

Overarching Enduring Understanding What causes things to move and how can that movement help explain things that we cannot see? How can understanding the power of the air help us to improve our lives?	
FLOW OF INSTRUCTION	
<p><u>K-PS2-1</u></p> <p>Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p>	<p><u>K-PS2-2</u></p> <p>Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p> <p><u>K-2-ETS1-1</u></p> <p>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p><u>K-2-ETS1-2</u></p> <p>Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p><u>K-2-ETS1-3</u></p> <p>Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p>
<p>Investigation: What Moves You? Knock It Down! (hands-on activity, occurs during week 1)</p> <p>Students plan and conduct an investigation as they try to figure out how to knock down a tower of cups under the constraint of not using their hands. They will compare and discuss the effectiveness of different strategies. Some examples of strategies (or constraints) include (a) use a part of your body that isn't your hands to push over the tower, (b) use an object to help you push down the tower, (c) use an object to help you pull down the tower, (d) try to knock down the tower without touching it (e.g., they can use a fan, or loud stomps, etc.). <i>Note: It is likely that they won't have any ideas for criteria (d) during this initial investigation. However, when they come back to the activity for Knock It Down! The Remix they should have some ideas for this part.</i></p> <p>Investigation: Wind in My Sail (hands-on activity, occurs during week 2)</p> <p>In this investigation students visualize the force of the air/wind by analyzing and discussing what happens when a piece of cloth is held in front of a fan. Students investigate what happens when they change the shape and the orientation of the cloth.</p> <p>Investigation: Knock It Down! The Remix (hands-on activity, occurs during week 3 or 4)</p> <p>In this activity students revisit their initial challenge and apply what they have learned over the past few weeks to think of other ways to knock down the tower.</p> <p>Students plan and conduct an investigation as they try to figure out how to knock down a tower of cups under different constraints. They will compare and discuss the effectiveness of different strategies. Some examples of constraints include (a) use a part of your body that isn't your hands to push over the tower, (b) use an object to help you push down the tower, (c) use an object to help you pull down the tower, (d) try to knock down the tower without touching it (e.g., they can use a fan, loud stomps, etc.).</p>	<p>Investigation: Demolition Derby (hands-on activity, occurs during weeks 3, 4, and 5)</p> <p>In this investigation students will design cars to go down a ramp and either (a) knock down a block tower or (b) not knock down a block tower. Each week they will test out different variations on their designs and analyze the outcomes to determine if their design produced the intended change, the strengths of the design, and the weaknesses of the design.</p> <p>For each investigation they will share (e.g., draw, write, dictate, etc.), with support from teachers and/or technology, the different conditions they are testing/tested and their observations of the outcomes of test.</p> <p>Investigation: A Windy Walk in the Park (summative challenge, occurs during week 5)</p> <p>Students must draw a picture, make up a song, or tell a story about a windy day in the park. In it they must include examples of pushes, pulls, and evidence that the wind has strength. <i>Note: Picture supports are included in the Appendix for students who may struggle with this.</i></p>

Unit	Draft Dodgers
Grade Level	Kindergarten
Price	\$725 – Full Curriculum Unit

Parts List

Component Name and Description	Approximate Cost	Source
Printed materials		
Educator Guide (1)		
<i>My STEM Stories™</i> notebooks (30 + teacher version)		Electronic copies available on the unit website.
<i>My STEM Explorer Notes™</i> mini notebooks (90)	NA	Printed materials available through replacement kit purchase.
Timelines sheets (1 set)		
Introductory investigation data recording sheets (30)		
Provided equipment and materials		
Pieces of light cloth (2 ft x 4 ft) (10)	~\$15	Fabric store/dollar store
Pinwheel	~\$5	Fabric store/dollar store
Sailboat	\$10	Click for Amazon link
Plastic cups (50)	\$10	Dollar store
Hand fan	\$5	Dollar store
Car frames (base, wheels, axles, tubing)	\$40-50	Click here , here , here , and here for Amazon links
Car modifiers (dowels, paper, cloth)	\$30	Craft store
Air tools (hand fan, straws, squeeze bottles)	\$20	Dollar store
<i>The Windy Day</i> by Anna Milbourne	~15	Barnes and Noble
Common equipment and materials required but not provided		
Box or table fan	\$5-\$15	Supermarket
Chart paper	\$10	Classroom supplies
Ramp (could be a simple piece of board)	\$5 – 10	Hardware store
Wagon/cart	NA	Classroom supplies
String	~\$5	Dollar Store
Scissors and tape	~\$5	Classroom supplies