Work sample: Purifying drinking water after a disaster

Relevant part of the achievement standard

By the end of Year 7, students pose questions and apply scientific concepts to everyday problems and make general predictions based on their experiences. They plan procedures for investigations that take into account the need for fair testing and use equipment that improves fairness and accuracy. They communicate their observations and data clearly, summarise their data where appropriate, and suggest improvements to their methods.

Students predict the effect of single changes on systems involving living things and suggest ways to classify organisms based on observable differences. They distinguish between pure substances and mixtures and plan appropriate methods to separate mixtures. They explain why some resources are not renewable and describe changes to water during the water cycle. They describe how unbalanced forces change the motion of objects and how changes in the position of objects in space cause other observable effects. They identify where science knowledge is used to propose solutions to problems and describe examples of where people use science in their work. They describe how evidence has led to an improved understanding of a scientific idea.

Summary of task

The students were asked to investigate methods of purifying water after a local disaster such as a tsunami and represent their findings in a flowchart. The water they were asked to purify was:

- originally from a salt water pool
- contained different types of debris such as timber, metal, plant material, mud, sand, concrete, plaster, a shallow film of oil and salt

The equipment available to them included a:

- small portable gas cooker
- half-full gas portable gas cylinder
- pot with no lid
- water bottle (empty) with lid
- nylon singlet top
- clean pair of socks
- travel journal with plastic cover
- small Swiss army knife
- Broken plant pot which could serve as a bucket.

Student attainment of the achievement standard is determined at the end of a reporting period after reviewing relevant assessment evidence.

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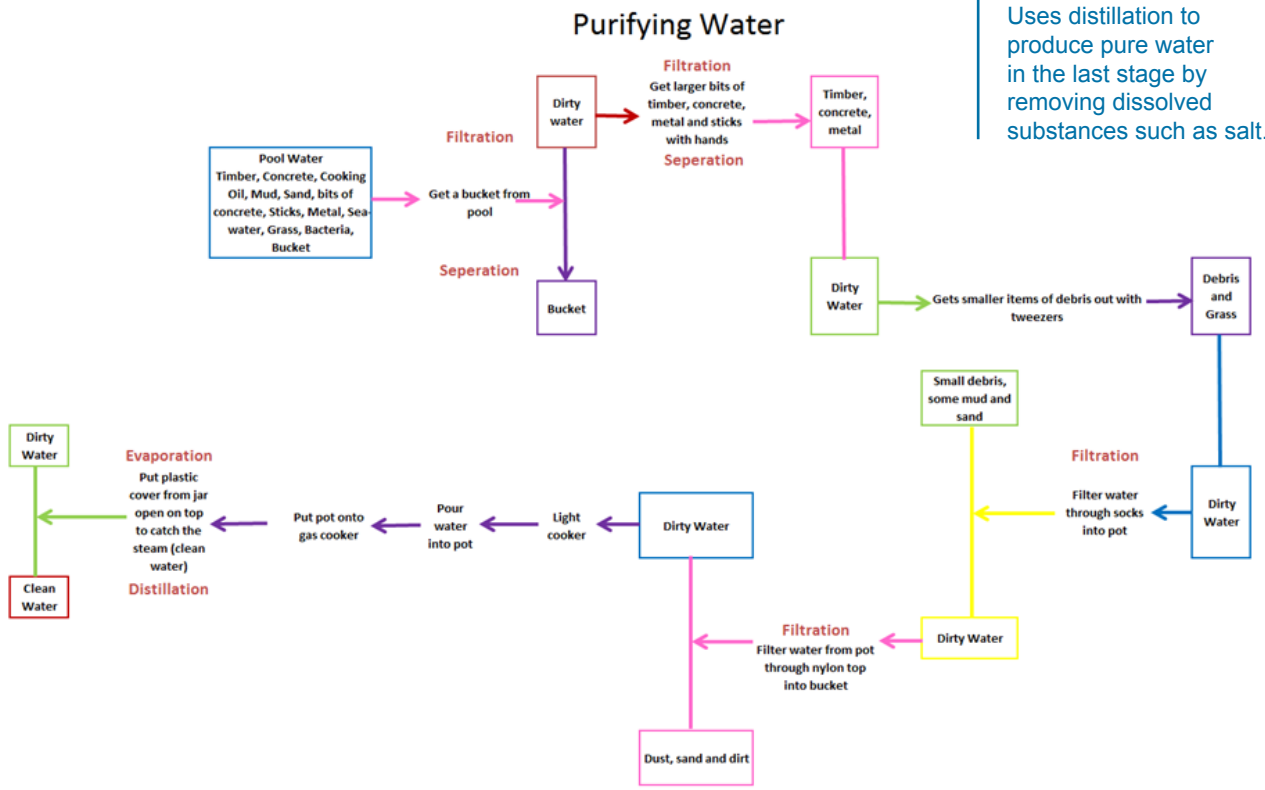

Annotations

Recognises that larger objects can be removed by hand and that smaller particles can be filtered using different materials (for example socks and nylon) to remove insoluble substances.

Uses distillation to produce pure water in the last stage by removing dissolved substances such as salt.

Annotation summary

This work sample demonstrates an understanding of separation methods. The student has applied scientific principles to solve this problem.

Acknowledgement:
ACARA acknowledges the contribution of trial school teachers and students in providing the tasks and work samples. The annotations written by ACARA are referenced to the Australian curriculum achievement standards.