

National Aeronautics and Space Administration



Downlink Planning Guide

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Preface

About In-flight Education Downlinks

What are in-flight education downlinks?

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

- Serves the education community and is approximately 20 minutes in length.
- Allows students to hear and see the crewmembers live from space. The crew does not see the audience.
- Supports a comprehensive suite of education activities proposed by the host organization to enhance student learning.
- Is broadcast live on NASA TV and streamed live on the NASA website.
- Is a large scale public event.

Purpose

Why does NASA provide downlinks?

Downlinks use the unique experience of human space flight to afford audiences the opportunity to learn first-hand from space explorers what it is like to live and work in space. Teaching From Space (TFS), a NASA Education office, facilitates these events which are designed to encourage students to study and pursue careers in science, technology, engineering and mathematics (STEM).

This planning guide offers information about the process and requirements to host a downlink. Please direct any questions or comments to TFS at JSC-Teaching-From-Space@mail.nasa.gov or (281) 244-7608.

Getting Started

Fitting t Opportunity

Is my organization a good fit for this opportunity?

A downlink may be a good fit if your organization:

- Is a U.S. formal or informal education institution.

- Has the flexibility to adapt to downlink date changes.
- Has the ability to develop a strong education plan.
- Can secure a large student and educator audience.
- Can assemble a team to handle the education, media and technical components of a downlink.
- Has the ability to establish and/or utilize community partnerships.

Understanding the Proposal Process

What do I do first?

The first step is to decide if your organization is a good fit for this opportunity. If so, continue reading this planning guide to gain more information.

Then What?

Submit a proposal. Proposal forms and additional details can be found at the [TFS downlink site](#).

Proposals are typically accepted twice per year. Following a proposal submission period, a committee evaluates submitted proposals and selects organizations to receive a downlink.

Evaluating the Proposal

How will proposals be evaluated?

Submitted proposals are evaluated on incorporation of the downlink as part of a complete package that reflects the following:

Education

- Is the downlink and surrounding comprehensive education plan useful to the education community, and do they strengthen the ability to engage students in STEM?
- Does the education plan include relevant interdisciplinary activities and make use of NASA content?
- Will the downlink and surrounding comprehensive education plan make a demonstrable contribution to attracting students to STEM careers?
- Does the downlink include a plan to evaluate the impact of the downlink on students?

Logistics

- Is the technology required in place or is there a plan to have it brought in?
- Does the proposal demonstrate flexibility regarding downlink dates and times?
- Does the proposal include a plan to ensure participants will complete NASA evaluations?
- Does the proposal provide a clear overview of the downlink including location, technology, schedule and transportation (if needed)?

Outreach

- Does the proposal include a detailed outreach plan?
- Does the proposal include plans to involve the community in the downlink and/or education plan?
- Is the downlink and/or education plan designed to leverage partnerships with local, regional or national entities?
- Will the downlink draw participants from other NASA Education opportunities and/or connect participants with other NASA Education opportunities?

Following a proposal review, a TFS Education Specialist will notify you of the committee's decisions. Due to limited downlink opportunities, NASA is not able to accommodate all proposals. If your proposal is selected, you will be provided with additional contact information and instructions. If your proposal is not selected, a TFS Education Specialist will be available to provide feedback on how to improve your proposal.

Writing Strong Proposal

What are some tips to writing a strong proposal?

- Integrate NASA Education content into your education plan. Links to a variety of NASA resources are provided in this guide, and TFS Education Specialists are available to help assist you in connecting this content to your education plan.
- Incorporate partnerships that have a lasting impact on the community.
- Brainstorm creative ways to maximize the downlink for the students and educators involved. Think about ways you can incorporate students in all aspects of the downlink.

- Establish an evaluation plan that measures the local impact of the downlink on students through pre- and/or post-activities.
- Keep date flexibility in mind. Downlink dates are driven by NASA mission requirements and are always tentative.
- Create a theme for the downlink.
- Proofread the completed proposal to make sure that all information is complete and relevant.
- Attend an online information session to learn more. For more information regarding these sessions, please contact TFS at JSC-Teaching-From-Space@mail.nasa.gov or (281) 244-7608.

Preparing for Education Component

Creating Downlink Education Plan

What is a downlink education plan?

A downlink education plan is an overview of how the host organization will utilize the downlink to enrich STEM learning activities, support local education initiatives, and tie to NASA Education criteria (see the “Evaluation the Proposal” section of this guide). As part of the proposal, the plan should describe how the pre- and post-downlink activities will tie into the 20 minute live downlink with the space station crewmembers.

How do I maximize this opportunity?

Think of the downlink as part of a much larger vision. Use the downlink to:

- Bring STEM subjects alive for students.
- Enhance or create partnerships with local businesses and community leaders.
- Attract widespread attention to your organization.
- Support local education objectives and initiatives.

Find creative ways to expand the reach of the downlink. For example:

- Explore the feasibility of webcasting the downlink to reach a broader audience.
- Check with local partners to secure a large venue.

- Develop a student-drive multimedia product to share the downlink with the community.

Viewing Downlinks

How can I view an upcoming downlink?

Downlinks air live on NASA TV and are also streamed live on the [NASA TV website](#). A TFS Education Specialist can provide dates and times for upcoming downlinks.

How can I view previous downlinks?

An example of a previous downlink can be seen at the [STS-118 mission page](#). Click on “Morgan, Crewmates Talk with Students” under “Related Multimedia” on the lower right side of the page. Check with a TFS Education Specialist on other ways to view previous downlinks.

Accessing NASA Education Resources

What kinds of NASA Education resources are available?

NASA offers a variety of resources for educators and students. These educational resources include websites, printed materials, student programs and professional development opportunities. In addition to the links provided below, you can check with a TFS Education Specialist for information on other NASA resources.

[NASA Education Home Page](#)

This site serves as a gateway to information on NASA Education programs and services for educators and students. Educators can search for resources by grade level, topic and type. The site contains numerous educator guides, posters and multimedia that will help provide information about NASA and space exploration that host organizations will find useful in planning activities for students.

NASA Educators Resource Center Network (ERCN)

NASA ERCN helps teachers learn about and use NASA’s educational resources. Personnel located at educator resource centers throughout the U.S. work with teachers to find out what they need and share NASA’s expertise. These resource centers provide workshops utilizing NASA instructional products and provide educators the opportunity to preview and receive NASA instructional products.

A visit to a nearby center would be a great way to get educators in the know as they prepare activities for students.

[Teaching From Space](#)

Teaching From Space offers experiences and resources not found anywhere else. You can get involved in real NASA missions and research, gain access to NASA experts and use NASA equipment to take learning to a new level. This is another great site for finding pre- and post-activities as well as connecting students and educators to other NASA Education opportunities.

[Accessing International Space Station Resources](#)

What kinds of space station resources are available?

NASA has numerous resources available to help the public learn more about the space station. Use the resources below to get students and educators familiar with the space station. The background will help students develop strong, in-depth questions to ask the astronauts.

[International Space Station Home Page](#)

This is the main site for all things space station. You can find the latest news on missions, activities, and resources.

[Teach Station](#)

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, crew updates, and up-to-the minute education news. Visit often and watch for opportunities to connect with space station crewmembers and other NASA Education opportunities.

[Accessing Additional Resources](#)

What other NASA resources are available?

There are a variety of other NASA resources that host organizations could utilize in preparing for a downlink. You can also check with a TFS Education Specialist for more resources.

[Astronaut Appearance Requests](#)

NASA astronauts appear before a variety of groups to inform the general public about the U.S. space program. Requests for appearances must be submitted far in advance. There is a cost involved for the host, and appearances are very limited.

[Astronaut Biographies](#)

This website provides biographical information on all past and present astronauts.

[NASA Exhibit Program](#)

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

Preparing for Media Component

Getting the Word Out

What is a media/outreach/promotion plan?

A media/outreach/promotion plan is an overview of how the host organization plans to communicate information about the downlink and surrounding educational activities out to your community. As part of the proposal, the plan should describe both internal and external promotion opportunities.

How do I maximize this opportunity?

- Get students involved in the promotion. For example, have them make an announcement or create invitations.
- Think big! Invite VIPs, including those in state and/or federal positions. Even if they can't accept the invitation, it will make them aware of great things going on at your organization.
- Utilize local media outlets such as TV or radio stations to help reach the community.

Preparing for Technical Component

Understanding Live Downlink Technology

What technology do I need to host a downlink?

- NASA TV at the location through NASA's Media Channel
- Two dedicated phone lines at the location
 - Line 1 – questions from student to crewmembers
 - Line 2 – conversation between host organization's technical point of contact and NASA TV Producer
- Equipment to broadcast NASA's Media Channel audio to audience (i.e. PA system or soundboard)
- Large screen to project video from NASA's Media Channel
- Microphone
- Digital hybrid (supplied by TFS)

Think of the technology in two parts:

1. Media Channel: You will receive your audio and video by connecting to NASA TV via NASA's Media Channel. NASA broadcasts audio and video of the crewmembers. The participants and NASA TV viewers will see the crewmembers, but the crewmembers and NASA TV viewers will not see the participants. Connect the audio from NASA's Media Channel to your PA system or soundboard.
2. Questions from students: The questions from students will be sent to NASA through a phone call on the digital hybrid. This call is then connected to the crewmembers by way of NASA audio engineers. The phone call is live and will be broadcast on NASA TV along with the video of crewmembers.

Approximately one hour prior to the downlink, the NASA audio engineer will call Line 2 and connect you with the NASA TV Producer who will stay on the line with the host organization technical point of contact throughout the downlink. The technical point of contact at the location is responsible for the

overall coordination of the technical aspects of the event. This includes setting up and testing equipment, communicating with the NASA TV Producer before and during a downlink and conveying time cues and other pertinent information to the person working directly with the students. NASA does not send out a technician.

Obtaining NASA TV

How do I obtain NASA TV via NASA's Media Channel?

To host a downlink, organizations must receive NASA TV through NASA's Media Channel. Please note that neither "regular" NASA TV (available through subscription services) nor the Internet can be used to conduct the downlink at this time. Additionally, the downlink cannot be conducted using video conferencing equipment. Organizations that do not have the technology onsite to connect to NASA's Media Channel are encouraged to seek out partnerships with organizations within their community than can provide the required technology.

Information about NASA's Media Channel including coordinates can be found at the [NASA TV website](#).

For the most up-to-date information regarding technology requirements, please contact a TFS Education Specialist.

Contact Information

For any questions, please contact Teaching From Space at JSC-Teaching-From-Space@mail.nasa.gov or (281) 244-7608.