Building a Better Future

Welcome to Sandwell's Interactive housing website *Building a Better Future*. It covers aspects of the National Curriculum from literacy, numeracy, history and geography to cross-curricular themes such as environmental issues and citizenship.

The website is divided into 6 modules, which have been designed to be used either independently or together.
The website has 3 entry levels – **red** (Key Stage 1), **yellow** (lower Key Stage 2), and **green** (upper Key Stage 3). These are guides only, and teachers are invited to be innovative.
The 6 modules are as follows:

1. Why do we have houses?
2. Housing in the past.
3. Problems in housing.
4. One solution – the Millennium House Watford.
5. Integer housing in Sandwell
6. Assessment module

The following notes are intended to help teachers get the most out of the site for their children, and to offer additional work and activities to compliment the site away from the computer.
Worksheets can also be downloaded and printed as an extra resource.

Module 1 – Why do we have houses?

This module is about houses in the present day, starting with the children's own houses, and evaluating them according to the children's own criteria.
This is then extended by comparing different types of housing found in Britain today. Finally the need for housing is summarised, and the children can identify priorities in the general characteristics of the houses they have seen.

Our House

Before logging on to the website with the children, it would be helpful to do some introductory work in class.

1) To begin with, discuss what the children's own houses look like and what they contain. Start by identifying the features they can see on the outside of the house and then talk about the rooms inside and what they contain. You could do a class survey as to which house features are universal and which are not. **Photocopiable sheet 1** can be used either at A4 size for individual work or A3 for a class survey. Discuss why some features relate all houses, and others only appear in some.

2) Once the main features of pupils' houses have been identified, the children can focus more specifically on to their own house and draw a picture of the outside of it. This could make a good title page for the project.

3) Older children could then draw a floor plan of their house and label the rooms.

4) One of the most important themes of this project is the materials used in different houses. To introduce this theme, the children should consider what the outside of their houses are made of and why. **Activity 1** on the website allows children to choose the materials on an interactive house and encourages them to think about why these materials are used. Some discussion about where the materials come from would broaden the activity.

5) The children also need to think about the whole of their house and contents and consider what is a necessity and what is a luxury. **Activity 2** is a sorting game which helps them to decide what they need to survive, what they like, and what they would happily live without. This is designed to introduce them to the concept of basic housing requirements.

Different houses in Britain

In this section, children will identify different types of houses found in Britain today and compare them with their own house. The focus of this work will be to develop the themes of materials used and common features found in all types of housing.

1) Before going back to the website, the children should be provided with magazines and newspapers, which have pictures of houses and other forms of living accommodation (e.g. caravans, boats, mobile homes etc). They should cut out examples of a variety of houses and stick them on a blank sheet of paper.

2) To start extending the children's thoughts the opportunity has been provided here to undertake an extended writing task. They should choose one of the house pictures they have cut out and imagine who might live in it and what their lives might be like. **Photocopiable sheets 2& 3** provide a writing frame for this.

3) **Activity 3** on the website is a matching activity. The children need to pair up pictures and their names.

4) It is important that the common features of the different types of housing are identified. Use the website and magazine pictures and previous house survey sheet to collate a checklist on **Photocopiable sheet 4**. The children should be encouraged to list the things that all or most houses have, e.g. roof, walls door etc.

5) Some schools may wish to extend these comparisons into housing in other countries. If schools have access to a photo pack on houses in other countries, then it would be good for the children to see these and consider the different materials used and the necessities and adaptations required by different climates.

Why do we need houses?

In this section the children will draw together what they have learnt in this module and try to conclude why people need houses to live in. The children may then be able to prioritize the features needed when designing or building a house. The most important things for the children to understand are that houses provide shelter from the elements, privacy and comfort.

1) **Activity 4** introduces a cartoon of two people– the first one does not have a house, while the second one does. The children need to think of or choose words to compare the two situations, which will help them to summarize why a house is needed.
2) Older children could then use **Photocopiable sheet 5** to prioritize the features of a house and explain the reasons behind their choices. This will help them to see the basics of why houses are needed.

Module 2 – Houses in the past.

This module uses a study of housing in the past to develop the children's understanding of the basics needed in housing. It is also designed to introduce the concept of problems encountered by people living in some houses. Module 2 begins to make comparisons between historic and modern housing, which will be followed up in Module 3 by starting to find solutions to some of these problems.

The website uses the Oak House in Sandwell as a resource for this section. It provides photos and pictures to give access to history. Of course if this work could be combined with a real visit to Oak House or a similar building, then the children's understanding would be enhanced.

1) To introduce this module, **Activity 1** on the website provides the children with some examples of housing from the past. These pictures can be dragged onto the correct slot on the timeline to give an overview of the development of housing through the ages.

2) It would be useful to discuss as a class how the features of these houses compare with those identified on the checklist in Module 1. **Photocopiable sheet 6** provides a tick sheet so that these comparisons can be recorded and viewed (found on Module 2 Green level).

3) Before moving on to Activity 2, it would benefit the children to learn about the history of Oak House. This activity could be done as a literacy text, or in a history lesson. **Photocopiable sheets 7 & 8** give differentiated versions of the history of the Oak House and the period in which it was built. An appropriate fact-finding sheet **(PHOTOCOPIABLE sheets 9 & 10)** can be used by the children to record their findings. This research could be supplemented by using other books on the period.

4) **Activity 2** on the website gets the children to label a picture of the Oak House with the materials it is made of. Older children are also asked to name some basic architectural features. It is very important for them to note the timber frame construction, and to discuss why this was so common in Tudor houses (i.e. that oak trees were strong, long-lasting, easily obtainable and relatively cheap.)

5) **Activity 3** is an interactive tour of Oak House. The children can navigate their way around both floors of the house and click to discover more about each room. Children can use the mouse to circle what is the same

and what is different in each room compared to their own house. This could be done instead on paper, using **Photocopiable sheet 11**, and used as a basis for further work.

6) To begin looking at housing issues in a little more depth, the children should try to identify problems that they can envisage with having to live in this house. Particularly focus on the necessities such as water supply, sanitation, heating and lighting etc. Enter these problems into the table on **Photocopiable sheet 12**

7) The children should then consider how these problems have been solved in our own housing (if they have been solved). Using **Photocopiable sheet 12,** with the previously entered problems they found in Oak House, the children should discuss and fill in solutions we have developed (i.e. Fetching water solved by having pipes to and taps in the house).

Module 3 – The problems of housing today

Module 3 is intended as a way of getting the children to think constructively about modern housing and the problems which it presents. The main aim of the module is to widen children's perceptions from specific, local issues to the global challenges facing the world today.
Issues such as the usage of fossil fuels, wasting of water and high-energy requirements to produce certain materials are introduced. Social concerns about housing are raised by considering fit and unfit living conditions.

1. Discuss with the children the problems they can identify with the living conditions of their own home. This should lead into an introduction to other concerns such as the concept of social housing and more global issues like energy conservation and sustainability.
2. Conduct a class or group brainstorm on what resources we use in modern houses.
3. Keep a diary on **Photocopiable sheet 13** for a day to see what water/electricity the children use.
4. **Activity 1** on the website helps the children to think of more uses for water by asking them to guess how water is being used from the sounds. This page also provides a link to a site, which will help the children to calculate how much water they use. Alternatively, this could be done as a Numeracy investigation by using **PHOTOCOPIABLE sheet 14.**
5. It would be helpful for the children to see how much water they use physically, so this would be an excellent chance to practice measuring skills and understanding of capacity.
6. To get the children thinking more deeply about their own use of water, they should evaluate in discussion, and then on **PHOTOCOPIABLE sheet 15,** their usage and decide how they could save water.
7. **Activity 2** on the website illustrates (by means of an animated flow chart) how electricity is commonly produced. This activity is annotated to provide insights into how coal generated electricity affects the environment.
8. It is important to revisit the theme of materials used to build houses, and to begin to evaluate them in terms of sustainability and suitability. The children will consider bricks as the traditional building material, so they should be reminded of how bricks are made. The children should attempt their own simple flowchart of this process. The implications of the process should then be discussed. Draw out the fact that the clay can't be replaced and that a lot of energy goes into making them. Older children could then annotate their flow charts with this information.
9. It is important to talk about living conditions and what makes good or bad living conditions. In doing so we are introducing the children to one aspect of social housing. To begin with get the children's own ideas as to what they think are good and bad living conditions.

10. The technical definition of poor housing considers the condition of a house in the following aspects:

- Disrepair
- Food preparation
- Dampness
- Ventilation
- Instability
- Bath/shower

11. **Activity 3** provides photographs of houses displaying poor living conditions. The children should identify the unsatisfactory aspects according to the list above.
Activity 4 introduces statistics as a way of measuring a problem. Data is presented on housing conditions in Sandwell in table form. The children are asked to memorise some details which they then should enter into fields. This then creates a graph to visually represent the data.

Module 4 – The Integer House – one possible house for the future.

This module begins with a photo tour of the original Millennium House at Watford. This photo tour gives the children a chance to view some of the external and internal features of the house. This should help to give an insight into the similarities and differences between it and normal housing.

Activity 1 consists of thumbnail photos, which can be clicked on to enlarge and reveal some interesting facts about them.

Photo titles

Number of Photograph	Title of Photograph
1	Exterior of conservatory
2	Side exterior
3	Exterior with front door
4	Lounge
5	Kitchen
6	Study
7	Recreation room
8	Upper conservatory
9	Conservatory staircase
10	Bedroom 1
11	Bedroom 2
12	Master Bedroom
13	Modular bathroom
14	Garden – Chicken coop
15	Garden - pond

Activity 2 looks at the materials used in the Integer House. As the activity is similar to the 1st one on the children's own houses and on Oak House, it acts as a direct comparison with both these buildings.

Activity 3 on the website will hopefully provide the children with an understanding of the flexibility of the bedrooms. The wall between the 2nd and 3rd bedrooms moves so the house can have 2 bedrooms or 3 bedrooms of various sizes. The children can try different ways of laying out these rooms in this activity.

Activity 4 focuses on one of the most fascinating features of the house – the doors between the study and the recreation room. The glass in these door are made from a liquid crystal which changes from transparent to translucent when an electrical current is passed through it. This activity provides an annotated diagram of how this works as well as a link to Priva Glass, which is the company which makes it. This opens up the opportunity for further research.

Activity 5 provides photos of Mystery Objects from around the house. The children should look closely at each picture and discuss it in the light of the following questions:

a) What is it?
b) What is it used for?
c) What is it made from?
d) Why is it made from this?
e) How might it save energy?

A worksheet is provided which could be used with the pictures online, or in printed form. **(Photocopiable sheet 15).**

When the children have considered each picture they can click on it to reveal the answers.
The answers are included here for your reference.

Mystery Object Information Sheet

Picture No.	1
What it is	Automatic watering system
What it is used for	To water the garden at preset times
What is it made from	Rubber, metal, plastic
Why it is made from this	Tough and flexible
How it saves resources	Automatic turn on and off saves water

Picture No.	2
What it is	Compost box
What it is used for	Decompose organic matter to provide fertilizer.
What is it made from	Wood
Why it is made from this	A sustainable material
How it saves resources	It recycles waste organic matter, and reduces need to buy manufactured fertilizer.

Picture No.	3
What it is	Top of the Grey water tank
What it is used for	To store the grey water from baths and sinks, as well as rain water, to be used for flushing the toilet.
What it is made from	Metal
Why it is made from this	Strong, waterproof and long lasting
How it saves resources	By recycling used water and utilizing rainwater, to reduce the cost and resources used in purifying water for consumption.

Picture No.	4
What it is	Wind turbine
What it is used for	To generate electricity from the wind
What is it made from	Plastic and aluminum
Why it is made from this	Light, strong and flexible
How it saves resources	It uses a sustainable and non-polluting energy source.

Picture No.	5
What it is	Chain drain pipe
What it is used for	Drains water from the roof slowly, to prevent localized flooding, and directs water to grey water tank.
What is it made from	Metal
Why it is made from this	Strong, long-lasting, water runs off easily
How it saves resources	Prevents erosion and flooding. Recycles rain water.

Picture No.	6
What it is	Techno cupboard control panel
What it is used for	Nerve centre of electronic house systems
What is it made from	Various
Why it is made from this	To control electronic data safely and efficiently
How it saves resources	Monitors use of resources in house, and maximises efficiency by only using requirements and no more.

Picture No.	7
What it is	Hot water storage tank
What it is used for	To store hot water from 3 sources. a) Solar water heaters on roof; b) geothermal pit in garden; c) traditional water heating system used to backup other systems.
What is it made from	Metal shell and high insulation materials
Why it is made from this	To provide a strong and long lasting unit, with high heat retention properties.
How it saves resources	Reduces use of fossil fuels to heat water. Increases efficiency of heat retention.

Picture No.	8
What it is	Lighting and burglar vibration detector control panel.
What it is used for	To control manually the lighting and the window vibration detector.
What is it made from	Plastic
Why it is made from this	Good electrical insulator
How it saves resources	Gives manual control to cater for individual tastes

Picture No.	9
What it is	Solar panels
What it is used for	Heats water and generates electricity using the sun.
What is it made from	Photo-voltaic cells
Why it is made from this	To convert sun light into energy
How it saves resources	Uses clean and sustainable source of energy

Picture No.	10
What it is	Smoke detector
What it is used for	Early fire detection
What is it made from	Plastic/various
Why it is made from this	Durable
How it saves resources	Prevents irreversible damage

Module 5 – The Integer principal in use for Social Housing

This module studies the first attempt to put the Integer concept into a practical setting. The Lyng estate in Sandwell provides the location for this pilot scheme and here we follow the progress of the project until its opening in July 2000. We can make an attempt to evaluate how effective the scheme is in saving resources, particularly heat and water. The following points can be discussed briefly with reference to the Integer Housing at Watford and Sandwell

a. Sources of heat – using the sun passively – amount of glass.
b. Insulation – meaning of insulation. – the advantages of newspaper over conventional insulation – How effective is newspaper as an insulator(experiment)
c. Heating water – harnessing the sun
d. Ways of saving water – grey water recycling
e. Communications for the future – phone points – intelligent cabling
f. Compare with unfit housing pictures
g. How else does it help develop the idea of social housing – pleasant, safe communal areas.

1. **Activity 1** shows the development of the Integer idea in Sandwell from the designs to the finished product.
2. **Activity 2** on the website looks at one aspect of saving energy – insulation. The Integer houses use treated newspaper as insulation. This activity questions the usual ending for a household newspaper – i.e. the bin. It shows how it can be recycled saving energy and resources.
3. In the Integer scheme, hot water comes from the sun, by the use of solar water heaters. **Activity 3** provides an interactive demonstration of how the system works. The children should click on sections to find out how the process works.
4. **Activity 4** on the website shows how the Grey water recycling works, and how it saves water.

Module 6

This is a short module which can be used as a simple assessment.

Activity 1 asks the children to choose materials to build their own house. This should be printed out so the children can annotate it to explain why they have chosen the materials for their house.