6th Grade UNIT 2 OVERVIEW: Catch a Wave!

Unit Outcomes At the end of this unit, your student should be able to:	**Key Vocabulary** Terms to deepen the student's understanding
✓ Explain that earthquakes, light and sound are all types of waves with unique properties and there are differences and similarities between electromagnetic and physical waves. ✓ Recognize … ○ Sound travels in waves ○ Sound vibrations are the result of disturbances that cause vibrations ○ Sound waves are affected by the mediums through which they travel ○ The structure of the human ear and its connection to our brain allows us to hear certain wavelengths ✓ Describe the different wavelengths that make up the electromagnetic spectrum ✓ Identify which wavelengths are visible by humans. ✓ Illustrate how energy travels in the direction of warmer to cooler temperatures. ✓ Compare energy transfer by conduction, radiation and convection. ✓ Explain that different types of matter respond differently to different electromagnetic waves: some absorb or scatter, which can change the temperature. ✓ Describe how matter changes when exposed to heat (expands) and removed from heat (shrinks). ✓ Identify which materials would make good conductors or insulators, based on their response to heat.	✓ Energy ✓ Light ✓ Sound ✓ Sound waves ✓ Disturbance ✓ Wavelengths ✓ Electromagnetic Spectrum ✓ Conduction ✓ Convection ✓ Radiation ✓ Energy transfer ✓ Medium ✓ Earthquakes ✓ Translucent ✓ Transparent ✓ Opaque ✓ Absorbing ✓ Scattering ✓ Conductor ✓ Insulator ✓ Thermal Expansion
Key Standards Addressed Connections to Common Core/NC Essential Standards	**Where This Unit Fits** Connections to prior and future learning
6.P.1.1 Compare the properties of waves to the wavelike property of energy in earthquakes, light, and sound. 6.P.1.2 Explain the relationship among visible light, the electromagnetic spectrum and sight. 6.P.1.3 Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and heating. 6.P.3.1 Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation, and convection.	Coming into this unit, students should have a strong foundation in: ✓ Describing the effects of heat transfer between objects at different temperatures. ✓ Explaining how heating and cooling affects some materials and how this relates to their purpose and practical applications. ✓ Identifying the basic forms of energy (light, sound, heat, electrical, and magnetics) and how they have the ability to cause motion or create change. ✓ Understanding that light travels in a straight line until it strikes an object or travels from one medium to another. ✓ Summarizing the relationship between sound and objects of the body that vibrate – eardrum and

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6.P.3.2 Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature. 6.P.3.3 Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).	vocal cords. This unit builds to the following future skills and concepts: ✓ Explain the influence of convection, global winds and the jet stream on weather and climatic conditions. ✓ Recognize that energy can transfer from one system to another when two objects push or pull on each other over a distance and electrical circuits are a complete loop through which an electrical current can pass. ✓ Compare the physical changes such as size, shape and state to chemical changes that are the result of a chemical reaction to include changes in temperature, color, and formation of a gas or precipitate.
Additional Resources Materials to support understanding and enrichment	**"Learning Checks"** Questions Parents Can Use to Assess Understanding
✓ CK12 Textbook: Sound ✓ CK12 Textbook: Waves ✓ CK12 Textbook: Visible Light ✓ CK12 Textbook: Thermal Energy ✓ CK12 Textbook: Electromagnetic Radiation ✓ Discovery Education TechBook ○ Sound Waves ○ Speed of Sound ○ Catch a Wave ○ Too Hot to Handle ○ Too Hot to Handle (Spanish) ○ Heat on the Move ○ Heat on the Move (Spanish) ○ Heat Transmission ○ Energy Transfer ○ Heat-Go-Round ○ Heat-Go-Round (Spanish) ○ Light Energy ✓ BBC Electromagnetic Spectrum Activity	✓ How is energy like a wave? ✓ What are the similarities and differences between the waves that produce earthquakes, light and sound? ✓ What is the nature of sound? ✓ How do we hear sound? ✓ How can you see different colors? ✓ What is the relationship between light and sound? ✓ How does heat travel? ✓ What are the effects of heat transfer? ✓ What are the similarities and differences between conduction, convection and radiation? ✓ How do electromagnetic waves interact with/affect different types of matter? ✓ How are materials chosen for different technological design projects?