**Strands of MPIs** **developed by ACS BRES 5th grade teachers  
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**GRADE 5**

**ELD STANDARD: The Language of Science   
EXAMPLE TOPIC: Force and Motion**

**CONNECTION: 5.P.1.1 NC Essential Standards for science:** *Explain how factors such as gravity, friction and change in mass affect the motion of objects.*

**EXAMPLE CONTEXT FOR LANGUAGE USE:** Students will demonstrate understanding of gravity, friction, and change in mass by designing and building a vehicle.

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| **COGNITIVE FUNCTION:** Students at all levels of English language proficiencywill **APPLY** their knowledge of force and motion vocabulary to **CREATE** a vehicle that will travel 100 cm. | | | | | | |
| **DOMAIN: Writing/Speaking** | **Level 1**  **Entering** | **Level 2**  **Emerging** | **Level 3**  **Developing** | **Level 4**  **Expanding** | **Level 5**  **Bridging** | **Level 6 - Reaching** |
| After introducing vocabulary words related to force and motion, with teacher support, students will work in small groups to design and build a vehicle and measure the distance it travels in cm and record their observations in their science notebooks. | After introducing vocabulary words related to force and motion, with teacher support, students will work in small groups to design and build a vehicle and measure the distance it travels in cm using three trials. Students will calculate the average distance. | After introducing vocabulary words related to force and motion, students will work in small groups to design and build a vehicle and measure the distance it travels in cm using three trials. Students will calculate the average distance. | After introducing vocabulary words related to force and motion, students will students will work in small groups to design and build a vehicle and measure the distance it travels in cm using three trials. Students will calculate the average distance.  They will also time each trial. Using the distance travelled and time, students will calculate the speed of each trial. | After introducing vocabulary words related to force and motion, students will students will work in small groups to design and build a vehicle and measure the distance it travels in cm using three trials. Students will calculate the average distance. They will also time each trial. Using the distance travelled and time, students will calculate the speed of each trial. Using their data, students will collaborate on how to redesign their vehicles to maximize speed and distance. They will explain their changes to their peers and defend their choices. |
| **TOPIC-RELATED LANGUAGE:** Students at all levels of English language proficiency interact with grade-level words and expressions, such as: speed, distance, acceleration, inertia, force, motion, Newton’s Laws | | | | | | |