ECOBOT'S ENERGY CHALLENGE

Lesson Plan: Year 5 — Maths

Objectives:
• To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
• To use rounding to check answers to calculations.
• To raise awareness of energy saving measures.

Resources:
• Energy saving Top Trumps cards (Resource A).
• Calculators.

Teacher Input:
Remind children that Ecobot's mission is to help us save energy. He has discovered that there are many things that you can do to buildings to help save energy and these ideas could be used at home and at school. Brainstorm any ideas that the children already have (double glazing, loft insulation, draught proofing, solar panels etc.) then show the Top Trumps Energy saving cards (Resource A) and discuss further. Look at some examples of costs together. Which is the cheapest/most expensive to install? Which one has the most/least amount of annual savings? Look at the cost of installation and compare it to the annual savings made. How would we work out how long it would be before pay back time? How many years would it take to pay back the cost of installation? Explain how the numbers can be rounded up or down to help estimate the costs. Then divide the average cost by the annual savings. In mixed ability pairs, children to estimate the approximate length of pay back time and then check the exact time with a calculator. Discuss findings.

Independent Activity:
Show the children Resource B, which compares the energy saving measures made by 3 households. Their task is to work out which house spends the most money and which house saves the most on their annual bills. How much will each household save after 10 years/15 years/20 years? When will each household pay back the total cost of installation? Which is the most cost effective energy saving measure?

Differentiation:
H.A. After completing the task, children to suggest energy saving measures for a house of their own to beat the house with the best annual savings.
M.A. Complete comparison activity for all houses.
L.A. Find total costs and savings for House A only.

Plenary:
Discuss with the children how these measures for houses could impact on saving energy in school. How many times bigger would the school be than the average house? How could we estimate how much a school could save if it made some of the changes? Would the installation costs be multiplied by the same amount? Are there any of these energy saving measures already installed in homes or the school? Which measures seem to save the most money in the short/long term?