CONSTRUCTION BOX 3:

Building a Model House from Food

a blended learning activity for primary aged children at home or in school, developed by

NASCENT

PLACE 21
Connections, Qualifications and Character Strengths

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AN INTRODUCTION TO THE CONSTRUCTION BOXES:

Over the last few years, scientists at West Suffolk College have been developing “science boxes” for primary schools, to ensure that children of all ages get to do practical, hands-on science throughout their school life. In response to these unusual times, since March 2020 the science boxes have been adapted to be used for “blended learning” this means they are now suitable not just for schools but also for carrying out in the home, they became “virtual” science boxes.

We are now delighted to begin providing virtual Construction Boxes: using the same simple, easy to read portfolio format with concise instructions, curriculum links and further guidance pathways.

Unlike science, construction is not a part of the primary curriculum, however practical construction projects such as this do encompass many areas of the curriculum such as numeracy and mathematics, language and literacy, science and working scientifically, art and design.

While all the construction box projects can be carried out by a single child, they are designed for groups giving pupils the opportunity to collaborate in a work-like project where a variety of skill sets are needed.

This is the “portfolio” and it contains all the information needed to carry out the activity at home or in school. Where appropriate, notes for non-teachers such as parents and carers are highlighted in yellow to further support home delivery.

SUMMARY:

This is a simple summary of the activity and what the children are going to be learning about

This activity involves children designing and building a model house using only food materials.

The children will draw and label their house designs, make predictions about which material will be best for each part of their design and then they will assemble their houses.

As well as an experience of design and model building, the children shall see the differences to the property of a material, in this case a foodstuff, brought on by heat or liquid and how this may improve (or not) it’s properties as a building material. Pasta, such as linguine or spaghetti is a useful example:

- Dried before cooking it is straight but brittle, it breaks easily.
- Cooked and warm it is flexible but has no strength
- Cooked and cooled it will stick together and be more rigid than when first cooked but not as rigid as uncooked.

Once built, the children devise “tests” for their houses:

- Could the occupant read in the house (are there any windows for light)
- Could the house withstand strong winds (test with a hairdryer), rain (a water spray gun) and an earthquake (wobbling the table).

KIT LIST:

This page describes all the "kit" that you'll need, as well as any hazards that may arise from using it… in other words, what you're going to need and what to be careful about

You will need?

Any foodstuffs, the facilities to cook them and knives to cut them. Some good examples to try are

- Spaghetti or linguine: as described in the summary section on the previous page, this can be a very versatile building material
- Root vegetables such as potatoes, swede or carrots: if lightly cooked these can be easily cut into "bricks" or used to stick uncooked pasta into
- Jelly cubes, jelly babies, marshmallows, soft sweets: stack nicely because they are sticky, and can also be used as bricks or to stick uncooked pasta into. Melted marshmallows make excellent glue/cement
- Slices bread or toast: toast makes wonderful walls and windows can be easily cut in
- Playdough: this of course can be made from food stuffs, for a great recipe visit https://www.bbcgoodfood.com/howto/guide/playdough-recipe

Potential Hazards

Adults should be on hand to supervise the cooking and cutting of the food materials.

Although this activity used food materials, children must not eat them, they should be thought of as bricks and stones and should not go anywhere near mouths.

ACTIVITY OUTLINE:

This is what you are going to do 😊

Gather together all the items you are going to use. If your children are anything like mine, they will want to have a good look at everything, that's fine, we encourage this, and we call it "tinker time", but do remind the children they must not eat the materials.

Set the scene: some very unsettled weather is coming, and we need to build a house for a tiny person to shelter in while they do their homework.

OPTIONAL: small figures could be cut or folded from paper towel or kitchen roll and one given to each child for them to create a house for…. later when the bad weather comes it will be easier for the children to see how effective their house was at keeping their figures dry.

Look at the food materials you are going to use, discuss how they might be utilised as building materials (see Kit List above) and ask the children collectively for ideas.

DESIGN THE HOUSE

First the children will design their houses in a drawing (print and use Worksheet 1 on the next page, or simply draw on a piece of paper).

More able pupils could

- add measurements to their designs.
- list the materials they plan to use
- describe why they have chosen them.

BUILD

Children use the materials to build their model houses. Note that depending upon the age and abilities of the children adult supervision may be needed if the foodstuffs are to be cooked or cut.

TEST

Apply the tests to the built houses:

1) Will the occupant be able to do their homework in the house? To do this they will need light so the house will need windows.

2) Is the house strong enough to survive strong winds? Apply the hairdryer. Encourage the children to make sure this is a fair test by making sure the hairdryer is set at the same level for each house.

3) Will the house stand up to the earthquake? Wobble the table. Encourage the children to think about fair testing, how could they make this a fair test? How might they ensure that the wobble they produce themselves by nudging the table is the same for everyone in the class? Unless the “earthquake” is generated by a device that can be set accurately this test will always be subject to human variation.

4) Is the house waterproof? Test for water resistance by applying water, this could be with a water spray gun, a watering can, a jug of water, spraying them with a garden hose… this method doesn’t matter but you might encourage to the children to think about which of these methods is most like “rain” and why.

More able children record the results of their tests in the worksheet / on paper.

DISCUSS

Discuss the findings, was the house that looked the neatest the best at keeping out the weather? Which materials worked best and why? How would they improve their houses using only foodstuffs it they were to try again?

WORKSHEET 1

Name……..

This is my model house
I am going to use these materials because I predict……
This is how I will test my house for water resistance…….
This is what I found out, the results……

CROSS-CURRICULAR LINKS:

Construction is not part of the primary curriculum, but as described in this brief list, it links many core areas

Numeracy and mathematics:
The building materials can be counted, measured and calculations made as to quantity and overall dimensions made depending upon the ability of the pupils.

Language and literacy:
When evaluation of the building materials is being considered reference might be made to the popular fairy tale “The Three Little Pigs”.

Science:
This construction box is based on the science box “Building a Model House” that we have created to meet the KS1 Everyday Materials / Properties of Materials and KS2 States of Matter and well as Working Scientifically across the age ranges.

Art and design:
The functional design of the house in this activity allows children to explore the relationship between form and function.

FIND OUT MORE: USEFUL LINKS

These links of short videos and written resources should help you and your children understand more about the construction box activity

WEB RESOURCE: The national curriculum in England Key stages 1 and 2
The entire national curriculum for primary schools as a PDF or Word Document
https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum

WEB RESOURCE: Twinkl Homes and House Paper Models
A selection of poems, word search games and other learning resources from a Suffolk based charity https://www.twinkl.co.uk/resource/t-t-15170-houses-and-homes-model-pack

WEB RESOURCE: Playdough Recipe (BBC Good Food)
https://www.bbcgoodfood.com/howto/guide/playdough-recipe

WEB RESOURCE: STEM Learning - a Tower made from Spaghetti and Marshmallows
https://www.stem.org.uk/resources/elibrary/resource/34191/spaghetti-towers

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