Nova’s Light and Shadow Investigation Log

Learning objective: To observe, record, and explain how light travels and how shadows are formed.

Join Nova the owl on a scientific quest to understand light. Follow the steps below to conduct your own light experiment using a torch and a solid object. Use your scientific knowledge to explain your findings clearly.

Word bank: transparent · translucent · opaque · light source · reflection · shadow · blocked · travels · rectilinear

1. Identify your light source and the object you are testing. Explain why you chose this specific object to create a shadow. (2 marks)

2. Describe what happened to the light when it hit the object. Did it pass through, or was it blocked? Justify your choice of scientific vocabulary. (3 marks)

3. Compare and contrast: How does the shadow change if you move the light source closer to the object? Explain why this happens. (3 marks)

4. If you replaced your object with a clear glass of water, what might happen to the light? Predict the outcome and explain your reasoning. (2 marks)

5. Explain why we cannot see objects in a completely dark room, even if our eyes are open. Use the term 'light source' in your answer. (3 marks)

6. What might happen if light did not travel in straight lines? How would this change the way shadows look on the ground? (3 marks)

Extension challenge: Design a shadow puppet theatre and justify your choice of materials for the screen. Explain why you chose a material that is translucent rather than opaque or transparent.