National Aeronautics and Space Administration  ****

In-flight Education Downlinks

Planning Guide

# **Introduction**

This planning guide offers information about the process and requirements to host 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 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, public event serving formal and informal education communities in the United States and U.S. territories.
* Supports a comprehensive suite of education activities proposed by host organizations to enhance student learning in STEM; science, technology, engineering and mathematics.
* Is a live broadcast on NASA Television and streamed live on [NASA’s website](http://www.nasa.gov/nasatv).
* Can only occur Monday – Friday between the hours of 8 a.m. and 1 p.m. Central Time.

## **Why does NASA provide 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 Office of STEM Engagement facilitates these events, designed to enhance student interest, learning and performance in STEM.

## **Is my organization a good fit to host a downlink?**

A downlink may be a good fit if your organization:

* Is a formal or informal educational organization located in the United States or U.S. territories.
* Has the flexibility to adapt to downlink date and time changes.
* Can secure a large student and/or educator audience.
* Can assemble a team to handle the education, outreach, technical and logistical components.

# **The Proposal Process**

Downlink details are found on the [In-flight Education Downlinks webpage](https://www.nasa.gov/audience/foreducators/stem-on-station/downlinks.html). Proposals are typically accepted twice per year. Following a proposal submission period, a committee evaluates submissions and selects organizations to host a downlink. Due to limited opportunities, NASA is not able to accommodate all proposals. If your proposal is selected, you will be provided with additional contact information and instructions. Organizations that host a downlink are **required**to report on education and outreach plans and activities as well as provide metrics, quotes and evaluations related to the downlink.

## **How will NASA evaluate proposals?**

To be considered for evaluation, complete the proposal form, paying close attention to the instructions for each section. This document includes tips to help you write a proposal that will receive strong consideration. Proposals are limited to 16 pages in length, excluding any optional letters of support.

## **General tips**

* Be as specific as you can with plans and involve all parties in every section of the proposal.
* Integrate NASA content into your education plan. Links to a variety of NASA resources are provided in this guide to assist you in connecting this content to your education plan.
* Incorporate partnerships which have a lasting impact on the community.
* Think about ways you can include students in the different components.
* Include as many availability dates as possible. The greater the flexibility of dates, the more likely your organization will be selected to host a downlink.
* The more stakeholders committed to support your specific plans, the better. **A downlink is a large event that cannot be effectively orchestrated by one person.**
* Proofread the proposal before submitting to ensure all information is complete and accurate.
* Include pictures/graphics within each section of the proposal when applicable.
* Attend an online informational session. Email us for session times.

# **Themes**

Downlinks can have a greater impact on students, participants and the community if the downlink and supporting activities are centered on a theme. Building downlink plans around a theme is not mandatory, but may help organizations plan effective activities and events. A successful theme is meaningful to the organization, participants and communities and should help the organization reach its overarching goal for the downlink. The NASA programs and activities listed below may help organizations identify a theme to connect participants with NASA. You will find resources for many of these themes at [NASA’s Next Gen STEM website](https://www.nasa.gov/stem/nextgenstem/index.html).

[**Artemis**](https://www.nasa.gov/specials/artemis/): With the Artemis program, NASA will land the first woman and next man on the Moon by 2024, using innovative technologies to explore more of the lunar surface than ever before. The next generation of explorers, the Artemis Generation, will overcome challenges, solve problems and develop technology needed to establish a sustained human presence on the Moon and send the first humans to Mars.

[**Commercial Crew**](https://www.nasa.gov/exploration/commercial/crew/index.html): NASA’s Commercial Crew Program supports the development of non-NASA markets for commercial human transportation services to and from low-Earth orbit. Commercial Crew is the first step toward making human space travel accessible to all people.

[**Expeditionary Skills**](https://www.nasa.gov/audience/foreducators/stem-on-station/expeditionary-skills-for-life.html): Expeditions are journeys made by people who share a definite purpose and specific experiences. To make their expeditions successful, NASA works with astronaut crews on skills that prepare them to live and work together during space missions. Some of these same skills are useful in everyday life here on Earth.

[**International Space Station 20th Anniversary of Human Presence**](https://www.nasa.gov/feature/nasa-counts-down-to-twenty-years-of-continuous-human-presence-on-international-space-station): NASA and its partners have successfully supported humans continuously living off planet since November 2, 2000. After nearly 20 years of continuous human presence, the space station remains the sole space-based proving ground and steppingstone for reaching the Moon in 2024 with the Artemis program.

[**Space Station Science**](https://www.nasa.gov/mission_pages/station/research/index.html): The International Space Station, one of the most ambitious international collaborations ever attempted, is a convergence of science, technology, and human innovation that provides humanity a one-of-a-kind proving ground for deep space exploration. It is a demonstration platform for new technologies and research laboratory for breakthroughs not possible on Earth, contributing to deep space exploration capabilities and benefiting life on Earth.

# **Dates Available for an In-flight Education Downlink**

The dates that downlinks occur depend on mission operations and crew member schedules for the International Space Station; because of this, we cannot choose dates for downlinks to occur, but instead match clients to dates that become available. Flight operations are fluid, organizations must be flexible to a date change if selected.

* Include **all**dates your organization is available for a downlink. A proposal with only a few dates listed cannot be considered for selection.
* Check your calendar for holidays, testing or anything else that would interfere with a downlink.
* Completely blackout any dates that your organization is unable to host a downlink.
* Downlinks cannot occur on weekends or federal holidays. **Do not add dates to the proposal form calendar**.
* Downlinks can only occur between 8 a.m. and 1 p.m. Central Time. **Do not list dates or times that you cannot host the event within this time range**.
* List a preferred 2-hour time window—this information will not hurt your availability for a downlink, but it will be used during scheduling if you are selected to host a downlink.

# **Impact Statement**

The impact statement portion of the proposal is to explain who you are as an organization, why your organization and community have a desire to host the downlink, and how it will impact your students and community. The impact statement is considered the most important section of the downlink proposal by the selection committee.

## **What are some tips for creating a strong impact statement?**

* Focus the narrative of the impact statement on how a downlink will benefit participants, the organization and the community.
* If building the downlink and education plan around a theme, tie the theme into the impact statement.
* Include demographics for the participants/organization and community.
* Choose a writing style that best represents your organization’s goals in being selected for a downlink—can be formal or informal.
* The selection committee is human. Pictures, short stories, etc. can help them feel connected to your organization – but it must all fit on one page.
* Some of the following items may help tell the narrative of how the downlink will benefit participants. Do not treat these items as a checklist, only include them if they help the narrative.
	+ The organization’s educational goals or vision, specifically any STEM related goals.
	+ The organization’s previous experience with NASA programs.
	+ Successes (with metrics) from previous big events hosted by the organization.
	+ Special considerations (ties to crew members, community needs, etc.).

# **Pre In-flight Education Downlink Educational Plan**

A downlink is not an isolated educational event; it is a highlight to an educational plan. Let the selection committee know what your organization’s learning objectives are and what activities and resources will be a part of the plan to achieve these objectives and prepare students for the downlink. Education plans should include one paragraph explaining how your organization will adapt plans to online learning if local circumstances require it.

## **What are some tips for creating a strong education plan?**

* Describe the audience for the downlink and education plan.
* Explicitly state your learning objective(s). Do not list state/national standards. List objectives that you want to accomplish for/by students in plain language. Typically, narrowing learning objectives to one or two objectives with a high level of focus on accomplishing these objectives is more effective than identifying several learning objectives. If using a theme for the downlink, the learning objectives should tie into the theme.
* Specifically name activities and resources that will be a part of the educational plan.
* Involve multiple disciplines in the educational plan, not only STEM courses.
* Reach out to the community and other organizations to provide special experiences. List organizations you have reached out to and what they have committed to do in assisting the education plan.
* Explain how you will ensure educator/student/participant buy-in to the educational plan.
* [This video](https://www.youtube.com/watch?v=UQAmZGmV-xU&feature=youtu.be) from a former downlink host provides example activities they conducted as a part of their educational plan.

## **What kinds of NASA resources are available?**

NASA offers a variety of resources including websites, printed materials, student and educator programs, and professional development opportunities. In addition to the links provided below, you can check with NASA’s Office of STEM Engagement personnel for information on other NASA resources.

[**Astronaut Biographies**](https://www.nasa.gov/astronauts/biographies/active)***:*** 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**](https://www.nasa.gov/station)***:*** This is the main site for space station related news, activities and resources. Check out the Expedition page for the crew you could be talking to in order to learn more about their mission. Explore the multimedia resources to learn how the space station was built and how the science and research benefits humankind.

### [**NASA STEM Home Page**](https://www.nasa.gov/stem)***:*** This site serves as a gateway to information on NASA Office of STEM Engagement opportunities and resources for educators and students. 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**](https://www.nasa.gov/about/exhibits/indexFeature-RequestExhibit.html): The NASA Exhibit Program encompasses exhibits, artifacts and visitor centers located at each of the ten NASA Centers and Smithsonian 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.

### [**NASA Express Message**](https://www.nasa.gov/stem/express)**:** Subscribe to NASA Education’s weekly e-newsletter and stay in the know about upcoming opportunities and newly released education resources.

### [**Spot The Station**](https://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!

### [**STEM on Station**](https://www.nasa.gov/stemonstation)**:** 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 opportunities.

# **Outreach Plan**

A downlink is expected to be a large-scale, public event. Most organizations that are selected to host a downlink have at least a few hundred participants on-site during the event. A downlink should help inspire not only the targeted audience, but also the community.

## **What are some tips for creating a strong outreach plan?**

* The media point of contact (POC) on your proposal should be someone who will contact media outlets and promote the event in the community. Have them write or assist with this section.
* Be specific in what media outlets you will work with to promote the event **and** which media outlets will be invited to the event to report on it.
* Think big on your list of VIPs—including those in state and/or federal positions, heads of local organizations, former astronauts that live in the area, celebrities, etc. List their names and titles. Even if they decline the invite, it will make them aware of the great things going on.
* Find ways to involve students or the target audience in the outreach plan.
* Be specific on how social media will be used to reach out to the community.

# **Facilities/Technology Logistics Plan**

A downlink is not possible without facilities and technology. Do your homework on the facilities to ensure it will have the necessary technical components needed. The platform to connect for a downlink is through Skype. NASA recommends minimizing use of all networks during the event. This dedicates as much bandwidth as possible to Skype, resulting in a better-quality video.

## **What are some tips for creating a strong facilities/technology plan?**

* Name the event location and capacity. You want a large audience but also a place conducive to required technology. Location availability must also be flexible for potential date or time changes.
* The technical POC on your proposal should understand the systems in the facility that you plan to host the event. Have them write or assist with this portion.
* Be specific on the equipment that will be used during the event so the review committee is confident you can handle the technical requirements of a downlink.
* Include a picture of the venue for your downlink.

## **What technology is needed to host a downlink?**

The following equipment is required to host an In-flight Education Downlink:

* 1. Dedicated computer running Skype, with a hard-wired internet connection.
	2. High-quality external microphone plugged into the computer.
	3. External video camera plugged into the computer. An external webcam is acceptable.
	4. Audio mixer/soundboard with a minimum of 4 channels with necessary cables.
	5. Video projector plugged into the computer and projecting the Skype image on a large screen.
	6. Digital Hybrid (provided and shipped by NASA for the event).
	7. A desktop phone with handset connected to a hardwired phone line. This will serve as a **backup**for Skype using the digital hybrid. It is intended only to bridge the gap if a Skype outage occurs – if Skype is lost, we will reinitiate the Skype session and switch back to it as soon as possible.
	8. Mobile phone with earpiece. This will serve as a coordination line between the host organization’s producer for the event and NASA TV Producer.

Organizations selected to host a downlink will have a digital hybrid shipped to them at least three weeks prior to the downlink. These digital hybrids serve as the back-up communication link in case the primary connection method fails. Most organizations provide the remaining needed technology for a downlink. In the event an organization does not have the required equipment, they may request a downlink technology kit from NASA. This kit includes an external microphone, external video camera, an audio mixer and cables to make connections.

## **What are the requirements for testing technology for the downlink?**

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.

On 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 TV producer who will stay on the line throughout the downlink. The technical team at the location is responsible for overall coordination of the technical aspects. This includes setting up and testing the equipment, communicating with the NASA TV 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 during a downlink?**

The host organization will see and hear the crewmembers. The crewmembers typically are only able to hear the questions. The NASA TV audience will see and hear the crewmembers and the question askers at the host organization. A recording of the NASA TV production of the downlink will be posted to YouTube.

### **Do you have any technology tips?**

* **Room layout** – Speakers and viewing screens should be placed so the audience and participants can see and hear the downlink. Design a seating plan so participants have quick access to the microphone. Plan to have the technical POC in the same room as the downlink participants.
* **Ambient noise** – Choose a room in which noise can be reasonably controlled and ensure all PA announcements and bell systems have been turned off. Any background conversations, theme music, sound effects, etc. will make it very difficult for the crew to hear.

# **Logistics for Day of In-flight Education Downlink Plan**

Several logistical details go into planning the downlink as well as the activities surrounding it that day. Describe logistical tasks such as collecting and selecting questions to ask crew members, collecting Talent Authorization Forms (required for anyone that appears on NASA TV), transportation required to get participants to the facility (if needed), the activities surrounding the downlink and community partnership involvement.

## **What are some tips for creating a strong logistics plan?**

* Do **not** make the downlink your only activity for the day.
* Invite community partners to participate in presentations or providing activities during the day. List community partners that have made a commitment to help out on the day of the event.
* Include plans for rehearsing the downlink before the event.
* Include plans to collect talent authorization forms for participants that appear on NASA TV.
* Provide a sample schedule about the day including educational activities and logistical activities.

# **Virtual Audience Event Contingency Plan**

In-flight Education Downlink are powerful events, inspiring participants in an audience. If local circumstances do not allow for a safe physical gathering, the downlink format may change from an in-person audience to an event with a completely virtual audience. An event with a virtual audience requires questions submitted as videos. Include the organization’s contingency plan to facilitate the downlink as a virtual event.

## **What are some tips for creating a strong virtual audience event contingency plan?**

* Give specific and detailed information on the process for collecting and selecting video questions from participants.
* Give specific and detailed information on the process for collecting Talent Authorization Forms from participants.
* Use a platform and create a program that will engage participants in more than the 20-minute downlink.
* Be creative on using community partnerships to enhance the virtual event.
* Think about strategies to include participants who lack resources to succeed in virtual learning.
* Think about how you will measure the impact of the downlink on the virtual audience.

# **Post In-flight Education Downlink Educational Plan**

A downlink is an event to spark interest in STEM. Post-downlink activities should continue to nurture the interest of students and provide support to follow up on desires to pursue STEM studies and careers.

## **What are some tips for creating a strong post-downlink education plan?**

* Indicate how you will identify students/participants who increased interest in STEM after the downlink.
* Be specific in plans and activities to support and nurture students’/participants’ interests in STEM.
* Identify how the community will be involved in the post-downlink education effort.

# **Letters of Support**

Letters of support from community partners, community leaders, legislators, etc. provides evidence your organization has the support needed to follow-through with plans listed in the proposal. Including letters of support with the proposal is optional. You may copy and paste letters of support directly into the proposal as images at the end of document, combine them with the document as a single pdf file or attach them as separate files when you submit the proposal.

**\*** Proposals are limited to 16 pages in length, excluding any optional letters of support.

For any questions, please email us