

LISBON SCHOOL DEPARTMENT
UNIT DESIGN OUTLINE

Unit Title: Unit 4: Waves and Light

Unit Designers: Jill Denniston

Level(s): Freshmen Time Span: 3 weeks

Content Area:

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|--|--------------------------------------|--|--|
| <input type="checkbox"/> Career Prep | <input type="checkbox"/> Health/PE | <input type="checkbox"/> M&C Languages | <input type="checkbox"/> Social Studies |
| <input type="checkbox"/> English Language Arts | <input type="checkbox"/> Mathematics | <input checked="" type="checkbox"/> Science & Tech | <input type="checkbox"/> Visual & Perf. Arts |

Summary of Unit:

In this unit students will understand that waves are rhythmic disturbances that transfer energy. Students will all so learn that waves have different properties and can be used in different ways.

Content Standards/Performance Indicators:

- D.4.** Students understand that the laws of force and motion are the same across the Universe.
- d. Describe and apply characteristics of waves including wavelength, frequency, and amplitude.
 - e. Describe and apply an understanding of how waves interact with other waves and with materials including reflection, refraction and absorption.

Key Pre-Requisites:

Knowledge:

Vocabulary: force, velocity/speed, energy, parallel, perpendicular, visible light

Skills:

Computer-access skills
Make metric measurements with a ruler
Perform simple calculations

Enduring Understandings:

You can see and hear the world around you because of the energy transferred by waves
Waves with different properties can be used in different ways.
You can hear an echo, see shadows, and check your reflection in a mirror because of how waves behave.
Doppler effect is observed in everyday life.
Sound waves are compression waves that require a medium to travel through and are mechanically produced.

Essential Questions that Guide and Focus This Unit:

What does light energy and other waves have in common?
What are characteristics of a wave?
What are the unique characteristics of a light wave?

Key Knowledge and Skills students will acquire as a result of this unit:

Knowledge

Describe how light is reflected and refracted by mirrors and lenses.

Explain or demonstrate how sound waves travel.

Be able to explain how sound travels through different mediums.

Understand that light behaves both like a particle and like a wave.

Skills

Use a computer simulation/model to explore wavelength, frequency and amplitude of waves.

How students will provide evidence of their understanding:

Homework.

Lab activities

Quizzes and tests.

Teaching and Learning experiences used to help students understand:

Pair-Share

Brainstorming

Modeling

Direct instruction

Vocabulary strategies (foldable(s), flash cards, concentration games)

Graphic organizers

Inquiry-based labs

Attach a copy of the unit assessment tool, including criteria for evaluation of student performance/product.

Wave Knowledge