

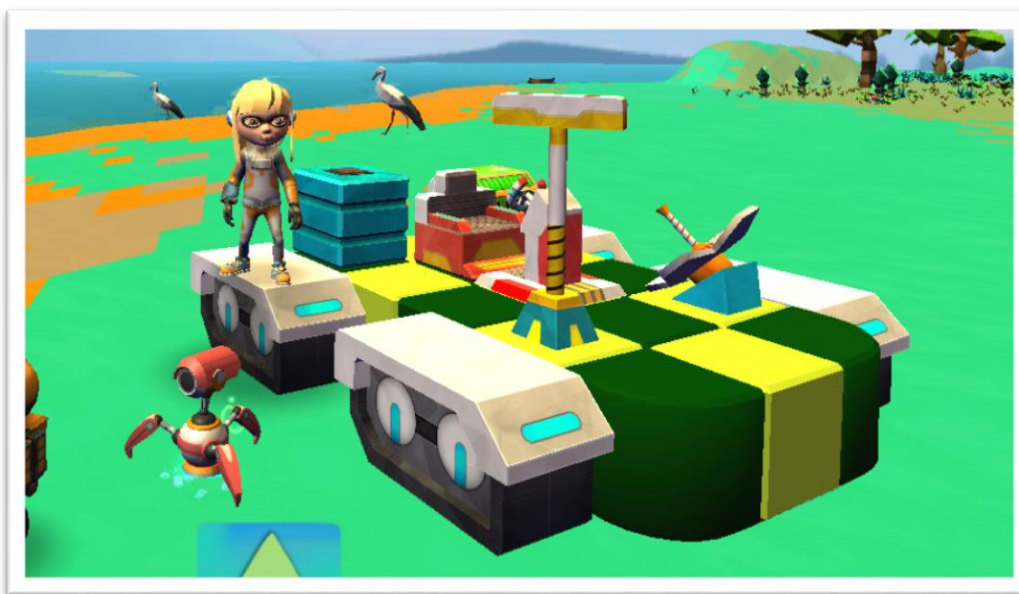
Quest Lesson Guide: Modify Rover for More Traction

Pillar: SCIENCE	Concept: Physical Sciences	Code: SP1.	Level: 1
Summary: Modify rover for more traction!			
STEAM Integration: Engineering (Design Process for Innovation)			
Learning Objectives			
Students will learn about...		Students will learn to...	
Experiment with force and movement.		Recognize that forces can affect the behavior of objects. Recognize that energy can be transformed and transferred from one form to another.	

Quest Introduction:

So many places to explore! Modify your rover with the builder so it has tracks instead of wheels and can travel steeper mountain areas without losing traction.

Students modify their rover by replacing the wheels with tracks for more traction



Fun Facts:

Friction is caused by one surface moving over another. Traction is the friction between the moving object, and the surface it moves upon; just like a wheel on the road. Traction is dependent on friction and so to increase traction, we must maximize friction. One way to do this is to increase the weight pushing down on the wheel; another is to make wheels bigger.

Using special wheels, tracks or tread for greater traction allow vehicles to travel up steeper hills or paths that are slippery like muddy inclines. Greater amounts of traction also allows vehicles to improve breaking or stopping and travel faster while turning and cornering.

In-Game Assessment:

The students earn XP in the following badges: 1. Physics 101 – 25% 2. Motion & Matter – 25%	Related in-game quiz that tests concepts: 1. Quiz: Physical Sciences 2. Quiz: Simple & Complex Machines
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Formative Assessment:

Once the student finished a quest, you can also assess them based on observation and discussion, and according to the following scale. If assessing a student's partially completed project, use the "Notes" section. In this case, assess the child based on their understanding of the projected learning outcomes and how effectively they implemented them on the part of the project they did complete.

5	4	3	2	1
Complete Achievement of goal/task/ understanding	Mostly Complete Achievement of goal/task/ understanding	Partially Complete Achievement of goal/task/ understanding	Very Incomplete Achievement of goal/task/ understanding	Did Not Complete goal/task/ understanding

Notes:
