



**Srini Science Mind**  
Abdul Kalam Physical Science Group



**NEW**

**10<sup>th</sup> class**

**PHYSICAL SCIENCE**

**MODEL LESSON PLAN**

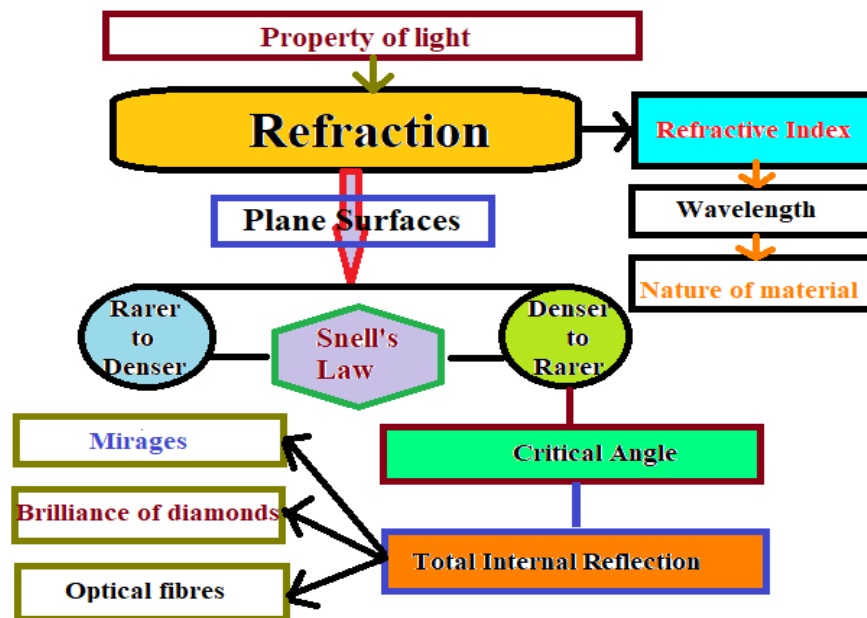


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## TEACHING LEARNING PROCESS

### Induction/Introduction:



### Experience and Reflection:

1. Students are able to utilize the concept of refraction of light day –to –day life.
2. Students will understand the relationship between refractive index and speed of light in medium, apply it in everyday life.
3. Students will be able to identify where the mirages are formed.

Explicit Teaching/Teacher Modelling (I Do)	Group Work (We Do)	Independent Work (You Do)	Notes for:
<ol style="list-style-type: none"> <li>1. Discussion and Conduct an activity of refraction with a tumbler, water and pencil.</li> <li>2. Discussion and Explain the concept of refraction with a long wall, bright metal object in the presence of sunlight</li> </ol>	<ol style="list-style-type: none"> <li>1. Students arrange the apparatus and conduct activities.</li> <li>2. Conduct activity and observe the involved phenomena.</li> </ol>	<ol style="list-style-type: none"> <li>1. Students identify the bending of pencil in a water tumbler.</li> <li>2. Students give examples of refraction of light.</li> </ol>	<ol style="list-style-type: none"> <li>1. Why does ray of light bent when it travels from one medium to another?</li> <li>2. What is the result of the refraction of light?</li> </ol>

<p>3. Explain and conduct an activity of refraction through the shallow vessel, coin and water.</p> <p>4. Explain the concepts of refractive index and relative refractive index.</p> <p>5. Discussion of refractive indices of some material media.</p> <p>6. Explain and conduct of Snell's law verification.</p> <p>7. Explain and conduct an activity of <math>i &lt; r</math> when light rays travel from denser to rarer medium.</p> <p>8. Explain concepts of the critical angle and total internal reflection with activities.</p> <p>9. Discussion and explain the formation of mirages.</p> <p>10. Explain the applications of total internal reflection.</p> <p>11. Conduct and discussion of finding lateral shift using glass slab.</p> <p>12. Conduct and explain of finding the refractive index of glass slab.</p>	<p>3. Collect the information of refractive indices of materials</p> <p>4. Group discussion on " Why do different material media possess different values of refractive indices?"</p> <p>5. Conduct activity and record the observations.</p> <p>6. Solved the problems on critical angle</p> <p>7. Students frame some questions in order to find out how mirages are formed.</p> <p>8. Students draw the diagram of lateral shift using glass slab.</p> <p>9. Students describe the procedure of the activity.</p>	<p>3. Write the definition of refraction of light.</p> <p>4. Students give reasons for no units of refractive index.</p> <p>5. Solved the problems on refractive index.</p> <p>6. Express the mathematical notation of Snell's law.</p> <p>7. Students complete the homework.</p> <p>8. Write the laws of refraction?</p> <p>9. Students will identify the conditions for the formation of mirages.</p> <p>10. Students learn where total internal reflection is used in the medicine and communication fields.</p> <p>11. Write the mathematical expression of refractive index of glass slab.</p>	<p>3. If light rays travel in the normal direction, what is the speed of light?</p> <p>4. Why the refractive index of kerosene is more than that of the refractive index of water?</p> <p>5. Is Snell's law is applicable, when light ray travels in the normal direction?</p> <p>6. Define Critical angle</p> <p>7. Why should you see a mirage as a flowing water?</p> <p>8. Write the applications of total internal reflection</p> <p>9. What is the angle of deviation produced by the glass slab?</p>
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### Check For Understanding Questions

#### 1. Factual:

1. Is the refraction of light essentially a surface phenomenon?
2. Why does light ray follows Fermat's principle?
3. Why does light bend in refraction?
4. Why is sine used in Snell's law?

#### 2. Open Ended/Critical Thinking:

1. Can total internal reflection occur from air to water? Discuss
2. A piece of glass disappears when immersed in glycerin – why?
3. Can a medium have a refractive index less than 1?
4. Why there is no critical angle for light travelling from water to glass?

#### 3. Student Practice Questions & Activities:

- a) Explain the formation of mirage?
- b) How do you verify experimentally that  $\sin i/\sin r$  is a constant?
- c) How do you verify experimentally that the angle of refraction is more than angle of incidence when light rays travels from denser to rarer medium.
- d) Explain the refraction of light through a glass slab with a neat ray diagram.

### TLM's (Digital + Print)

1. Used prepared Quiz paper.
2. Utilized digital classroom.
3. DIKSHA App
4. YouTube Videos

#### Assessment:

1. Collect information on working of optical fibres. Prepare a report about various uses of optical fibres in our daily life.
2. Observe the table. Answer the following questions?

Material medium	Water	Benzene	Turpentine oil	Kerosene
Refractive index	1.33	1.50	1.47	1.44

- i) Which of the above material media, speed of light is less? ii) Among water and kerosene, which is optically denser?
3. Frame some questions to know about the formation of mirage.
  4. Why should you see a mirage as a flowing water?

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEADMASTER

VISITING OFFICER WITH REMARKS