

Lesson Update and CRT Addendum	
Lesson/Activity Title: Lunar Landing Sites	ID: 8-708
Product Number: EG-1997-10-116-HQ	Grade: MS
URL for Lesson: https://tracs.txstate.edu/access/content/group/1f661749-a288-4c82-af20-eac949ac1c67/Lesson%208/_8_%20708%20Lunar%20Landing%20Sites%20_1_.pdf	
Subject: Mass, velocity, geology, design, experimental modeling,	
Summary: Within a given background of the Moon’s geological conditions, students design spacecraft, choose landing sites, and plan a lunar mission. This is a hand-on activity that culminates with oral, visual, and 3-dimensional presentations.	
Materials for Lesson: Lesson has detailed materials list for each activity.	

Review and Recommendations	
ALIGNMENT TO STANDARDS	
NGSS	MS-ESS1, MS-ESS2, MS-PS2-2, MS-PS2-4, MS-PS3-1, MS-PS3-2, MS-PS3-3, MS-PS3-5, MS-ETS1
Common Core State Standards in Mathematics	The lesson doesn’t have explicit requirements that align with CC Standards, however there is ample opportunity to include graphing, statistics, and comparison throughout the activity.
CULTURAL RESPONSIVE TEACHING (CRT) RECOMMENDATIONS	
5E Lesson/Description	
1. Engage	<p>Teacher can lead a discussion about various generations “Events” that impact culture so profoundly that everyone that experiences them, they remember exactly where they were and what they were doing at that moment. (Moon Landing, 9/11, Kennedy Assassination...) Prompt students to share any moments they may have experienced or that are important to their cultures.</p> <p>Teacher can discuss with the class the rapidity with which technology grows (From Wright Brothers to Moon landing was less than 60 years. Rate has increased exponentially since then.) and show video of Wright Brothers flight and the Moon Landing.</p>

	Teachers should also spend time reviewing pertinent vocabulary and making connections to students' home language is applicable.
2. Explore	The primary activity is very concrete and hands-on. Opportunities are provided for multimodal learning.
3. Explain	Much of this section should come directly from the students, directed and refocused when necessary by the teacher. Students should be explaining their process and asked high order open-ended questions throughout the activity.
4. Expand/Enhance	The "Heavy Lifting" Activity or any of the other activities included in the additional resources would nicely expand or enhance this activity.
5. Evaluate	The presentations at the end provide ample opportunity for formalized summative assessment. Formative assessment can and should occur throughout the process.

Additional Resources:

SLS Resources for the Classroom:

<http://www.nasa.gov/exploration/systems/sls/outreach/classroom.html>

Rocket Guide:

<http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Rockets.html>

Heavy Lifting Activity

<http://www.jpl.nasa.gov/edu/teach/activity/rocket-activity-heavy-lifting/>

Match Activity

https://www.grc.nasa.gov/www/k-12/TRC/Rockets/match_rocket.html

Thrust Equation and Other activities (on the bottom of the page by grade level)

<https://www.grc.nasa.gov/www/k-12/airplane/rockth.html>

Rocket Principles and Resource Websites:

https://spaceflight systems.grc.nasa.gov/education/rocket/TRCRocket/rocket_principles.html

More Ways to Build Rockets with other Recyclable materials:

<https://spaceflight systems.grc.nasa.gov/education/rocket/TRCRocket/RocketActivitiesHome2.html>