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Designing an Energy Efficient House

Student Inquiry – Small Group

Overview

You are going to work in groups to design an energy efficient house. The house you will design is not a high-tech home but a family home built to an average budget. The design will need to consider the use of passive solar energy.

Each group will:

- Complete internet research using the resources on page 5 to identify what factors and design features need to be considered when designing an energy efficient house
- Discuss their research findings and work together to agree on a design for an energy efficient house
- Present their design to the class describing its features.

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Key Question

What is your group's design for an energy efficient house? List and then sketch your ideas in the space below.

Before you try to answer this question, have a go at answering supporting questions A and B on the next two pages.

You can research information on these questions by using the resources listed on page 5.

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Supporting question A

What passive solar energy factors need to be considered when designing an energy efficient house?

Factors	What design features can be used to increase energy efficiency?	How will this increase energy efficiency?
The sun's path is higher and there are more sunlight hours during summer.	*Plant deciduous trees on the North and West to allow sunlight in during winter, and to shelter the house from the sun in summer.*	*Save energy on air-conditioning.*

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Supporting question B

What other energy efficiency factors need to be considered when designing an energy efficient house?

Factors	What design features can be used to increase energy efficiency?	How will this increase energy efficiency?
Heat can be lost through walls. Example	*Put insulation in the walls.* Example	*This will trap warm air and slow down heat loss during winter. The insulation will also help keep the house cool in summer.* Example

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Resources

These websites provide all the information you need for this investigation.

Synergy
http://www.synergy.net.au/Residential_Segment/SmartWays_To_Save/Smartways_to_Save2.html

Note: This site requires a Flash player, but the Flash player can be downloaded for free: http://www.adobe.com/shockwave/download/download.cgi?P1_Prod_Version=shockwaveFlash

Energy Efficiency and Conservation Authority (ECCA)
http://www.eeca.govt.nz/eeca-library/renewable-energy/solar/fact-sheet/passive-solar-design-fact-sheet.pdf