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| M. Angileri  12-4-17 | **6th grade science** | | **Lesson Plans: Energy Transfer in Motion #3** | | | | |
| 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 comprehension of what energy changes occur by explaining their understanding in the Science article. | | SW demonstrate comprehension of what energy changes occur by explaining their understanding on their study guide | SW demonstrate evaluation of the energy transfer in motion by testing. | SW demonstrate evaluation of the energy transfer in motion by completing the Type 3 CER. | SW demonstrate knowledge of a newton of force by recognizing the relationship between mass and a Newton Of force. |
| Language objective | | SW orally discuss the connections between classroom content and information if the science article using sentence frames. | | SW orally discuss the connections between classroom content and information using the study guide. | SW write to answer questions about the transfer of energy in motion using the common assessment. | SW write to explaining the transfer of energy in motion using the CER and Type 3 processes | SW write to collect data about the relationship between mass and a Newton Force using the labsheet. |
| **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?** | **Why will colliding objects change direction?** |
| In class today | | Winning Force: Analyze article and quiz  Study Guide | | Review past assignment  Correct Study Guide | C.A. Energy Transfer in Motion  APK Newton’s Third Law | Type 3 CER  **What energy changes occur while swinging?** | Hook: What is a Newton |
| Learning Target | | I can make connections between classroom content and the reading in science article. | | I can assess my level of knowledge about the energy transfer of objects in motion. | I can describe energy transfer in motion on the common assessment. | I can describe the changes in energy as a pendulum swings. | I can experiment with spring scales to build understanding of a Newton of force. |

**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 | Nat Geo Article | How does Energy transfer in Extreme Sports? Give presentation | How does Energy transfer in Extreme Sports? Give presentation |  |  |