L. Sigh

Data and Math

Kindergarten (Option 3)

Introduction: This lesson is part of a "Let's Fly" unit in which students use mathematical concepts to learn the essentials of designing, building, and flying paper planes. In this lesson wind speed and directional data will be use to assist students in their understanding of wind and flying objects. This is a 45 minute lesson.

Engaging Context For Kindergarten: The data from Intellicast (2018) is authentic and engaging. Intellicast database allows students to visualize, wind. The hourly line table shows real-time directional windspeed for American cities and counties. This data is relevant to the "Let's Fly" unit because windspeed affects flying objects in both negative and positive ways. Students will spin their skyrocopters into the wind and measure the distanced travel.

Skyrocopter spinner

Objectives:

- Use a tape measure to record distance travel.
- Describe what happens to a skyrocopter flown into the wind and against the wind?

Materials: skyrocopter, measuring tape, compass, interactive smartboard

Essential Questions: How does wind affect a flying moving object? How will the Intellicast data and skyrocopter spinners demonstrate, or explain, affect wind has on a moving object? What else can we learn from the Intellicast data?

Results: According to the National Assessment of Educational Progress (2003), studentss should be given authentic stimuli to analyze, interpret, and explore. This activity allowed students to analyze, interpret, and explore aerodynamic using a model and real-time windspeed data. The data used provided interdisciplinary context connections in geography (cardinal directions) and reading.

Prior to going outside the students analyzed the data from the Intellicast website. The map was displayed on the class smartboard. Students asked many questions about the wind; such as, What if the wind was 100 miles? How do meteorologist determine the windspeed? This teacher was surprised at the many intelligent questions and informed the students that she was also learning. The colorful, interactive data website kept the children actively involved and focused on learning about windspeed.

During the launching of the skyrocopters, students freely use the vocabulary words. "Give it more thrust." "Wow! The wind lifted it higher". Teacher modeled the word, "drag" when several skyrocopers were drag by the wind into brushes.

Students and teacher together measured distance traveled with a tape measure. Information was record on the table in the appendix.

Evidence Collected: Teacher used interviews to assess students understanding of the concept.

- How did the wind affect the skyrocopter?
- What did you notice when you flew into/against the wind?
- What affect, if any, did the wind have on the skyrocoper's lift, weight, thrust, or drag?

The activities and model enhanced students understanding of aerodynamics.

NGSS Kindergarten

- 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 (K.PS2-2)
- 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 (K.PS2)
- Use and share observations of local weather condition to describe patterns over time (K.ESS2)

Common Core Math

- Asking questions, making observations, and gathering information are helpful in thinking about problems (K-2-ETS1-1)
- Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object (K.MD.A.1)
- Describe object in the environment using names to describe the relative position s of these object using terms such as above, below, beside, in front of, behind, and next to. (K.GA.1)

Reference

Common Core State Standards Initiative. (2017). Retrieved October 17, 2017, from http://www.corestandards.org/

Intellicast. (2018). Retrieved March 16, 2018, from http://www.intellicast.com/Local/Hourly.aspx?location=USMD0378.

National Assessment of Educational Progress. (2003). Retrieved March 18, 2018, from https://nces.ed.gov/nationsreportcard/pubs/strategies/P1SBP1.aspx.

National Science Teachers Association. (2014). Retrieved October 13, 2017, from http://ngss.nsta.org/Practices.aspx?id=

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Appendix

Skyrocopter Spinner Feet Traveled	
Against Wind	With Wind

Intellicast Hourly Weather Forecast