Mission Meals™

A Mini EdVenture about Space Food

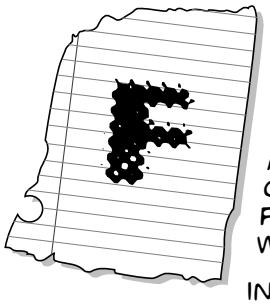
teacher's guide

This activity is part of Challenger Center's Vista Station™ Program. For more information on how to purchase Vista Station™ to use in your classroom, visit www.challenger.org/store.

Another Series of Challenger Learning EdVentures from

Challenger CENTER®

Food Detective
Activity Station #5



FOOD WILL BE A VERY IMPORTANT COMPONENT OF THE SPACE STATION. UNLIKE, SPACE SHUTTLE MISSIONS, IN WHICH ASTRONAUTS EAT THE FOOD FOR SHORT PERIODS OF TIME, THE ASTRONAUTS ON A SPACE STATION WILL BE CONSUMING THESE FOOD OVER A LONG PERIOD OF TIME. BECAUSE OF THIS FOOD, SCIENTISTS MUST MAKE SURE THAT THE FOODS ARE APPEALING AND NUTRITIOUS. A GREAT DEAL OF RESEARCH GOES INTO THE PREPARATION OF FOODS FOR SPACE. ASTRONAUTS MUST HAVE MEALS THAT ARE WELL-BALANCED AND CONTAIN ALL OF THE NECESSARY NUTRIENTS.

IN THIS ACTIVITY YOUR STUDENTS WILL HAVE THE OPPORTUNITY TO ANALYZE SOME FOODS FOR NUTRIENT CONTENT. THESE ACTIVITIES ARE MUCH SIMPLER THAN THE RESEARCH THAT FOOD SCIENTISTS UNDERTAKE BUT THEY WILL GIVE YOUR STUDENTS AN UNDERSTANDING OF THE ABILITIES NEEDED TO ANALYZE AND ISOLATE CERTAIN FOOD TYPES.

Key Concept

CAN CERTAIN NUTRIENTS BE FOUND IN FOODS?

Objectives

STUDENTS WILL:

- DEVELOP A CONTROLLED EXPERIMENT.
- ANALYZE FOODS FOR CERTAIN NUTRIENTS.

Preparation & Management

1) COPY THE STUDENT WORKSHEET
2) PLACE ALL OF THE NECESSARY MATERIALS AT THE WORK STATION.
3) TRY ANY CEREAL THAT HAS 100% OF THE DAILY REQUIREMENTS OF IRON. TOTAL® CEREAL WORKS VERY WELL.
4) YOU MAY WANT TO GIVE YOUR STUDENTS THE OPPORTUNITY TO TRY A VARIETY OF CEREALS.

Transfer & Extension

1) HAVE YOUR STUDENTS LOOK FOR THE LIST OF NUTRIENTS ON FOOD WRAPPERS.
2) HAVE YOUR STUDENTS RESEARCH FOODS THAT ARE HIGH IN MINERALS.
3) HAVE BOOKS AVAILABLE ON NUTRITION. ASSIGN EACH CLASS GROUP A NUTRIENT THAT THEY MUST LEARN ABOUT. CARBOHYDRATES, PROTEINS, FATS, VITAMINS, MINERALS, AND WATER ARE THE CATEGORIES THEY SHOULD RESEARCH.

Student Worksheet

FOOD SCIENTISTS MAKE SURE ASTRONAUTS HAVE GOOD, NUTRITIOUS FOODS WHEN THEY ARE IN SPACE. THIS IS ESPECIALLY IMPORTANT WHEN THE ASTRONAUTS ARE LIVING ON A SPACE STATION. ON A SPACE STATION ASTRONAUTS STAY IN SPACE FOR A MUCH LONGER TIME THAN ON A SPACE SHUTTLE. SCIENTISTS HAVE WAYS OF TESTING FOODS TO SEE WHAT KINDS OF NUTRIENTS THEY HAVE IN THEM. THIS IS YOUR CHANCE TO BE A FOOD DETECTIVE AND TRY TO FIND THE NUTRIENT, IRON, IN A FOOD.

IS THERE IRON IN CEREAL?

IRON IS A NUTRIENT. IT IS FOUND IN FOODS SUCH AS GREEN, LEAFY VEGETABLES AND RED MEAT. IN A PERSON'S BODY, IRON HELPS CARRY OXYGEN TO THE PLACES THAT NEED IT. IN THIS EXPERIMENT YOU WILL REMOVE THE IRON FROM CEREAL. UNLIKE GREEN, LEAFY VEGETABLE AND RED MEAT, CEREAL ONLY HAS IRON IN IT BECAUSE FOOD SCIENTISTS ADD IT TO THE CEREAL WHILE THE CEREAL IS BEING MADE.

Questions & Conclusions

1) LOOK UP THE WORD, MAGNETIC, IN THE DICTIONARY.

2) EXPLAIN HOW YOU REMOVED THE IRON FROM THE CEREAL.

3) CAN YOU THINK OF ANY OTHER USES FOR THE MAGNET?

4) WHAT COLOR IS IRON?

Challenger Center Programs

The internationally acclaimed **Challenger Learning Center** Network currently consists of state-of-the-art, innovative educational simulators located at 49 sites across 29 states, Canada, and the United Kingdom. Staffed by master teachers, the core of each Center is a two-room simulator consisting of a space station, complete with communications, medical, life, and computer science equipment, and a mission control room patterned after NASA's Johnson Space Center. See *www.challenger.org* for information.

A joint initiative of Challenger Center for Space Science Education, the Smithsonian Institution, and NASA, ***Voyage — A Journey through our Solar System*** is a space science exhibition project that includes permanent placement of a scale model solar system on the National Mall in Washington, DC, and at locations all over the world. See *www.voyageonline.org* for information.

Space DaySM launches new *Design Challenges* created by Challenger Center each school year. The inquiry-based challenges are designed to inspire students in grades 4-8 to create innovative solutions that could aid future exploration of our solar system. See *www.spaceday.org* for information.

Challenger Center's ***Journey through the Universe*** program provides under-served communities with diverse national resources, including K-12 curriculum materials, teacher workshops, classroom visits by scientists from all over the country, and Family Science Nights. See *www.challenger.org/journey* for information.

The **MESSENGER** spacecraft (MErcury Surface, Space ENvironment, GEochemistry and Ranging) is to be launched in 2004 and go into Mercurian orbit in 2009. Challenger Center is one of the partner organizations charged with MESSENGER education and public outreach activities. See *www.messenger.jhuapl.edu* for information.

Through the Challenger Center **Speakers Bureau, Voyages Across the Universe**, staff members speak to student audiences of 30-1,000, conduct workshops for 100-300 educators, give keynote and featured presentations at conferences, as well as conduct Family Science Nights at the National Air and Space Museum, and other facilities across the nation, for audiences of 300-1,000 parents, students, and teachers. See *www.challenger.org/speakers* for information.

For information about other Challenger Center programs,
or to purchase our classroom resources, visit www.challenger.org/store.