



Matter and Electromagnetic Radiation

By: Amanda Martin
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Science
Grades 9–12



Introduction

In this lesson, students will work in groups to research the effects of electromagnetic radiation when it is absorbed by matter at different frequencies. Students will additionally search through articles found on the internet to find valid and reliable information.

Learning Objectives

([NGSS.HS-PS4-4 Waves and their Applications in Technologies for Information Transfer](#)) Students will evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

Materials Needed

- Articles (These can be used as a basis to start. Students may also find their own.)
 - [NDT Resource Center – Radiation Safety](#)
 - [The Effects of Radiation on Matter](#)
 - [The Interaction of Radiation with Matter](#)
 - [Tec-Science – Interaction of Radiation with Matter](#)
- Computers/laptops with Google Slides, PowerPoint, or Prezi access

Procedure

1. Review the following term with the class: electromagnetic radiation. Ask students to name the elements of electromagnetic radiation. Be sure to write down the correct items on the board and encourage students to take notes.
2. Explain that there are many studies that have been conducted surrounding electromagnetic radiation and matter. Today, students will conduct their own research to determine how radiation affects matter when absorbed. Divide students into groups of 2 or 3. Each group will need access to a computer and/or laptop. Students must find research (from trusted sources) and evaluate the claims made concerning the absorption of electromagnetic radiation at different frequencies. Groups must evaluate at least 3 articles. Groups may be given the articles above to research or search for their own articles.

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3. With the information found in the articles, groups will create a Google Slides, PowerPoint, or Prezi presentation. The presentation must outline the key findings from each article and discuss the validity of those claims. The presentation will be graded for accuracy and presented to the class for a grade. (Students may need longer than one class period to complete this assignment.) Please use the rubric below to assess student learning.

Evaluation

Electromagnetic Radiation Research			
Article 1	3 Above & Beyond	2 Acceptable	1 Unacceptable
Group outlines the claims found within the article.			
Claims are present and in detail.			
Evidence and reasoning are thorough.			
Article 2	3 Above & Beyond	2 Acceptable	1 Unacceptable
Group outlines the claims found within the article.			
Claims are present and in detail.			
Evidence and reasoning are thorough.			
Article 3	3 Above & Beyond	2 Acceptable	1 Unacceptable
Group outlines the claims found within the article.			
Claims are present and in detail.			
Evidence and reasoning are thorough.			