Making Waves

A Physics Project on Wave Mechanics

Goal: In groups of 2-3 people, create a 4-6 minute physical demo to illustrate and explain one of the topics listed below:

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1. The mathematical relationship between the frequency, wavelength, and speed of waves traveling in different media
   - Examples of data could include electromagnetic radiation traveling in a vacuum and glass, sound waves traveling through air and water, seismic waves traveling through the Earth, etc.

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2. The advantages of using digital transmission and storage of information
   - Examples include the advantages/disadvantages in terms of the stability of information, the ease of transference, the security of information, etc.

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3. Electromagnetic radiation can be described either by a wave model or a particle model, and for some situations one model is more useful than the other
   - Examples of a phenomenon could include resonance, interference, diffraction, photoelectric effect, etc.

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4. The effects of different frequencies of electromagnetic radiation when absorbed by matter
   - Examples include demonstrating which frequencies can and which cannot pass through different materials, or which frequencies can and which cannot damage living tissue, etc.

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5. The use of wave behavior and wave interactions with matter to transmit and capture information and energy
   - Examples could include solar cells capturing light and converting it to electricity, medical imaging, communications technology, etc.

Rubric

Claim (300 exp)

1. Connected to assigned topic
2. Clearly stated
3. Demonstrable (can be proven to be true or, hypothetically, false)
4. Describes the relationship between dependent and independent variables

Evidence (350 exp)

1. Sufficient evidence to support the claim
2. Appropriate data to support your claim. Leave out information that doesn't support the claim
3. Qualitative, quantitative, or both

Reasoning (350 exp)

1. Shows how or why the data counts as evidence to support the claim
2. Provides the justification for why *this* evidence is important to *this* claim
3. Includes one or more scientific principles that are important to the claim and evidence

Create a Google Slides or Powerpoint presentation to explain the Claim, Evidence, and Reasoning of your demonstration