BIMBINGAN PdPc

Projek 1

Objektif:
***Objective*:**
Untuk membina satu model pembersihan air.
To build a model of a water purification.

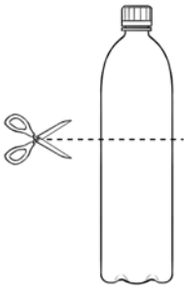
Konsep:
***Concept*:**
Kaedah pembersihan air yang digunakan ialah penurasan. Kaedah penurasan digunakan untuk memisahkan bendasing terampai daripada air. Apabila air melalui batu kerikil dan pasir, pergerakan bendasing terampai terhalang. Model pembersihan air ini beroperasi berdasarkan prinsip asas yang sama seperti proses penapisan air bawah tanah. Model tersebut terdiri daripada lapisan-lapisan berikut:
(a) batu kerikil – untuk menapis sedimen besar
(b) arang – untuk membuang bahan cemar dan kekotoran melalui penyerapan kimia
(c) pasir – untuk membuang kotoran halus
(d) kapas – untuk mengeluarkan zarah-zarah kotor daripada air
The water purification method used is filtration. The filtration method is used to separate suspended particles from water. When water passes through gravel and sand, the movement of suspended particles is obstructed. This water purification model operates based on the same basic principle as the process of underground water filtration. The model consists of the following layers:
(a) gravel – to filter large sediments
(b) charcoal – to removes contaminants and impurities through chemical absorption
(c) sand – to remove fine dirt
(d) cotton – to filter dirty particles from the water

Arahan:
***Instructions*:**

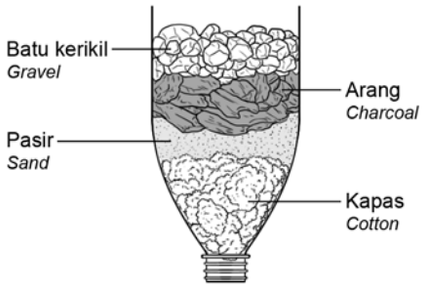
1. Murid diminta mencari maklumat di internet.
   Students are asked to search for information on the internet.
2. Murid melakarkan reka bentuk model pembersihan air.
   Students sketch the design of the water purification model.
3. Murid berbincang dalam kumpulan untuk mengenal pasti langkah-langkah mereka cipta model pembersihan air.
   Students discuss in groups to identify the steps for creating the water purification model.
4. Murid diminta menyediakan bahan-bahan yang diperlukan sebelum memulakan projek reka cipta ini.
   Students are asked to prepare the necessary materials before starting this design project.
5. Murid berbincang dalam kumpulan mengenai kelemahan model dan pengubahsuaian yang perlu dilakukan selepas projek selesai.
   Students discuss in groups the weakness of the model and the modifications that need to be made after the project is completed.

Senarai bahan:
***List of materials*:**
(a) Botol plastik kosong / *Empty plastic bottle*
(b) Air / *Water*
(c) Arang / *Charcoal*
(d) Pasir / *Sand*
(e) Kapas / *Cotton*
(f) Pisau / *Knife*

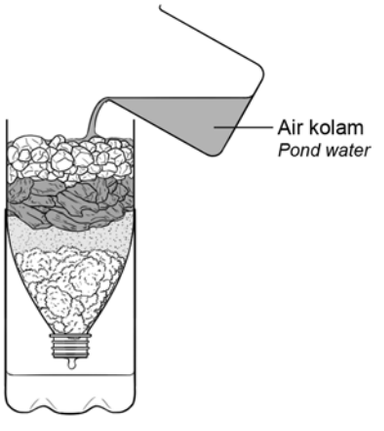
Langkah-langkah:
***Steps*:**



1. Potong botol plastik kepada dua bahagian.
   Cut the plastic bottle into two parts.
2. Tebuk beberapa lubang kecil pada penutup botol plastik.
   Punch several small holes on the cap of the plastic bottle



3. Terbalikkan bahagian atas botol plastik, kemudian masukkan kapas ke dalam bahagian atas botol plastik.
   Turn the top part of the plastic bottle upside down, then place cotton inside the top part of the plastic bottle.
4. Masukkan pasir, diikuti dengan arang dan batu kerikil (ketinggian 2 cm setiap lapisan).
   Add sand, followed by charcoal and gravel (each layer with a height of 2 cm).



5. Masukkan bahagian atas yang berisi dengan bahan-bahan penapis ke dalam bahagian bawah botol plastik.
   Insert the top part filled with filtering materials into the bottom part of the plastic bottle.
6. Tuangkan air kolam ke dalam model ini.
   Pour pond water into this model.
7. Rekodkan warna dan bau air penurasan.
   Record the colour and smell of the filtered water.

Perbincangan:
***Discussion*:**

Kelemahan produk / *Weaknesses of the product*

- Selepas satu tempoh, bendasing terampai akan terkumpul dan menyumbatkan bahagian penapis di dalam model ini.
  After some time, the suspended particles will accumulate and clog the filter section in this model.
- Model ini tidak dapat menghilangkan bau air sepenuhnya.
  This model cannot completely remove the odour from the water.

Pengubahsuaian / *Modifications*

- Tambahkan alum ke dalam air kolam dahulu supaya zarah-zarah lumpur bergumpal dan tenggelam di bawah bikar sebelum penurasan.
  Add alum to the pond water first so that the mud particles clump together and settle at the bottom of the beaker before filtration.
- Mengoksidakan air kolam sebelum penurasan (menuang air kolam dari satu bikar ke bikar lain berulang kali).
  Oxidise the pond water before filtration (by pouring the pond water from one beaker to another repeatedly).