

CHALLENGER LEARNING CENTER OF MAINE EXPLORATION LAB

Teacher Information

Exploration Lab stands alone as an exploration into hands-on math and science set in our simulated Mission Control and Space Lab environments. Skills and topics addressed vary somewhat based on grade level.

Activities may include:

- Developing and testing hypotheses
- Observing and testing magnetism
- Using a balance
- Adding a list of numbers
- Summarizing information
- Labeling latitude and longitude
- Transferring information from a map
- Communicating over a headset
- Following directions
- Recording results
- Using a robotic arm to gather results
- Viewing and recording visible spectrum gases
- Working within a glovebox
- Recording and comparing data

BEFORE YOU ARRIVE

We request that you buddy your students in pairs before they arrive. We also recommend that you explain to the students that they will have a chance to try out a number of stations during their visit, however they may not get to every station.

We recommend a total of 2-4 adults to accompany the class (including teachers). One of the adults will be positioned at a station throughout the program to assist with an activity. More adults may be needed if students are non-readers.

PRE-MISSION ACTIVITIES FOR YOUR CLASSROOM

While there are no specific educational requirements prior to participating in Exploration Lab, the experience may be enhanced if one or more of the following are offered prior to coming to Challenger:

- Explain to your students that they will be given the opportunity to become NASA scientists and engineers for the day. Share how this relates to your classroom's learning goals.
- As a class, read books that address different fields of science and engineering, and how they relate to our daily lives.

POST-MISSION ACTIVITIES

De-Briefing

As soon as possible after your visit, provide time for your students to share general observations and reactions to their experiences.

To continue the theme of students-as-scientists, here are some questions to explore in the classroom:

- How did you think/ behave like scientists and engineers while at the Challenger Center? Have you noticed your self thinking/ behaving like a scientist since then?
- Did we learn how to use any tools or engage in any activities that would be useful for scientists that might work in fields other than NASA? Would any of these tools or activities be useful in our everyday lives?
- What kind of information did we collect? How did we document/ share our findings?
- Choosing two of the Challenger activities, describe how the tools and the processes were the same or different?
- Were any hypotheses formed that needed to be rejected after testing? Is it bad to make a wrong prediction? Why or why not?
- What is a successful scientific experiment? What is a successful engineering project?
- Did your observations or findings make you wonder about anything else?

For more Talk Science resources and a class discussion checklist, visit: <http://inquiryproject.terc.edu/>

Extension Activities

- Link Exploration Lab activities to multiple curricular areas. For example, students could:
 - develop vocabulary lists based on their experience
 - record their experiences in their writing journals
 - complete math problems related to their data tables (i.e. summing the total mass of the moon rocks or graphing results of visual reaction tests)
 - have students create a short article for a classroom "science journal."
- Integrate NASA activities, videos, etc. into your lessons: nasa.gov/audience/foreducators
 - search a database organized by grade and subject: nasawavelength.org
 - search science video clips: nasaclips.arc.nasa.gov
- Create a classroom bulletin board displaying data and communicating findings obtained during Exploration Lab, along with student ideas on what it means to "do science."

General Science PD for Teachers:

Books:

- *Ready, Set, Science! Putting Research to work in K-8 science classrooms* by Sarah Michaels, Andrew S. Shouse and Heidi Schweingruber
- *Understanding Science: How Science Really Works*
<http://undsci.berkeley.edu/index.php>
- *Primary Science: Taking the Plunge* by Wynne Harlen

Webinars:

- Searchable NASA database: txstate-epdc.net/events

We look forward to working with you and appreciate your feedback.

Please contact Jennifer Therrien at (207) 990-2900 ext. 3 / jtherrien@astronaut.org. Thank you!