

# COULD YOU BE A DENGINEER?

## AIMS AND OBJECTIVES

The aim of the challenge is to creatively engineer a structure that stands from easily sourced everyday materials.



### AFTER THE ACTIVITY YOU WILL BE ABLE TO UNDERSTAND:

- The different ways that natural disasters can affect people
- how to plan and construct a sturdy structure
- how your fundraising will help Save the Children change the lives of children around the world

### THE RULES

- 1 At least one person should be able to sit inside the den.
- 2 The den should be able to stay upright without someone needing to hold it.
- 3 Ask for permission before collecting your materials and let an adult know what you're doing.
- 4 Use your imagination - the more creative the better!
- 5 Have fun!

## WHAT CAN YOU USE TO MAKE YOUR DEN?

You can use objects you find around the school or ones that you've brought in from home including clotheslines, string, clothes pegs, wooden poles, flags, flag poles, bed sheets, rubber bands, safety pins, cardboard boxes, sturdy chairs, large cushions and beach towels.

# SAVE THE CHILDREN'S DEN DAY

## STEM ACTIVITY: TO BUILD A STRUCTURE THAT STANDS

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STEM resources developed by educator Robert Crook for Save the Children's Den Day

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### CONSISTS OF:

- this teacher sheet
- challenge sheet for pupils
- KS1 and KS2 PowerPoint slides

The KS1 and KS2 *Natural Disaster* PowerPoints accompany the *STEM activity* for use as part of Save the Children's Den Day. The material is designed to be used at school over 1-3 hours, although it can be modified for other purposes.

### AIMS

Turn your Den Day at school into a valuable learning experience while you fundraise, using this STEM challenge. The simple aim of the challenge is to encourage children to creatively engineer a structure that stands from easily sourced everyday materials.

#### The aim of the activity is to teach children to:

- explain how natural disasters can affect people in many ways
- plan and construct a sturdy structure.

Participants should also appreciate the differences between their culture and those of others. The children will highlight and raise awareness of the difficulties experienced by children world-wide while being creative and playful.

See below for learning outcomes.

### NOTES ON POWERPOINTS

The Natural Disaster *KS1 & KS2* PowerPoints are specifically designed for 5 to 7-year-olds (Key Stage 1) and 7 to 11-year-olds (Key Stage 2). They are designed to be presented before children participate in Den Day. However, they can also work as standalone lessons on the geographic themes of natural disasters and recovery.

It is up to the teacher to decide how much, or how little of the PowerPoints they wish to show their students. The presentations were designed to last between 15 and 25 minutes. These can be shortened by omitting pages/activities or lengthened by, for example, using the atlases to locate Nepal and the 'Ring of Fire' locations, or using the Internet to research natural disaster case studies.

### NOTES ON TALK PARTNERS

Students can be placed in mixed or equal ability pairs or small groups. They should be encouraged to think about the issues raised, then to share and finally communicate with the whole class.

### NOTES ON THINKING KEYS

Thinking Keys are a great activity for developing innovative and creative thought processes. However, they can be rather tricky for students to grasp if they have not been exposed to critical thinking activities beforehand. This is why the *KS2 Natural Disasters* PowerPoint contains a Thinking Key sample and example answers that follow the main thinking activity.

The children should be encouraged to think about the problem, in this instance about reducing the risk of damage from an earthquake. At least three answers should be found and the children should be encouraged to think further about the practicalities and effects of such actions (as illustrated by the arrows which indicate the continuing thought process).

### NOTES ON CHALLENGE SHEET

The challenge sheet can be printed and sent home with the students as an informational introduction for the benefit of parents/guardians. The challenge sheet should remain visible for the participants throughout the activity on Den Day.

### LEARNING OUTCOMES

How can the Den Day STEM Challenge be linked into your classroom curriculum teaching?

See the below **Hamilton Trust** and the **International Primary Curriculum** links for UK Years 1-6

### HAMILTON TRUST

	Key Stage 1	Key Stage 2	
	WEATHER EXPERTS LEARNING	LIVING IN THE MOUNTAINS	EARTH MATTERS
Learning objectives	Design and build a flood-resistant house and evaluate their models through discussion - Select and use materials to make dens and models based on their properties - Listen to each other and work together during the model making - Use class discussions to develop ideas - Select from and use materials and textiles to make a den - Communicate ideas through discussion - Choose materials to make a model house - - Select from a range of materials to build a model house - Choose and use materials based on their properties - Evaluate their models - Listen to each other and work together to make a model house	Begin to think about similarities and differences between their lives and life in the Kumaon Himalaya - Use an atlas to identify the countries within which the Himalayan mountain range runs - Learn about life in the upper reaches of the Himalayas - Think about isolation and employment and access to water and electricity - Consider materials available for building houses and begin to understand that some are better than others for homes in different regions - Think about life for children who live in less economically developed countries and relate this to our own behaviour and attitudes - Understand the need for access to clean water for humans and animals	Describe and understand key aspects of earthquakes - Consider the effects felt at the surface of the Earth when tectonic plates move - Gain an understanding of life in an earthquake zone and become familiar with the precautions and preparations required - Understand how buildings are designed to withstand earthquakes

### INTERNATIONAL PRIMARY CURRICULUM (IPC)

ART	GEOGRAPHY	TECHNOLOGY	INTERNATIONAL
<p><b>1.2</b> Be able to use a variety of materials and processes such as close observational sketching and appliqué work</p> <p><b>1.3</b> Be able to suggest ways of improving their own work and structures</p> <p><b>1.4</b> Be able to comment on their own work and structures</p>	<p><b>1.1</b> Know about the main physical and human features related to structures of particular localities</p> <p><b>1.4</b> Know about the weather and climatic conditions in the localities studied and how they affect the buildings and the lives of people living there</p> <p><b>1.5</b> Know that the world extends beyond their own locality and that the structures and places they study exist within a broader geographical context</p>	<p><b>1.1</b> Know that structures in everyday use have an effect on people's lives</p> <p><b>1.2</b> Be able to plan the structures they are going to make</p> <p><b>1.3</b> Be able to describe their plans of structures in pictures and words</p> <p><b>1.4</b> Be able to use simple tools and materials to make structures</p> <p><b>1.6</b> Be able to comment on their own plans and structures and suggest areas of improvement</p>	<p><b>1.1</b> Know that children within the class and school have different home countries and different homes</p> <p><b>1.4</b> Learn more about one another's individuality and independence in relation to their homes</p> <p><b>1.5</b> Be able to work with each other where appropriate</p>

### MILEPOST 2 LEARNING OBJECTIVES FOR: ACTIVE PLANET; DIFFERENT PLACES, SIMILAR LIVES; LIVING TOGETHER

GEOGRAPHY	TECHNOLOGY	SOCIETY	INTERNATIONAL	ART
<p><b>2.1</b> Know how particular localities have been affected by earthquakes and volcanoes</p> <p><b>2.2</b> Know how the lives of people in particular localities have been affected by earthquakes and volcanoes</p> <p><b>2.3</b> Know how the nature of particular localities affects the lives of people</p> <p><b>2.4</b> Know about the weather and climatic conditions in the host country and other</p> <p><b>2.12</b> Understand how places fit into a wider geographical context</p>	<p><b>2.2</b> Be able to design and make products to meet specific needs</p> <p><b>2.3</b> Be able to make usable plans</p> <p><b>2.4</b> Be able to make and use labelled sketches as designs</p> <p><b>2.5</b> Be able to use simple tools and equipment with some accuracy</p> <p><b>2.6</b> Be able to identify and implement improvements to their designs and products</p>	<p><b>2.1</b> Know that they belong to different groups, have different home countries and different nationalities</p> <p><b>2.2</b> Know that different groups have different purposes</p> <p><b>2.3</b> Know that people within groups have different outlooks, characteristics and purposes</p> <p><b>2.5</b> Know that people in different countries have different traditions, celebrations and ways of living</p> <p><b>2.8</b> Understand that people's health and safety can be affected by a variety of factors including food, climate, rules, and availability of resources</p>	<p><b>2.1</b> Know about some of the similarities and differences between the geographical features of the different home countries and between them and the host country</p> <p><b>2.2</b> Know about ways in which these similarities and differences in geographical features affect the lives of people</p>	<p><b>2.4</b> Be able to choose materials and techniques which are appropriate for their task</p> <p><b>2.5</b> Be able to explain their own work in terms of what they have done and why</p>

### MILEPOST 3 LEARNING OBJECTIVES FOR: WEATHER AND CLIMATE; WHAT A WONDERFUL WORLD

GEOGRAPHY	TECHNOLOGY	INTERNATIONAL
<p><b>3.25</b> Understand how localities are affected by natural features and processes</p> <p><b>3.26</b> Understand how and why people seek to manage and sustain their environment</p> <p><b>3.27</b> Understand how the geographical features of the host country affect the lives of the people who live there</p>	<p><b>3.4</b> Be able to respond to identified needs, wants and opportunities with informed designs and products</p> <p><b>3.5</b> Be able to gather and use information to suggest solutions to problems</p> <p><b>3.6</b> Be able to devise and use step-by-step plans</p> <p><b>3.9</b> Be able to work with a variety of tools and materials with some accuracy</p> <p><b>3.10</b> Be able to test and evaluate their own work and improve on it</p> <p><b>3.13</b> Understand the need for accurate design and working</p> <p><b>3.14</b> Understand the ways in which technology can be used to meet needs, wants and opportunities</p> <p><b>3.15</b> Understand that different techniques, tools and materials are needed for different tasks</p> <p><b>3.16</b> Understand that the quality of a product depends on how well it is made and how well it meets its intended purpose</p>	<p><b>3.6</b> Be able to identify ways in which people work together for mutual benefit</p> <p><b>3.7</b> Understand that there is value both in the similarities and the differences between different countries</p>