

Lesson Update and CRT Addendum	
Lesson/Activity Title: Food for Thought: Extension: Burning Question- Which Foods to Take to Mars?	ID: 7-705
Product Number: EG-2011-08-00005-SSC	Grade: MS
URL for Lesson: https://www.nasa.gov/pdf/591741main_Food-For-Thought.pdf	
Subject: Energy conversion, caloric density versus nutrition	
Summary: This extension has students measure the amount of energy contained in various foods and determine the foods suitability for inclusion on a mission to Mars.	
Materials for Lesson: Lesson has detailed materials list for each activity.	

Review and Recommendations	
ALIGNMENT TO STANDARDS	
NGSS	MS-PS1-6, MS-PS3-4, MS-LS1-7, MS-LS2-1, MS-LS2-3, MS-LS2-4, MS-ESS2-1
Common Core State Standards in Mathematics	
CULTURAL RESPONSIVE TEACHING (CRT) RECOMMENDATIONS	
5E Lesson/Description	
1. Engage	<p>The previous activities, Mars Needs Food! should be included to put the calorimeter activity in better context. Students should also be asked to share foods they eat at home that are part of their cultures and as this lesson progresses the value of those foods inclusion in the menu for long space travel should be explored and included. In Part Two of the previous investigation (Guess Who’s Coming to Dinner, step 5 on page 7) there is a specific task for students to include food for astronauts from different countries, this is an opportunity to allow students with families from other areas to take a lead role in the discussion.</p> <p>Include foods taken on earlier manned space travel (Gemini and Apollo).</p>

<p>2. Explore</p>	<p>Adding the preceding activities gives much more opportunity to fully explore the lesson, provides depth, rigor, and the opportunity for critical thinking and student engagement.</p>
<p>3. Explain</p>	<p>While there isn't a separate vocabulary list, there is a lot of potential for vocabulary building here and having ESL students share the vocabulary equivalents in their home languages.</p>
<p>4. Expand/Enhance</p>	<p>Students could prepare and sample foods that have been preserved in various ways that may make them able to be carried on a space voyage.</p> <p>The calorimeter activity is a good chance to talk about and explore the difference between junk foods and healthy alternatives.</p> <p>Discuss with students the importance of various scientific disciplines in space exploration. Often students think only of engineers and “rocket scientists”, but nutritionists, medical personnel, logistics managers, and all types of scientists, mathematicians, and workers are needed for the program to be successful. Use this as an analog for the need for diversity in our society in general and highlight the wonderful diversity of the students in the classroom.</p>
<p>5. Evaluate</p>	<p>Within the activities the various activities have charts and worksheets for students to organize their work. These can be used to summatively assess student work and understanding. Teacher should be using student responses and participation in discussions to formatively assess and drive the lesson.</p>

Additional Resources: