



STEM on Station: ISS LABS: Learning, Achieving, Believing, Succeeding

A Digital Learning Network Experience
for
Grades 6-8th



Grades	6-8 th
Subject Areas	Science, Technology, Engineering , Mat h

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Digital Learning Network (DLN) Program

A DLN Program is a one-time connection that allows students to experience NASA first-hand. Each expedition features an integrated educational package of grade-appropriate instruction and activities centered around 60 minute videoconference. Students will actively learn with a NASA Education Specialist or a NASA Subject Matter Expert.

STEM on Station

Grade Level 6-8th

Focus Question

How is Science, Technology, Engineering, and Math (STEM) used aboard the International Space Station (ISS)? How is this relatable to STEM topics in the classroom and life here on Earth?

5-E Learning Objectives

Engage	The learner will (TLW) share their prior knowledge of the ISS with the NASA education specialist
Explore	TLW demonstrate each of the STEM pre-activities
Explain	TLW interpret results of each STEM pre-activity
Elaborate	TLW predict what the results of each STEM pre-activity means for the operation and research aboard the ISS.
Evaluate	TLW reflect and share their experiences, following completion of each STEM pre-activity demonstration.



Education Standards

National Science Education Standards (5-8th)

Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

Science and Technology

- Abilities of technological design
- Understanding about science and technology

Texas Essential Knowledge and Skills – Science (6-8th)

112.18 b2 (6th), 112.19 b2 (7th), 112.20 b2 (8th)

- Scientific investigation and reasoning: The student uses scientific inquiry methods during laboratory and field investigations.

Texas Essential Knowledge and Skills – Math (6-8th)

111.22 b13 (6th), 111.23 b15 (7th), 111.24 b16 (8th)

- Underlying processes and mathematical tools: The student uses logical reasoning to make conjectures and verify conclusions.



Pre-Conference Activities

The purpose of a pre-activity is to expose students to the content learned in this DLN module. Completing the pre-conference activities improves the interaction between students and the NASA education specialist during the videoconference, and results in a better overall educational experience.

The following activities are strongly recommended but not required:

S- Crystal Growth in Space



T- International Space Station Robotic Arm



E- High Velocity Debris: Space Suit Protection



M- Problem Solving: Saving Space Station Power



For more information regarding STEM and ISS content, please visit the recommended sources found in the *Resources* section.



Before Your Video Conference

Audience Guidelines

Teachers, please review the following points with your students prior to the event:

- A videoconference is a two-way event. Students and NASA presenters can see and hear one another.
- Students are sometimes initially shy about responding to questions during a distance learning session. Explain to the students that this is an interactive medium and we encourage questions.
- Students should speak in a loud, clear voice. If a microphone is placed in a central location instruct the students to walk up and speak into the microphone.
- Teacher(s) should moderate students' questions and answers.

Pre Video Conference Checklist

1. _____ Print a copy of the module.
2. _____ Collect pre-activity materials prior to the conference (pg. 5)
3. _____ Have students complete the recommended pre-activities.
4. _____ Review the Audience Guidelines above.



During and After Your Video Conference

Outline for Videoconference

- I. Welcome and introduction
- II. The International Space Station (ISS)
- III. Purpose of ISS
- IV. ISS components
- V. ISS Research (Science)
- VI. ISS Robotic Arm (Technology)
- VII. Spacesuit debris protection (Engineering)
- VIII. Solar energy generation (Math)
- IX. Future of ISS
- X. Questions and Answers
- XI. Good-bye

During Video Conference Materials

- I. Supplies for each STEM Pre-activity should be on hand. Students should be prepared to demonstrate the activities in class themselves and discuss the results with their presenter during the program.

Post-Conference NASA Online Feedback

We value your input! By providing us with feedback, you help continue improving our programs and help them remain free of cost to educators across the country. Feedback from you and a few of your students would be appreciated. Please complete an online evaluation form to provide feedback on the NASA Video

Conference Program at <http://dln.nasa.gov/dln/content/feedback/>. Your presenter should send you more specific instructions after your connection.