

### Lesson 17: Waves of War

#### Teachers' notes

The Waves and War lesson is a paper-based group activity that mirrors scientific and tactical discussions prior to and during World War Two. Students take the roles of scientists and are asked to use their knowledge of physics to prioritise avenues of research.

Because both sides of the conflict are included, the activity is competitive and has the not insignificant outcome of winning or losing a war.

The teacher takes a facilitating role, and will be able to discuss the ethics of science in time of war. It is hoped that students might understand more about how scientists work in large teams, and to appreciate that scientists have a heavy ethical burden placed upon them.

#### ***Starter***

Blindfold a volunteer/victim. Ask them to see if they can feel the writing on a coin using their fingers. They should feel something. Ask them to sit on a chair (be careful and hold their hands as they sit!) On the chair place the same coin. Can they still feel it? Probably....but can they feel the words still? Explain the link between the small size of your fingers and the fine detail they reveal. The human bottom is larger and reveals detail about larger objects. In other words smaller wavelength electromagnetic waves show fine detail compared to longer waves.

#### ***Main Activity 2***

At first glance this looks like a lesson to avoid (too complicated); however, it is thoroughly enjoyed by pupils and does work well. The class must be divided into two teams. Piloting has shown that 'girls versus boys' ensures that the girls participate; in mixed gender groups they tend to take a passive role.

The teacher does need to keep prompting the groups, reminding them to have explanations for their choices as often it is the explanation that gains the points. There are the same number of points available to both teams and the outcome of the war depends on the size of the difference between the teams.