



# KS1 – Year 1

## Topic

## Global context

## Practical Action teaching resources and information

### Plants

Identify and describe the basic structure of a variety of common flowering plants

See which flowering plants grow in countries around the world

- ▶ *Pumpkins against Poverty*
- ▶ *Plants – images*
- ▶ *Farming - images*

### Everyday materials

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water

Making and testing simple models of homes and gardens in other countries from everyday materials

- ▶ *Floating Garden Challenge*
- ▶ *Beat the Flood*

Describe the simple physical properties of a variety of materials

# KS1 – Year 2

## Topic

## Global context

## Practical Action teaching resources and information

### Living things and their habitats

Identify that most living things live in habitats to which they are suited and how different habitats provide for the basic needs of different kinds of animals and plants

Explore how plants grow in different parts of the world in a range of habitats (especially habitats that flood)

- ▶ *Floating Garden Challenge*
- ▶ *Pumpkins against Poverty*
- ▶ *Sandy Seeds*
- ▶ *Plants – images*
- ▶ *Climate change - images*

### Plants

Observe and describe how seeds and bulbs grow into mature plants

Investigate seed germination and how pumpkins grow

- ▶ *Pumpkins against Poverty*
- ▶ *Sandy Seeds*
- ▶ *Plants – images*

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

### Animals, including humans

Describe the importance for humans of exercise, eating the right amounts of different foods, and hygiene

Investigate how germs are spread and the importance of hand-washing

- ▶ *Stop the Spread*

### Uses of everyday materials

Identify and compare the suitability of everyday materials... for particular uses

Investigations on material absorbency, material strength and structure before making models of homes and gardens

- ▶ *Floating Garden Challenge*
- ▶ *Beat the Flood*

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

## KS2 – Year 3

Topic	Global context	Practical Action teaching resources and information
<b>Plants</b>		
Explore the requirements of plants for life and growth and how these vary from plant to plant.	How plants are grown in different countries... problems of too much or too little water	<ul style="list-style-type: none"> <li>▶ <a href="#">Floating Garden Challenge</a></li> <li>▶ <a href="#">Global Food and Farming</a></li> </ul>
	How does the quality of soil affect growth?	<ul style="list-style-type: none"> <li>▶ <a href="#">Plants – images</a></li> <li>▶ <a href="#">Sandy Seeds</a></li> </ul>
Explore the part that flowers play in the life cycle of flowering plants	Understanding the role of germination in the life cycle of pumpkins	<ul style="list-style-type: none"> <li>▶ <a href="#">Pumpkins against Poverty</a></li> </ul>
<b>Animals</b>		
Identify that animals, including humans, need the right types and amount of nutrition	Looking at different foods eaten by different people around the world...and that we all need the basic food groups	<ul style="list-style-type: none"> <li>▶ <a href="#">Food stories</a></li> <li>▶ <a href="#">Pumpkins against Poverty</a></li> </ul>
<b>Light</b>		
Recognise that they need light in order to see things and that dark is the absence of light	Solar lanterns etc. Importance of light in education, running a business	<ul style="list-style-type: none"> <li>▶ <a href="#">Solar Lanterns – information</a></li> <li>▶ <a href="#">Solar Lanterns – video</a></li> </ul>
Notice that light is reflected from surfaces	Solar cookers	

## KS2 – Year 4

Topic	Global context	Practical Action teaching resources and information
<b>States of matter</b>		
Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Preserving fresh food using a zeer pot	<ul style="list-style-type: none"> <li>▶ <a href="#">Cool Pots</a></li> <li>▶ <a href="#">Zeer pot fridge – information</a></li> <li>▶ <a href="#">Zeer pot fridge – video</a></li> </ul>
	Human impact on the water cycle in different parts of the world	<ul style="list-style-type: none"> <li>▶ <a href="#">Water Conservation - concept cartoon</a></li> </ul>
<b>Electricity</b>		
Identify common appliances that run on electricity	How electricity is generated in different parts of the world and its importance to help lift people out of poverty	<ul style="list-style-type: none"> <li>▶ <a href="#">Power for the World</a></li> <li>▶ <a href="#">Energy and the Global Goals</a></li> <li>▶ <a href="#">Renewable energy poster</a></li> </ul>

# KS2 – Year 5

Topic	Global context	Practical Action teaching resources and information
<b>Properties and changes of materials</b>		
1. Compare and group together everyday materials on the basis of their properties	Sorting materials for recycle and reuse	▶ <a href="#">Plastics Challenge</a>
2. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	Simple water filters used to clean water	▶ <a href="#">Global CREST Challenges, water</a> (for KS3 but could be adapted) ▶ <a href="#">Water for the World</a>
3. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	Importance of testing materials for specific uses e.g earthquake or flood prone areas, ability to float Sustainable building materials, energy costs, the link to climate change	▶ <a href="#">Beat the Flood</a> ▶ <a href="#">Floating Garden Challenge</a> ▶ <a href="#">Beat the Flood</a> - video ▶ <a href="#">Plastics Challenge</a> ▶ <a href="#">Monsoon Proof Roof</a>
4. Demonstrate that...changes of state are reversible changes	Understanding the water cycle in different parts of the world  Reuse and recycling of materials	▶ <a href="#">Water Conservation</a> - concept cartoon  ▶ <a href="#">Plastics Challenge</a>
5. Explain that some changes result in the formation of new materials and that this kind of change is not reversible	The impact of indoor smoke pollution on health (particularly of children and women)	▶ <a href="#">Smoky Homes</a>
<b>Forces</b>		
Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	Use of levers, pulleys etc. to transport people and produce in the developing world  Use pumps in irrigation	▶ <a href="#">Squashed Tomato Challenge</a> ▶ <a href="#">Tuins</a> - information ▶ <a href="#">Pump it</a> - video

# KS2 – Year 6

Topic	Global context	Practical Action teaching resources and information
<b>Living things and their habitats</b>		
Describe how living things are classified into broad groups ... including microorganisms	The importance of good sanitation in reducing the spread of disease	▶ <a href="#">Stop the Spread</a> ▶ <a href="#">Global Goals</a> - display materials
<b>Animals including humans</b>		
Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	The effects of a poor diet The importance of good sanitation	▶ <a href="#">Pumpkins against Poverty</a> ▶ <a href="#">Stop the Spread</a> ▶ <a href="#">Pump it</a> - video
<b>Evolution and inheritance</b>		
Identify how animals and plants are adapted to suit their environment in different ways	Plants grown in different parts of the world are adapted to their environment	▶ <a href="#">Sandy Seeds</a> ▶ <a href="#">Pumpkins against Poverty</a> ▶ <a href="#">Floating Garden Challenge</a>
<b>Electricity</b>		
Compare and give reasons for variations in how components function	Electrical circuits in flood warning systems	▶ <a href="#">Flood Alert</a>

Topic	Global context	Practical Action teaching resources and information
<b>Nutrition and digestion</b>		
<b>The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</b>	The consequences of poor nutrition on some people in the developing world.	▶ <a href="#">Iodine Initiative</a>
<b>Plants making carbohydrates in their leaves by photosynthesis and gaining minerals, nutrients and water from the soil via their roots</b>	Solutions for growing crops in developing countries affected by floodin	▶ <a href="#">Pumpkins against Poverty</a> ▶ <a href="#">Floating Garden Challenge</a> ▶ <a href="#">Design for a Better World</a>
<b>Gas exchange systems</b>		
<b>The impact of exercise, asthma and smoking on the human gas exchange system</b>	Death due to smoke in the home from stoves causes more deaths than malaria	▶ <a href="#">The Meal Deal</a> ▶ <a href="#">Pump It</a> – video ▶ <a href="#">Smoke</a> – video ▶ <a href="#">Smoky Homes</a>
<b>Cellular respiration</b>		
<b>The process of anaerobic respiration in humans and micro-organisms including fermentation</b>	The role of micro-organisms in biogas production	▶ <a href="#">Marvellous Microbes</a> – video
<b>Reproduction</b>		
<b>Reproduction in plants, including ... fertilisation, seed and fruit formation</b>	Global solutions for growing plants	▶ <a href="#">Pumpkins against Poverty</a> ▶ <a href="#">Floating Garden Challenge</a> ▶ <a href="#">Food and Agriculture</a> - videos
<b>Relationships in an ecosystem</b>		
<b>The importance of plant reproduction through insect pollination in human food security</b>	Issues around food security	▶ <a href="#">Wild Weather</a> ▶ <a href="#">Beekeeping</a> – technical brief
<b>How organisms affect, and are affected by, their environment, including the accumulation of toxic materials</b>	Climate change – how humans contribute to it and mitigate against its effects	▶ <a href="#">Stop the Spread</a> ▶ <a href="#">Pumpkins against Poverty</a> (KS2 but could be adapted) ▶ <a href="#">Global Goals</a> ▶ <a href="#">Design for a Better World</a> ▶ <a href="#">Floating Garden Challenge</a> ▶ <a href="#">Climate Change</a> – blogs
<b>Inheritance, chromosomes, DNA and genes</b>		
<b>The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material</b>	GM crop debate Importance of biodiversity for small farmers in developing world	▶ <a href="#">Pumpkins against Poverty</a> (KS2 but could be adapted) ▶ <a href="#">Biodiverse Agriculture</a> – technical brief



# KS3 – Chemistry

Topic	Global context	Practical Action teaching resources and information
Atoms, elements and compounds		
Chemical symbols and formulae for elements and compounds		▶ <i>Plastics Challenge</i>
Pure and impure substances		
Simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography	Filtering water to make it fit to drink and clean enough to wash hands in countries with limited water	▶ <i>Stop the Spread</i> ▶ <i>Design for a Better World</i> ▶ <i>Global Goals</i> - display materials ▶ <i>Water for the World</i> ▶ <i>Global CREST Challenges, water</i>
	Solar distillation	▶ <i>Solar distillation</i> – technical brief
Materials		
Properties of ceramics, polymers and composites (qualitative).	Materials used globally in buildings to make cook stoves and smoke hoods	▶ <i>Global CREST Challenges, shelter</i> ▶ <i>Beat the Flood</i>
The periodic table		
The varying physical and chemical properties of different elements	How deficiency of vital elements impacts health	▶ <i>Iodine Initiative</i>
Earth and atmosphere		
Earth as a source of limited resources and the efficacy of recycling	Recycling as an important process in a sustainable world	▶ <i>Plastics Challenge</i> ▶ <i>Reuse or Recycle</i>
The production of CO <sub>2</sub> by human activity and the impact on climate	Climate change and global warming	▶ <i>Design for a Better World</i> ▶ <i>Global Goals string activity</i> ▶ <i>Global Goals</i> - display materials ▶ <i>Wild Weather</i>

# KS3 – Physics

Topic	Global context	Practical Action teaching resources and information
Calculation of fuel uses and costs in the domestic context		
Fuels and energy resources	Use of renewable energy	▶ <i>Smoky Homes</i> ▶ <i>The Meal Deal</i> ▶ <i>Wind Power Challenge</i> ▶ <i>Moja island</i> ▶ <i>Energy and the Global Goals</i> ▶ <i>Energy</i> - homework and revision activities ▶ <i>Global CREST Challenges, energy</i> ▶ <i>Renewable energy poster set</i> ▶ <i>Top ten reasons why renewable energy is cool</i> ▶ <i>Free energy</i> – concept cartoon ▶ <i>Energy resources</i> – technical brief
	Efficiency of different stoves	
Domestic fuel bills, fuel use and costs	Black Carbon	
	Costs of and different uses of fuel globally	

Topic	Global context	Practical Action teaching resources and information
<b>Energy changes and transfers</b>		
Simple machines give bigger force but at the expense of smaller movement (and vice versa): product of force and displacement unchanged	Ropeways systems	<ul style="list-style-type: none"> <li>▶ <a href="#">Squashed Tomato Challenge</a></li> <li>▶ <a href="#">Tuins</a> – information</li> <li>▶ <a href="#">Global CREST Challenges, transport and water</a></li> </ul>
	Pumps e.g. water pumps	<ul style="list-style-type: none"> <li>▶ <a href="#">Pump It</a> – videos</li> <li>▶ <a href="#">Treadle pump</a> – technical brief</li> <li>▶ <a href="#">Hand pumps</a> – technical brief</li> </ul>
Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation	Ways of keeping food cool or reducing the rate of heat loss through insulation	<ul style="list-style-type: none"> <li>▶ <a href="#">Zeer pot fridge</a> - information</li> <li>▶ <a href="#">Zeer pot fridge</a> – technical brief</li> <li>▶ <a href="#">Cool Pots</a> (for KS2 but could be adapted)</li> <li>▶ <a href="#">Fireless Cooker</a> - technical brief</li> <li>▶ <a href="#">Smoky Homes</a></li> </ul>
	Other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels	<p>Flood warning systems</p> <p>Drying food to preserve it</p> <p>Transport</p> <p>Renewable Energy</p>
<b>Forces</b>		
Forces as pushes or pulls, arising from the interaction between two objects	Turbines used in renewable energy – wind and hydr	<ul style="list-style-type: none"> <li>▶ <a href="#">Wind Power Challenge</a></li> <li>▶ <a href="#">Hydroelectric power</a> – technical brief</li> <li>▶ <a href="#">Power for the World</a></li> </ul>
	Hand pumps	<ul style="list-style-type: none"> <li>▶ <a href="#">Treadle pump</a> – technical brief</li> <li>▶ <a href="#">Hand pumps</a> – technical brief</li> </ul>
<b>Pressure in fluids</b>		
Pressure in liquids, increasing with depth; upthrust effects, floating and sinking		<ul style="list-style-type: none"> <li>▶ <a href="#">Floating Garden Challenge</a></li> </ul>
<b>Electricity and electromagnetism</b>		
Electric current, measured in amperes, in circuits, series and parallel circuits	Electrical circuits used in flood warning system	<ul style="list-style-type: none"> <li>▶ <a href="#">Flood Alert</a></li> </ul>