Drexel-SDP GK-12 LESSON

- Lesson Title and Identifier:

  Title: Astronomy and Me: Waves

  Identifier: 3.1

- Module

  Astronomy

- Subject Area (Unit):

  Astronomy

- Concept: Vocabulary

  Waves

  Peaks

  Crests

  Frequency

  Amplitude

  Prism

- Objectives:

  In this module, students will gain a basic understanding of electromagnetic waves and its relationship to light.

- Keywords: Astronomy, Waves, Frequency, Amplitude, Prism

- PA Academic Standards:

  3.1.7 Unifying Themes
  3.2.7 Inquiry and Design

- Grade Level: 6th
- Setting/Group Size: 30 students
- Duration/Time Required: 1 class period
- Materials List (include safety equipment if applicable)

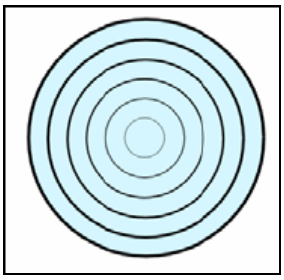
Chalkboard and student answers
Pencil
Paper
String
Cup
Water
Straw or dropper

- Methods and Procedure:

Step 1: Begin a class discussion on what students have seen in the night sky. (You may want to bring photos if students reside in a large city. They might not have a much opportunity to see the stars due to the city lights.)

Step 2: Bring out the debate on whether light is a wave or a particle. (Give as much history as appropriate for your class.) Have the student come up with as many types of waves as they can along with examples. This can be done either as a class or in teams. Keep this list available for later in the class.

Step 3: At this point, begin with the most common type of wave the students are likely to have, a wave in water. Each group of students will need a cup with water and a straw/dropper. Have the students add a drop of water into the cup after the surface is stable. What did they observe in the cup? Relate this top view of the wave to the profile of the wave. (This ties in with the Landforms Topology lesson.)



The students will see something close to this

Step 4: Review the basic parts of a wave, such as wave length, amplitude, period, and frequency.

Step 5: To demonstrate the concept of frequency, the students will create their own wave using a piece of string. Have on student hold one end of the string on the table. Have a second student move the free end left and right across the table. Have the students go faster and slower. What observations can they make?
Step 6: Next, use a prism to show that white light is composed of many colors. Relate the colors to frequency. Now go back to original list of waves. Discuss which waves are visible to the human eye and which are not. Review the other methods scientists can view waves. (This should be part of their reading.)

Step 7: Have the students begin a chart where they record the different characteristics of light and what they can learn from it. How does that affect their view of the stars?

Light Characteristics	What it tells us

- Assessment

  Students will be evaluated on a scale from 0 to 4 on:

  _____ _____ _____
  Participation Task Completion Quality of Analysis

- Authors

  Connie Gomez, Dara Kusic, Donna Barreca, Pat Wilkes