

How can Science help the homeless?

WOW!

(An *engaging* event to capture interest and energise. Guided by an adult initially; a supported experience)

Visit from a local homeless charity or similar (e.g. ShelterBox) or watch films of natural disasters (not too sad).

Watch [Ted Talk](#) - to show that small inventions and changes can make huge differences to people's lives.

Consider the [work of scientists](#) in the field of materials that have come up with [innovative product ideas](#).

Learners create a list of things that they would like to solve by being a Scientist - first thoughts only.

Immersion: skills (TRY IT)

(Developing **empathy** of events, processes or people, exploring and enhancing language and social skills)

G - Use maps and iPads to locate countries including Ethiopia (setting of Garbage King).

DT – Practice making annotated sketches, cross-sectional diagrams and exploded diagrams of existing products (shelters/camping equipment).

DT – Practice cutting (different materials) and using different ways to join, strengthen and reinforce.

SC – Homeless people might not always have access to clean water? Explore different ways to separate mixtures and solutions. Are all changes reversible? Explore separation methods and observing changes over time.

Milestone

Children should be better at specific skills or be better at working independently/with others.

Immersion: knowledge (TRY IT)

(Developing **knowledge** of events, processes or people, exploring and enhancing language)

G – Explore physical characteristics and climates of continents. Focus on characteristics of Ethiopia and UK. How might these differently affect the homeless?

DT – Research existing products and develop design criteria from this (shelters/camping equipment).

SC – Compare and group different everyday materials. Which are waterproof? Which conduct thermal heat? Which are best for wet/dry/cold/heat?

SC – Explore electrical components, design simple circuits and explore how to increase/decrease the brightness of a bulb.

A – What is an explanation text? Research features.

Milestone

Children should have a better understanding of area of study and should be able to identify new knowledge.

Have-a-go: skills (USE IT)

(Building on immersion, children have opportunities to acquire and **practice** skills in numerous ways)

SC – Plan fair testing experiments to separate materials and test materials for thermal conductivity and waterproof-ness.

DT – Thinking about the challenge, plan and design their prototype products for homeless kit using Scientific understanding of separation, filtration, sieving, evaporation, waterproof materials and electricity. What recyclable materials could they use like Garbage King? Test usability of these. How will they present their end product?

Milestone

Children will have practiced a skill, or repeated skills in different ways, and have been planned are prepared for the challenge.

Have-a-go: knowledge (USE IT)

(Building on immersion, children have opportunities to acquire and **develop** knowledge in numerous ways)

DT – Evaluation: Compare existing products to their own ideas. What skills will be useful? How will they justify materials? Gather feedback from others. Think about the geography of Garbage King – What changes could they make?

SC – Compare and group different everyday materials AGAIN based on scientific findings. Rank best materials.

A – Use features of an explanation text to write an explanation – using scientific vocabulary – justifying their chosen products.

Milestone

Children can draw on new knowledge without adult support in order to complete the challenge.



The Challenge (PROVE IT)

(Combines skills and knowledge practiced in Have-a-go to, independently of adults, prove what they have learnt, by answering the question)

Produce a homeless kit for someone in the UK or Ethiopia. Consider shelter (DT), warmth, light and water (Science).

Documenting the challenge

Produce annotated plans, explanations and models of homeless kit.

Celebrating the challenge
Hold a science fair and invite parents in to look at challenge outcome.