

**Grade Level:** Fourth Grade

**Time:** 20 minutes

**Brief Description of Lesson:** In this activity, students will become engineers and explore the concept of speed as they investigate the BEST way to make paper airplanes. The students will then test their planes to see how far it can fly and stay in the air. Students will share their observations and decide which airplane design is the fastest.

FIU-EOW offers ways to **differentiate** to provide opportunities for all students to access the curriculum or standards. These are being provided as **suggestions**.

SCIENCE	TECHNOLOGY	ENGINEERING	MATHEMATICS
<p><b>Standard:</b> <b>SC.4.P.12.2:</b> Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.</p>	<p><b>Standard:</b> <b>ISTE: 1.4: Innovative Designer:</b> Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.</p>	<p><b>Standard:</b> <b>3-5-ETS1-3 Engineering Design</b> Plan and carry out fair tests in which variables are controlled, and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	<p><b>Standard:</b> <b>MA.4.M.1:</b> Measure the length of objects and solve problems involving measurement.</p>
<p><b>Activity:</b> The instructor will introduce the concept of speed using the video linked below.</p> <p><a href="#">What is Speed?</a></p> <p>As students follow the design process, they will need to observe how different designs affect the speed of the paper airplane.</p> <p><b>VOCABULARY</b>  <b>Distance:</b> The length between two points (or objects).  <b>Motion:</b> The process of an object moving or being moved.  <b>Ratio:</b> The quantitative relation between two amounts showing the number of times one value contains or is contained within the other.  <b>Rectilinear Motion:</b> Motion of the object in a straight line path.</p>	<p><b>Activity:</b> During the testing portion of the engineering process, the instructors will help the students measure the amount of time the paper airplane traveled using an intelligent device.</p>	<p><b>Activity:</b>  <b>Hook:</b> As an engineer, you develop winglets as a design so that the airplanes can glide smoother through the air. Winglets are vertical extensions of wingtips that improve an aircraft's fuel efficiency and cruising range. You're an engineer tasked with finding the most efficient airplane design for an upcoming project.</p> <p><b>Problem:</b> How can we increase the distance and speed through our winglet design choice?</p> <p><b>Measurable Goal:</b>  Students will determine if they were successful in their project by</p> <ul style="list-style-type: none"> <li>• The increase in speed from their initial winglet design choice</li> <li>• The increase in distance</li> </ul>	<p><b>Activity:</b> Students will measure the distance traveled by the paper airplane using a tape measure. Students will then use mathematics to calculate the speed traveled by dividing distance by time and recording their data.</p> <p><a href="#">Worksheet 1</a></p>

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<b>Speed:</b> The rate of change of position of an object in any direction.			
<b>Differentiation:</b> Students will have the opportunity to watch the video before and during the activity to apply during the activity.	<b>Differentiation:</b> Students could use their individual devices, which they are familiar with, and capture the amount of time flown by their paper airplane.	<b>Differentiation:</b> Students will have a measuring tape on the floor to keep track of their progress in the distance.	<b>Differentiation:</b> Differentiated recording worksheet: <a href="#">Worksheet 1</a>