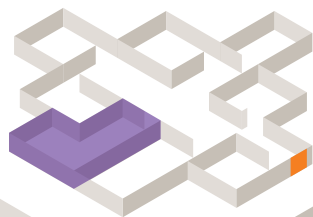


'Examine a building's materials. Do they benefit or harm the environment?'



Sciences

Mental materials

Collect a random mix of 30 small items (eg a pen, a postcard, an orange, a box, a teaspoon) from around school or home and cover them in a sheet before the lesson. Get pupils to sit around the sheet. Explain the activity. Remove the sheet and ask pupils to try to memorise the items. Cover them again after 30 seconds. Ask pupils to list the items they remember in two columns – organic and inorganic. Go through them. Then repeat the activity this time asking them to put them into recycling categories (eg plastics, metals, compost, paper, mixed etc).

Biosphere in a bottle

This activity demonstrates how our earth's biosphere works. Collect and prepare some large plastic bottles prior to the lesson. In pairs pupils put water and various organic and inorganic materials into a bottle and seal it. Explain how it is a closed system just like earth – the biosphere bottle has its own climate, water and carbon cycles and can achieve a balance over time. Like Earth, the biosphere bottle responds to changes imposed on it and so there are numerous learning opportunities through studying it. Give yourself plenty of preparation time. www.bottlebiology.org

Which insulator?

Discuss the concept of insulation. Fill a number of plastic bottles with hot water. Wrap each bottle in a different material (eg foam, paper, plastic, foil, wool, bubble wrap etc). Measure the change in temperature every two minutes. Compare the results then draw a line graph to show the insulating properties of the different materials. Pupils could finish by writing a short paragraph explaining which material they would use to insulate their house.

The burger tree

Show your class a picture of a burger. Ask pupils to list the different components (bread, beef, sauce, salad etc). Ask them what's needed to produce each component (eggs for mayonnaise, grain for cows, yeast for bread etc). Then relate it to the energy needed to produce each ingredient (transporting tomatoes, manufacturing cow feed, heating bread etc). Go into as much detail as possible. You could get them to represent this information as a tree with the burger as the trunk. Discuss with pupils the importance of considering their food, where it comes from and the impact of their choices.

Grow your own lunch

Plan to create an area of your school grounds where fruit and vegetables could be grown. Ask pupils to consider from where the food they have at lunchtime might have originated. Is it locally grown or does it have to travel a long way? Then think about how the school grounds could be adapted and used to produce food for the school kitchens. What could be grown there? How would this change from season to season and in differing weather? Why would opting for locally grown food be better for the environment? Pupils could design their gardens in teams and present how they plan to overcome these issues to the class. www.teachernet.gov.uk/growingschools

Create your own bio diesel

Highlight the problems of using fossil fuels and discuss the potential of bio fuels. For example you could demonstrate how to make bio diesel with the class. This can be made by reacting used vegetable oil, sodium hydroxide (soda lime) and methanol. Ensure adequate safety precautions are made as these components are very hazardous. It will take a week to settle and the by product can be used to make soap. This is a dangerous experiment for experienced chemists to demonstrate to older pupils only! Ensure you have practised the demonstration well in advance. See tinyurl.com/33ovrn

Energy links and resources

Think energy www.think-energy.co.uk
Sustainable energy for teachers www.unitedutilities.com/teachers
Energy Matters tinyurl.com/yr2gsl