Lesson 14: Pre-Mission Preparation II

Preparatory Readings

LP #	Unit 1: Mission Bfg/ App Process
Mission Briefing	
1	The Mission
1	We Need You
1	Space Station Alpha
opt	Verizon
How to Apply	
2	Apply Today
2,3	Personal Essay
2,3	Class Activity: Station Systems
opt	Mission Patch

LP #	Unit 2: Space Weather
4	Specialist Orientation
Chapter 1	
4	Here Comes the Sun
4	Inside the Atom
5	Sheer Magnetism (Hands On)
5	Dr. Z: Inside the Sun

LP #	Unit 3: Radiation Health
Chapter 2	
7	New Frontiers & New Dangers
8	Electromag Rad: Taming the Wild Energies
7	Do You Want the Recipe?
7	In the Kitchen with Poly
7	Measuring Exposure to Radiation
Enrichment Activities	
7	Ready, Aim, Mutate! (Hands On)
7	Sweet Dreams are Made of These (Hands On)
7	Are You Too Hot? (Hands On)

LP #	Unit 4: Power Systems
Chapter 3	
9	The Energy Supply Problem
9	Rechargeable Batteries
10	All About Power
10	Emergency Procedures
10	Practice Ex: Power on the SS (Hands On)
Enrichment Activities	
10	Electrical Current Mag Field (Hands On)
10	Electrical Circuit: Quick Guide (Hands On)
10	Nailing Down Energy (Hands On)
10	A Shocking Discovery (Hands On)
10	Electrolysis (Hands On)
10	It's Electric (Hands On)

LP #	Unit 5: Life Support
Chapter 4	
12	How I Discovered Air
12	A Weighty Discovery
12	Living in a Bubble
12	Breathing on the Space Station

LP #	Unit 6: Pre-Mission Prep
13	Overview of Teams
13	Mission Directives
13	Classroom Setup
Team Preparation Introductions	
13	STORM Team Overview
13	Radiation Team Overview
13	Power Team Overview
13	Life Support Team Overview
13	Communications Team Overview

Other Homework Due: Students read their Team packets

Subject

Students participate in the DATA Race.

Teams discuss a "What if…" and report to rest of class.

Description of Student Activities

The "DATA Race" runs for 20 minutes. Reward the team that can accurately process the most data sets with an appropriate prize or form of recognition. All teams should be fairly even in their work.

Given the data that was processed during the 20-minute race, have each team prepare a brief report (10 min.) on the trends revealed by the data and any recommendations to Mission Control regarding precautionary actions the astronauts should take under the given conditions. Have them refer to online materials such as their team's Space Station Reference Guides.

Duration

(25 min.) Data Processing Race
(20 min.) Team reports to rest of class

Main Topics

1. Graphs and tables are valuable scientific tools.
2. Simulations help people prepare for unforeseen events.

Materials

Practice Data for Data Processing Race
Team Reference Guides
Team Preparation Materials

Outcomes

- The students will generate tables to convert raw data into meaningful information.
- The students will generate graphs to convert raw data into meaningful information.
- The students will compare the use of tables and graphs.
- The students will predict outcomes based upon trends revealed by both tables and graphs.

Special Comments:

The Communications Team must keep up with the flow of data during the race, check all team reports for accuracy (against the teacher "masters") and inform each team if they have made an error in a report. One computational error can affect the outcome of an entire table. The Communications Team gives each team a new set of data as soon as the teams turn in their Report Forms from the previous set of data. They must be organized, fast in their work, and even-handed in their dealings with each team messenger. Their leadership skills are revealed by their calmness under pressure.

Procedure:

(20 min.)

1. Set the classroom up as described in the article, "Classroom Set-up." Conduct the DATA Race. Award the team that processes the most raw data in 15 minutes with an "appropriate" prize.
2. Suggest that all students will participate in the race for practice. The first student on the team to complete the data correctly and check it against the computation of two other students will fill in the Report Form and deliver it to the Communications team. Suggest that if they have questions, they should raise their hands and you will help them figure out whatever the problem may be.

(20 min.)

3. After the "award ceremony" all teams discuss the implications of the data that they processed during the race using the information from the Team Reference Guides and Team Preparation Materials. Give them 5 – 10 minutes to discuss the data and decide upon the "time to criticality" and the data trends. Have each team make a quick report to the rest of class.

   During this period, the Crisis Management Team members from each team should huddle together and go over their team's instructions. They should prepare the ***Space Station Alpha Crisis Status Board*** *and the* ***Space Station Alpha Floor Plan****.*

   Without their Crisis Manager present, each specialist team will pull together to prepare its evaluation of the situation that has been developing based upon the data they processed during the DATA Race.

   This is also a good time to huddle with the Communications Team and discuss the Report Forms, Report Form priorities, and verbal and written communications protocols.

4. Make sure that all students know where to report for the e-Mission and that they have all received permission from the appropriate teachers to attend a double science class.

Homework for Lesson 15 (The Mission)

As your next Mission Log entry, answer two questions: For your team assignment, what conditions constitute an emergency situation on the space station? If this emergency should arise, what are the options your team might recommend to Mission Control to help the astronauts avoid danger?