ACTIVITY NINE: CHOOSING THE RIGHT MATERIAL FOR THE JOB

Learning Objectives:
ALL: Students will know the properties of solids, liquids and gases.
MOST: Students will know the how to use the properties to decide the right material for a job.
SOME: Students will know the developments in materials since WWI and the difference to soldiers lives that they have made.

Resources:
Samples of (or pictures with descriptions of): iron, steel, woollen fabric, canvas, leather, rubber, bone

STARTER:

Ask students to describe the following substances by what they can do (properties): solid, liquid and gas.

INTRODUCTION:

Check that students are aware of the following:

- Solid: Cannot flow, does not change shape.
- Liquid: Can flow, takes the shape of containers, amount stays the same unless some is spilt.
- Gas: can flow, escapes unless kept in a sealed container.

They will also need to be introduced to the term: composite material – a material that is made of several types added together so that it can have more useful properties.

(instructions continue on the following page)

MAIN TASKS

Students to use the samples or pictures & descriptions of the first set of substances that were available in WWI to complete something similar to the following table:

Job	Description of job	Choice of material	Reason behind choice
Projectile/bullet	To pierce through an object	Iron	Solid, not as expensive as steel but still quite strong and easy to shape
Explosive	To create a quick push force in one direction	Gas	Let off a large amount quickly and it will force bullet in correct direction
Gun	To contain and send projectile in one direction without getting damaged	Steel	Strong enough to contain explosion and send projectile in correct direction.
Top of shoe	To prevent foot getting too wet from contact with rain	Leather	Relatively waterproof and east to shape even though a solid so will not hurt as much to wear
Sole of shoe	To prevent foot getting wet from contact with mud	Rubber	Tough waterproof solid that is a little bit flexible but will not break when walked on regularly
Jacket and trousers	Flexible and able to stop much rain hitting soldiers skin	Canvas	Able to stop a reasonable amount of water getting through, flexible and comfortable to wear.
Jumper	To keep soldier warm	Wool	Keeps in body heat, flexible solid with gaps in between strands to allow sweat out.
Comb	To remove lice from body hair	Bone	Not flexible, easy to clean/wipe. Can see lice easily against surface (black against grey-white)

Extension

Students could research different polymers that we wear now and describe the differences between their properties and wool/canvas.

REVIEW

Students to label a diagram/picture of a trench with soldiers in with at least 3 common materials that were used in the trenches and explain why they were used.