includes the NASA Television producer and audio engineer)

This technology is in two parts – you will send and receive signals from two different sources. You will receive your audio and video by connecting to NASA with your video conferencing equipment. Connect the audio from the video conferencing equipment to your PA system or soundboard. Questions from the students are sent to NASA through a phone call on the digital hybrid. This call is connected to the crew by NASA.

How do I connect with the NASA Media Channel?

The following equipment is required for a NASA Media Channel (NTV-3) connection:

- Digital Video Broadcast (DVB) compliant Integrated Receiver Decoder (IRD) to access the NASA Media Channel
- Monitor or projector to display video from the NASA Media Channel
- Soundboard or PA system to broadcast audio to the audience
- Digital hybrid (supplied by NASA)
- Two dedicated phone lines
 - Line 1 – questions from students to crewmembers on the digital hybrid
 - Line 2 – a coordination line between the host organization’s technical team and the technical team at the Johnson Space Center (includes the NASA Television producer and audio engineer)

This technology is in two parts – you will send and receive signals from two different sources. You will receive your audio and video by connecting to NASA Television via NASA’s Media Channel. NASA broadcasts audio and video of the crew. Connect the audio from the Media Channel to your PA system or soundboard. The questions from students will be sent to NASA through a phone call on the digital hybrid. This call is connected to the crew by NASA.

What is a digital hybrid?

A digital hybrid is a device that takes a standard telephone line and converts it into an audio input and output. You can use the audio input and output to plug into your PA system or soundboard. If you need this equipment for your downlink, NASA will send it along with instructions to configure it for your event.

What are general requirements for all events?

A test call with NASA will take place approximately one week prior to the downlink. During the NASA test call, the following items will be addressed:

- Verify technology is setup correctly
- Determine if an audio delay exists and the nature of the delay
- Address any troubleshooting questions

One the day of the downlink, the NASA audio engineer will call Line 2 approximately one hour prior to the downlink and connect you with the NASA Television Producer who will stay on the line throughout the downlink. The technical team at the host organization is responsible for overall coordination of the technical aspects. This includes setting up and testing the equipment, communicating with the NASA Television producer before and during the downlink and conveying time cues and other pertinent information to the person working directly with the students. NASA does not send out a technician.

What does everyone see and hear during a downlink?

The host organization will see and hear the crewmembers. The crewmembers will only be able to hear the questions and will not see the participants. NASA broadcasts the audio and video from the crew along with audio from the organization live on NASA Television. Depending on prior arrangements, it is possible for NASA Television viewers to see participants.

The Interview

Organizations selected for a follow-up interview will receive further information and instructions via email. It is important the contact information on the letter of intent is complete and accurate. Interviews will take place via an online platform such as Blackboard Collaborate or Skype.

For any questions, please contact
JSC-Downlinks@mail.nasa.gov