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| **Workshop : Steam to Green****National Curriculum Links**KS2 History: Investigating Local HistoryKS2 Science: yr3 + yr5Identify the effects of air resistance and friction that act between moving surfacesKS2 DT: - Design- generate, develop and communicate their ideas- Select from and use a range of materials according to their functional properties- Select from and use a range of tools and equipment to perform practical tasks.-technical knowledge- understand and use mechanical systems (wheel and axel)KS2 mathematics:-measure, compare, add and subtract lengths- Add and subtract amounts of moneyKS2 Geography- human geography: energy distribution, renewable sources of energy |
| **Learning objectives** | **Session structure** | **Assessment for learning** |
| **To explore energy production and distribution on Tyneside.****To investigate how inventions have impacted our environment.** **To learn about Wind power generation in the Northeast.****To consider what makes a good wind turbine blade.** **To design and build successful wind turbine blades.**  | **Introduction**We start the session by touring the museum to learn about energy production on Tyneside. We think about where we think most of our energy comes from and the best ways to generate energy and its impact on the environment. We talk about Charles Parsons, William Armstrong and George Stephenson. **Session activities**We then move to the Play + Invent space to learn more about wind power in the Northeast. The wind tunnel is introduced to the students, and they try to predict which propeller design will be the most effective and why. We think about the properties of materials that are going to make the most effective blades and how air resistance and friction can speed up or slow down the blades as they spin. Students then work in small group to design and build wind turbine blades to test in the wind tunnel. Upper ks2 groups will work with a budget of £100 to buy materials for the challenge. **Plenary**Groups are allowed one pretest to ensure their designs are the best they can be before final testing. Each groups blades are tested to see who generates the most power. We discuss the designs to consider what was successfully and what would need to be changed for next time.  | Children will explore themes through class and group experiments, we will ask questions throughout to check understanding.Children will have opportunities to respond and give feedback throughout the session. There will be opportunities for Q&A at the end of the session.  |
| **Before your visit** | **After your visit** | **Key vocabulary** |
| Make a free teacher pre visit to familiarise yourself with the site- contact learning@discoverymuseum.org.uk Explore the museum virtually using goggle institute:<https://artsandculture.google.com/partner/discovery-museum>  | * Explore the last coal of Newcastle display on the Ground floor
* Learn more about inventors from the workshop using a self-led trail <https://discoverymuseum.org.uk/exploring-discovery-museum-self-led>
 | Wind, Turbine, Blade, Volts, Energy, Steam, Coal, Renewable, Non-renewable, fossil fuel  |