

getting the physics straight

frequency as the fundamental characteristic

amplitude sets energy

waves superpose

waves travel, carrying information

waves can do remote working

representing the topic effectively

waves unpacked, so that the term has meaning

keeping rays, beams and paths separate

using a photon model of the interaction of radiation and matter

particular teaching challenges

correct use of technical terms

relating new phenomena to an established phenomena

providing explanations; not rules of thumb

embedding 'radioactivity' in an intelligible framework, so as to

relating phenomena to a wave model

constructing a general, non-mathematical model of a wave

developing simple models of the atom, focussing on energy

developing simple models of the nucleus, focussing on energy

dealing with existing ideas

contamination and irradiation are different

referring to the 'size' of photons

spontaneous emission of radiation

nuclear decay as transmutation

geometry and decreased intensity

selected teaching principles

unpacking the idea of a wave

linking ideas from different areas: reusing ray diagrams

making sense of the interactions of radiation and matter