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| M. Angileri  11-27-17 | **6th grade science** | | **Lesson Plans: Energy Transfer in Motion #2** | | | | |
| NGSS Standard | **MS-PS3-1.**  [**PS3. B.1:**](http://www.nap.edu/openbook.php?record_id=13165&page=120)  S & E  CCC | | **Construct, use and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from an object**  **Conservation of energy and energy transfer**: when motion energy of an object changes, there is inevitably some other changes in energy at the same time.  **Engaging in Argument from evidence**  Oral and Written:  Argument: Construct, use, and/or present an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. [Energy](http://www.nap.edu/openbook.php?record_id=13165&page=89) and Matter Forms of energy: Energy may take different forms (e. g. energy in fields, thermal energy, energy in motion | | | | |
| Vocabulary: | | **Energy:** The ability to work or cause change.  **Kinetic Energy:** The energy an object has due to its motion. Motion energy that is proportional to the mass of the moving object and grows with the square of its velocity. KE=1/2m x v squared  **Mass:** The amount of matter in an object.  **Motion:** The state in which one object’s distance from another is changing.  **Proportional relationship:** When two values exist in a constant ratio.  **Speed:** The Ratio of change of position with respect to time.  **Mechanical Energy:** Kinetic or potential energy associated with the motion or position of an object. The sum of the potential and kinetic energy in an object.  **Light Energy:** A form of energy that exhibits wave like behavior as it travels through space; part of the electromagnetic spectrum.  **Transfer:**  Moving from one place to another.  **Potential Energy:** Energy that is stored in a system or object.  **Thermal Energy:** Total kinetic energy of the tiny particles that make up matter. The faster the particles move, the warmer the matter becomes.  **Sound Energy**: Form of energy that is made by vibrations and requires a medium ( air, Water, or solids) in order to travel. | | | | | |
|  | | **MONDAY** | | **TUESDAY** | **WEDNESDAY** | **THURSDAY** | **FRIDAY** |
| Content Objective: | | SW demonstrate knowledge of science inquiry by recording the set up for the Demolition Day activity. | | SW demonstrate application of energy transfer between objects by carrying out the demolition day activity. | SW demonstrate analysis of demolition day data by comparing and graphing data. | SW demonstrate application of energy transfer by carrying out the fun with friction activity. | SW demonstrate evaluation of the transfer of energy by justifying their reasoning in the activity. |
| Language objective | | SW write to state the scientific inquiry to be used in the demolition day activity using complete sentences. | | SW write to report the results of their experiment using accurate measurements. | SW write to record and analyze data from the experiment using a line graph and complete sentences. | SW orally discuss the energy transfer occurring in the Fun with Friction activity. | SW write to justify the changes in energy transfer using the sentence frames. |
| **Essential Question:** | | **What energy changes occur while swinging?** | | **What energy changes occur while swinging?** | **What energy changes occur while swinging?** | **What energy changes occur while swinging?** | **What energy changes occur while swinging?** |
| In class today | | Discuss Do I activity: Collect  Set up Do 2: Demolition Day  Scopepedia Graphic Organizer and questions | | Conduct investigation- Do 2: Demolition Day  Questions on Scopepedia Graphic Organizer and questions | Analyze data- Do 2: Demolition Day Graph data  CER writing  Due Scopepedia Graphic Organizer and questions | Do 3: Fun with Friction  Connections Video: Red Hot Stop and questions | **Guided Practice: Where did the Energy Go?** |
| Learning Target | |  | |  |  |  |  |

**The Verbs:** What should students be doing?

**Construct an argument:** Say what you think and why.

**Use an argument:** Make use of what you think.

**Present an argument:** Show and tell people about what you think.

**The Nouns**: What key terms are found in the standard?

Motion energy: Kinetic energy

Kinetic energy: Energy of motion

Energy: Controls the amount of change that can occur within a system; without enough energy, change cannot occur

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| Build day pinwheel | Test Pinwheels. | How does Energy transfer in Extreme Sports? Research | Create Presentation visuals | Give presentation | ?? Share presentations with regular classes? |