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Major Project
The E in STEM

Phase 1- Research and Planning

1. Big Idea- There are many different ways that objects can be moved.
2. CASS- 3rd Grade Physical Science 2. Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding interactions between objects and within systems of objects. Patterns of motion can be used to predict future motion.
3. Students will need to know that different types of terrain effect movement of objects. They will also need to be familiar with the design process. They will be using facts and procedures to accomplish this task.
4. Students will be introduced to different vehicles, such as planes, trains, cars, ATVs, etc. They will analyze how these different vehicles move and what is unique about them. They will also look at different terrain types and how a vehicle might need to be different in order to cross different terrains. The moon will be studied using photos, videos, and other resources, so that students are familiar with the terrain. Students will build a rover that can traverse the moon.
5. You could do activities that focus on:
 - methods of propulsion-look at rocket, plane, car, train-discuss how they are propelled
 - simple machines-simple tasks that require students to build simple machines (i.e. make a machine that will make an object move up when a string is pulled)-inclined plane, pulley, wheel
 - terrain-take a walking field trip, have students look for different types of terrain that may be difficult for a rover to traverse (i.e. stairs, bumpy, cliff, etc.)
 - energy sources-take a field trip to an electric plant, have students research different types of energy and discuss the pros and cons of each type-solar, wind, combustion, water
6. Ideally, you would be able to do all the activities above to prepare for the “Roving on the Moon” activity. However, if you have to choose just one I would go with looking at different types of terrain and then tying in methods of propulsion.