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Curriculum Units by Fellows of the National Initiative
2024 Volume IV: Energy: Past, Present, and Future

Force to Energy: Increased efficiency through intelligent design

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It is easy to make connections to new technologies like renewable energy and how to reduce our carbon footprint for students. Options for clean energy all have moving parts except solar. In physical science, we teach types of forces and how they are a manifestation of energy at work. This unit gives us the opportunity to examine the efficiency within a system when conveying energy from one side to the other using both equations and physical experimentation.

Teaching physical force and Newton's Laws, perhaps by employing a Newton's Cradle as a demonstration of the law of conservation of energy, we expose our students to the physical phenomenon creating a moment of wonder. This unit teaches the students in my Oklahoma 8th grade physical science classes about the application of force through a system as energy. Students will start with levers and pulleys, moving through the advances in technology and how they are utilized. We are demonstrating there is science at work all around them. This also opens the opportunity to explore how power can be lost within a system and possible remedies to mitigate that power loss.

(Developed for Advanced MYP Science 3, grade 8; recommended for Science, grade 8, and Physical Science, grade 9)