

LASER OBSTACLE COURSE - Five "E" Model of Instruction

A Constructivist Approach to Learning

1. ENGAGE

- What are some sources of light you can think of?
- How do different objects interact with light?
- Does light travel in a straight line?
- Can light be bent?

2. EXPLORE

- Take some time to explore the objects on the table by shining light on them.
 - Does light pass through the object?
 - Does some of the light pass through the object?
 - Does no light pass through the object?
- Use your eyes to look through the lenses, glasses, and prisms. How does the world around you look different?

3. EXPLAIN

- Using what you have just discovered, use some of these definitions to categorize the objects.
 - **Reflect:** Light bounces off the surface of the object at an angle equal to the incident ray.
 - **Refract:** Light goes through an object at a different angle depending on the refractive index of the medium. This is caused by the change in the speed of light as it travels through the medium.
 - **Prism:** A prism can be used to show the colors that make up white light.
 - **Transparent:** Light passes through the object.
 - **Translucent:** Some light passes through the object.
 - **Opaque:** No light passes through the object.
 - **Beam splitter:** An optical device for dividing a beam into two or more separate beams.

4. ELABORATE

- Laser Obstacle Course (use instructions on attached handout)
- What type of object can you use to redirect the laser light to the target?
- How long will it take you to get the light to the target?
 - Can you be the **FASTEST** time of the day???

5. EVALUATE

- Does a mirror reflect or refract light?
- How easy is it to direct light to a particular object?
- How can you split a laser beam into two beams of light?
- What's the difference between transparent, translucent, and opaque objects?
- When is it okay to look into a laser?