

Objective:

Students will participate in a problem-solving exercise in small groups, creating a moon rover that fits a set of specific criteria.

Arkansas State Standards Addressed:

Computer Science

CT.1.1.1 Demonstrate the following basic steps when problem solving: understanding the problem, considering various strategies.

CT.3.1.1 Solve problems of increasing complexity cooperatively.

Science

NS.1.1.1 Communicate observations orally, in writing, and in graphic organizers: T-charts, pictographs

NS.1.1.2 Ask questions based on observations.

NS.1.1.8 Apply appropriate rules of safety related to daily activities.

Activity:

This activity provides an opportunity for students to develop problem-solving skills and work cooperatively in groups. Introduce the activity by showing students pictures of real-life moon rovers and explaining what they do and how difficult it is to travel over the rocky terrain. Before proceeding to the activity, explain to students that they will be designing their own moon rover. Go over the criteria (listed below) and some basic guidelines for how to work well together. Then, ask students to brainstorm how they would build a moon rover by drawing a design plan on the Design a Moon Rover planning page (attached).

Split the students into small groups of two or three. Each group will be responsible for creating a moon rover that meets a set of 5 criteria:

- Must be able to go down a four-foot board at a 45-degree angle and not break as it comes down
- Must be able to move at least two feet when pushed by the teacher
- Must be able to hold two "people"
- Must be able to hold cargo in it, and the cargo cannot fall out during any of the tests
- Must stay in one piece for the crash test

Lego bricks with wheels would be the best materials for this activity; however, recyclable materials and various craft supplies could also be used.

Give students approximately 30 minutes to work together and build. Walk around the room and monitor their progress, asking questions and reminding them to think about the criteria. After they are mostly finished, call them back together and begin testing their creations. Invite student observations of what does nor does not happen during these crash tests.

This activity was originally found online: <http://adventuresinmommydom.org/design-a-moon-rover/>

Additional Resources at the Bentonville Public Library:

The following resources feature the Moon's terrain and surface. Accelerated Reader levels are included when available. All items are available for checkout at the Bentonville Public Library; call numbers are included in brackets. Online resources are available through BPL's Student Portal: <http://www.bentonvillelibrary.org/student-portal/>

Books

- *Do You Really Want to Visit the Moon?* by Thomas K. Adamson. AR Reading Level: 2.8. Non-Fiction. [ENF 523.3 ADA]
- *On the Moon* by Anna Milbourne. AR Reading Level: 2.3. Picture Book. [PIC Milbourne Anna]

Online Resources

- *Rosen PowerKnowledge Earth and Space Science*, is an online database for young learners. There is a specific section on The Moon and its surface under Space/The Moon

Explore Space Exhibit Information:

Explore Space: A Cosmic Journey, a traveling exhibition for libraries, is part of the STAR Library Education Network (STAR_Net) led by the National Center for Interactive Learning at the Space Science Institute. Exhibit partners include the American Library Association, the Lunar and Planetary Institute, and Afterschool Alliance. Explore Space is supported through a grant from the National Science Foundation.

