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| Lesson Plan no : |
| Date : |  | Subject : | SCIENCE |
| Class : | 10 | Chapter : | LENS |
| Time : | 45 | Period : |  |

**Overview and Learning Objective**  
Lenses are essential components in optical instruments like cameras, telescopes, and microscopes. They use refraction, the bending of light as it passes from one medium to another, to manipulate light and create images.   
  
LO-1: Students will be able to define a lens and differentiate between convex and concave lenses.   
LO-2: Students will be able to explain how lenses refract light to form images, identifying the key concepts of focal point and focal length.  
LO-3: Students will be able to describe the different types of images formed by convex and concave lenses, including real and virtual, magnified and diminished, and inverted and upright.

**Curricular Goals and Curricular competencies**  
CG-1: Students will gain an understanding of the fundamental principles of refraction and how lenses manipulate light.   
CG-2: Students will be able to identify and explain the different types of lenses and their applications in various technologies.  
  
CC-1: Students will be able to accurately define and explain the concept of refraction.   
CC-2: Students will be able to analyze the behavior of light as it passes through different types of lenses.  
CC-3: Students will be able to apply their knowledge of lenses to design simple optical systems and explain their function.

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| Learning Objective | Curricular competencies | FACTUAL KNOWLEDGE | CONCEPTUAL KNOWLEDGE | PROCEDURAL KNOWLEDGE |
| LO-1 | CC-1 | Lenses refract light to focus or spread it. Convex lenses converge light, concave lenses diverge light. The focal length determines magnification and image size. | Lenses refract light, bending it to focus or diverge. Convex lenses converge light, forming real or virtual images. Concave lenses diverge light, creating virtual, upright images. | Identify the types of lenses. Observe light refraction through lenses. Construct a simple magnifying glass. |

**Essential question**  
Q-1: How do lenses manipulate light to create images, and what are the different types of lenses and their unique properties?  
Q-2: How does the shape and curvature of a lens influence its ability to focus light, and how can we use lenses to correct vision problems?  
Q-3: What are the applications of lenses in various fields, such as microscopes, telescopes, cameras, and eyeglasses?

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| **Teaching Points** | **Learning Outcomes** | **Sequential Learning Activities** | **Formative Assessment** | **Expected Queries** |
| TP-1: Lenses bend light, causing it to converge or diverge, which affects how images are formed. TP-2: Different types of lenses, like convex and concave, have unique effects on light, leading to magnification or reduction of images. TP-3: Lenses are essential components in various optical instruments, including cameras, telescopes, and microscopes, enabling us to see objects that are far away or too small to be seen with the naked eye. | LO1, LO2 | Activity-1: Explore different types of lenses (concave, convex) and their shapes. Discuss how lenses refract light. Activity-2: Conduct a simple experiment with a magnifying glass to demonstrate how a convex lens focuses light. Activity-3: Discuss real-world applications of lenses, such as eyeglasses, telescopes, and cameras. | [formative assessment no 1] Describe how a magnifying glass uses lenses to make objects appear larger. [formative assessment no 2] Explain how the shape of a lens affects the way it refracts light. [formative assessment no 3] Imagine you are looking through a pair of glasses. What type of lens would be needed to correct nearsightedness and how does it work? | Q-1: What is a convex lens? Q-2: How does a lens bend light? Q-3: What is the focal length of a lens? |
| TP-1: Lenses bend light, causing it to converge or diverge, which affects how images are formed. TP-2: Different types of lenses, like convex and concave, have unique effects on light, leading to magnification or reduction of images. TP-3: Lenses are essential components in various optical instruments, including cameras, telescopes, and microscopes, enabling us to see objects that are far away or too small to be seen with the naked eye. | LO1, LO2 | Activity-1: Explore different types of lenses (concave, convex) and their shapes. Discuss how lenses refract light. Activity-2: Conduct a simple experiment with a magnifying glass to demonstrate how a convex lens focuses light. Activity-3: Discuss real-world applications of lenses, such as eyeglasses, telescopes, and cameras. | [formative assessment no 1] Describe how a magnifying glass uses lenses to make objects appear larger. [formative assessment no 2] Explain how the shape of a lens affects the way it refracts light. [formative assessment no 3] Imagine you are looking through a pair of glasses. What type of lens would be needed to correct nearsightedness and how does it work? | Q-1: What is a convex lens? Q-2: How does a lens bend light? Q-3: What is the focal length of a lens? |

**summarization And Home work :**   
A lens is a curved piece of transparent material that refracts light, focusing or dispersing it.   
  
Q-1: How does a convex lens differ from a concave lens in terms of its shape and how it affects light?  
Q-2: Explain how a magnifying glass uses a convex lens to make objects appear larger.  
Q-3: Design a simple experiment to demonstrate the phenomenon of refraction using a glass of water and a straw.

**Signature of Teacher**