**The Wave Nature of Light and Its Technological Applications**

The study of light and its many resultant technologies have impacted all aspects of our daily lives. You will research a technology that uses the principles discussed in this unit. You will then assess this technology's impact on society and the environment. In your analysis, be sure to portray your understanding of principles related to the nature of light and its applications; use pictures and diagrams where necessary. You are to present this information as a power point or similar format in front of the class. Be prepared to answer student’s questions regarding your technology. Be sure to reference all information sources and pictures. (approx. 7-10 slides)

Here are some possible topics to get you thinking:

* Xeon lights
* spectroscopes
* polarized sunglasses
* use of light to find mineral deposits
* global positioning system's use of light waves
* CDs, DVDs
* night vision goggles
* wireless networks
* fibre optics
* holographic technology (money security)
* photoelectric sensors (e.g., garage door openers)
* use of lasers in surgery
* weather forecasting
* military applications
* television
* security applications
* communications
* medical applications

CONTENT RUBRIC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * Light Technology Assignment and Discussion | | | | |
| **Categories** | **Level 1 (50 - 59%)** | **Level 2 (60 - 69%)** | **Level 3 (70 - 79%)** | **Level 4 (80 - 100%)** |
| **Knowledge and Understanding -knowledge of the concepts and terminology of principles related to the nature of light** | -demonstrates limited knowledge of principles related to the nature of light | -demonstrates some knowledge of principles related to the nature of light | -demonstrates considerable knowledge of principles related to the nature of light | -demonstrates thorough knowledge of principles related to the nature of light |
| **Communication -expression and organization of relevant ideas and information to analyze and assess the impact on society and the environment of a technology utilizing light** | -expresses and organizes relevant ideas and information to analyze and assess the impact on society and the environment of a technology utilizing light with limited clarity | -expresses and organizes relevant ideas and information to analyze and assess the impact on society and the environment of a technology utilizing light with some clarity | -expresses and organizes relevant ideas and information to analyze and assess the impact on society and the environment of a technology utilizing light with considerable clarity | -expresses and organizes relevant ideas and information to analyze and assess the impact on society and the environment of a technology utilizing light with a high degree of clarity |
| **Application -application of knowledge and understanding of principles related to the nature of light to a technological system** | -demonstrates limited ability to apply knowledge and understanding of principles related to the wave nature of light to a technological system | -demonstrates some ability to apply knowledge and understanding of principles related to the wave nature of light to a technological system | -demonstrates considerable ability to apply knowledge and understanding of principles related to the wave nature of light to a technological system | -demonstrates thorough ability to apply knowledge and understanding of principles related to the wave nature of light to a technological system |

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.

**Presentation Rubric**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Power Point Slide Show Marking Rubric** | | | | |
|  | **1** | **2** | **3** | **4** | **Mark** |
| **Organisation** | Audience cannot understand presentation because there is no sequence of information. | Audience has difficulty following presentation because student jumps around. | Student presents information in logical sequence which audience can follow. | Student presents information in logical, interesting sequence which audience can follow. |  |
| **Content Knowledge** | Student does not have grasp of information; student cannot answer questions about subject. | Student is uncomfortable with information and is able to answer only rudimentary questions. | Student is at ease with content, but fails to elaborate. | Student demonstrates full knowledge (more than required) with explanations and elaboration. |  |
| **Visuals/graphics** | Student used no visuals or graphics | Student occasional used visuals that rarely support text and presentation. | Visuals related to text and presentation. | Student used visuals to reinforce screen text and presentation. |  |
| **Mechanics** | Student's presentation had four or more spelling errors and/or grammatical errors. | Presentation had three misspellings and/or grammatical errors. | Presentation has no more than two misspellings and/or grammatical errors. | Presentation has no misspellings or grammatical errors. |  |
| **Delivery** | Student mumbles, incorrectly pronounces terms, and speaks too quietly for students in the back of class to hear ***OR*** just reads the presentation. | Student incorrectly pronounces terms. Audience members have difficulty hearing presentation. | Student's voice is clear. Student pronounces most words correctly. | Student used a clear voice and correct, precise pronunciation of terms. |  |
|  |  |  |  | **Total** |  |