

***Deliberate and specific retrieval of expected prior knowledge (be specific)***

Retrieval should occur regularly throughout the learning journey:

**From Y8 Waves 1:**

- Types of waves
- How we hear
- Detecting waves
- Sound waves caused by vibrations
- Speed of sound and light
- Ultrasound and uses

**From Y8 Earth:**

- The structure of the Earth

***Academic transformation (be specific)***

Your core curriculum must do all of the following:

**Wave Types**

- Waves can be transverse and longitudinal. Examples of transverse. Describe amplitude, wavelength, frequency and time period.
- EM spectrum and uses

**Transmission of waves**

- Reflection practical – prove the angle of incidence = angle of reflection
- How do we see?
- Refraction practical
- Refraction – the speed of the waves changes as they move into different medium of different optical densities

**Lenses**

- Convex lenses, how do they work – link to the eye and energy transfers

**Sight**

- Rough structure of the eye
- How we see using reflection
- Dispersion of light
- Seeing in colour, absorption and reflection

***Personal transformation (2 or 3)***

Deliberately inviting students and our community to enrich learning by sharing their experiences, history and first hand accounts. Explicitly choose application opportunities for learners to:

- Construct a pinhole camera
- Opportunities to discuss colour blindness, short and near sight, how glasses and contacts work
- Using old prescription glasses for students to try out
- Use lenses to make an image blurry and undo this with the opposite lens
- Careers – optical fibres in EM spectrum and uses

***Can I Learning Questions***

- ***Can I explain how waves travel?***
- ***Can I explain how light interacts with matter?***
- ***Can I explain how a pinhole camera is made?***
- ***Can I explain reflection and refraction?***
- ***Can I describe how we see?***

***Literacy***

***Key vocabulary***

Transverse, Medium, Amplitude, Wavelength, Frequency, Period, Spectrum, dispersion, wave speed, optical density, convex, reflection, refraction, absorption, luminous, retina, electromagnetic

***Disciplinary reading***

One-Way Mirrors – How do they work?

***Classroom talk***

Why can we see the sun but not hear it?  
Why are different objects different colours?

***Misconceptions (5 or 6 examples)***

- Waves always refract at a change in medium (there needs to be a change in the optical density)
- The models are 2D, waves move in all directions
- We draw the diagrams as a straight line but it's a wave
- White light is a single colour
- Objects emit light – they reflect light
- Black is a colour – not the absence of light