

## Quest Lesson Guide: Build a Helicopter

<b>Pillar:</b> SCIENCE	<b>Concept:</b> Simple and Complex Machines	<b>Code:</b> ES1.2	<b>Level:</b> 1
<b>Summary:</b> Build a Helicopter			
<b>STEAM Integration:</b> Engineering (Making)			
<b>Learning Objectives</b>			
<b>Students will learn about...</b>		<b>Students will learn to...</b>	
Understands the purpose of simple machines and the common types.		Identify individual parts of machines. Craft basic machine parts. Use basic machines suitable to solve specific problems.	

### Quest Introduction:

Create a helicopter to explore the region from the air. Combine multiple propellers to create a controllable and balanced helicopter.

*Students build a working Helicopter they can take for a test flight*



### Fun Facts:

Propellers are machines that move an object forward when their blades are turned really fast. As the blades rotate, they deflect air backwards, and this air pushes forward on the blades. This force is called thrust and gives airplanes and helicopters the ability to escape the pull of gravity and fly.

Ever wondered how helicopters fly? It's all about lift and drag! You get more lift by changing the angle of your rotator blades. Drag is the force that resists the movement of a helicopter through the air and is produced when lift is developed. If you don't increase your engine power, drag can send you right back down to earth pretty quickly. What a drag, huh!

**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: 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:**

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