

## ENGINEERING A KINETIC WIND SCULPTURE BETH WHITE, CHARLES R. DREW CHARTER SCHOOL

**GRADE LEVEL AND CONTENT:** High School Engineering Concepts, English Language Arts, Physical Science, Mathematics, and Visual Arts

### OVERVIEW

This 21-day integrated STEAM unit challenges students to apply their knowledge of kinetic energy to create wind power. Students collaborate to master art, engineering, geometry, and physics standards by designing and building wind turbines capable of lighting light-emitting diodes (LEDs). During the project, the class is divided into groups, where each is responsible for designing a specific part of a kinetic sculpture. The unit culminates with the class presenting their final design to a real-world client.

### STANDARDS ADDRESSED

**Engineering Concepts:** STEM-EC-5; STEM-EC-7; STEM-EC-8; STEM EC-9

**English Language Arts:** ELAGSE9-10SL1

**Mathematics:** MGSE9-12.G.SRT.1.; MGSE9-12.G.SRT.2; MGSE9-12.G.SRT.3; MGSE9-12.G.SRT.6; MGSE9-12.G.SRT.7; MGSE9-12.G.SRT.8; MGSE9-12.G.C.1; MGSE9-12.G.C.2; MGSE9-12.G.C.3; MGSE9-12.G.C.4

**Physical Science:** SP5

**Visual Arts:** VAHSVAPR.1; VAHSVAMC.2

### AVAILABLE MATERIALS

- Video of Unit
- Daily Lesson Plans
- Mini-Engineering Design Project Activity Sheet
- Windy Energy Infographic
- Kinetic Wind Sculpture Project Brief
- Bronze Sculpture
- Funny Sculpture
- Kinetic Wind Sculpture Order Form
- Group Contract
- Kinetic Wind Sculpture Timeline
- Kinetic Wind Sculpture Rubric



### ABOUT THE TEACHER

*In 2013, Beth left her job as an engineer and entered the classroom. There are indelible markers of her previous professional life on every student project she develops – from building a tiny house to creating a windmill capable of lighting LEDs. After Beth received her degree in civil engineering from Colorado State University, she began working as an engineer in Atlanta. While serving as the Vice President of Outreach for the Society of Women Engineers – where she developed STEM experiences for children – she decided that teaching was the right setting for her. Beth received her master's degree in teaching from Kennesaw State University in 2013.*