

RESOURCE MATRIX

Year 4 Our Changing World	Resources
1: How can we classify trees by looking at their leaves?	Digital camera, sets of three different leaves
2: How can we classify and identify deciduous trees in winter?	No additional resources
3: How can we classify plants by looking at their flowers?	Digital camera, field study guides and identification keys. See Woodland Trust Nature Detectives http://www.naturedetectives.org.uk/packs/pack_spotting.htm

Year 4 Module 1 In a state	Resources
1: What are my properties?	Mini whiteboards and pens; 10–16 sets of: cotton wool, aluminium foil, wood, clear rigid plastic, containers of salt, water, milk, colourless shower gel, ketchup (or materials with similar properties); a range of solids and liquids to include: hard, rigid materials (such as wood, rigid plastic, glass, ceramic, metal, rock), flexible materials (fabric, foil, string, wire), soft and malleable materials (modelling clay, clay, salt dough, tack), sponge, cotton wool, granular and powdery materials (salt, sugar, sand, talcum powder, cornflour, bicarbonate of soda), transparent and opaque materials, liquids of different viscosity (water, milk, shower gel, washing up liquid, handwash, undiluted squash, ketchup, syrup); additional containers for pouring; magnifiers; two large sheets of sticky notes
2: What happens to the ice hands?	Ice hands, trays, measuring equipment such as measuring cylinders, rulers, tape measures, string, weighing scales
3: What makes a difference to how fast ice melts?	Ice blocks/shapes appropriate for the different investigations, trays/containers for the ice, measuring equipment as required by children's investigation plans
4: What are melting and freezing?	Small foil cases (5 or 6 per group depending on how many materials are used), bowls (1 per group), thermometers (1 per group), a source of hot water, small samples of materials for testing (such as chocolate, butter, solid vegetable fat, soft margarine, wax, metal such as a coin)
5: Are spaces really empty?	Transparent plastic cup, paper towel, transparent container of water (a small fish tank is ideal), food colouring, a bowl of water, a tray, sponges (include some natural ones with large air spaces), digital scales or a metre ruler and string, two identical balloons, one fully inflated the other slightly inflated, raisins, clear plastic cups of lemonade, ping pong balls, folded paper or card fans (or could use number fans from maths resources)
6: What state am I in?	Similar sized balloons filled with ice, water and air (one of each per group), containers for contents of balloons, syringe, materials for sorting, e.g. group of materials to support the sorting activity (see individual challenges for suggested materials)
7: How can we get it dry?	3–5 identical squares of thin cotton fabric per group (it is easier to see whether darker colours are wet or dry), a different sized square of the fabric and a square of a different type of fabric, 1 or 2 table top or floor standing fans, somewhere to hang the fabric squares such as string stretched across the room plus pegs, timers (count up) or a clock, measuring spoons or syringes, thermometers
8: What is evaporation?	Antiseptic wipes or hand cleaning gel, a small bowl of strong smelling liquid such as vinegar or perfume
9: What is boiling?	A means of boiling water and observing it, such as a Pyrex pan on portable stove, data logger with temperature sensor, thermometer)
10: Where did the water come from?	Kettle, glass jars with lids (two per group), ice, cans of soft drink (one per group), mirrors or metal spoons, a metal baking tray and thermometer

Year 4 Module 1 In a state	Resources
11: Where does rain come from?	Clear bowl of warm water, clingfilm or plate, ice, large paper and pens for posters, scissors and glue (for Challenges 1 and 2)
12: What have we learned about changes of state?	Clear bowl of warm water, clean clingfilm or plate, ice, instant coffee, sand, outdoor or hall space with playground or PE equipment or a stage, sticky notes, glue, a digital camera (optional)
Enrichment 1: Which chocolate should we choose?	Bowls (1 per group), hot water, small foil cases (minimum of 3 per group), stopwatches, timers or a clock, at least 3 different types of chocolate such as white, milk or plain (it is easier to get pieces which are the same size if all chocolate is the same brand), cocktail sticks or skewers, butter, golden syrup, cornflakes or rice cereal, cake cases, baking sheets or bun tins, spoons, kitchen scales
Enrichment 2: Why do we put salt on icy roads?	Ice blocks, trays/washing up bowls, salt, food colouring or thin water soluble paint or ink, digital camera, plastic beakers or cups (two per group), thermometers (two per group), lots of ice (small cubes or crushed), stopwatches (or whiteboard timer), whole class set of: large and small ziplock freezer bags, milk or cream, sugar, vanilla flavouring, gloves or towels
Enrichment 3: How does the thermometer work?	Equipment for measuring temperature: as a minimum include liquid in glass thermometers, forehead strip thermometers and data loggers. You could also include digital clinical thermometers, maximum and minimum thermometer, an oven thermometer and heat sensitive items which change colour, such as bath ducks. Milk bottle, water with food colouring, transparent drinking straw, modelling clay, rulers, fine permanent markers (enough for small group work), masking tape, bowls of water at different temperatures
Enrichment 4: Why do we use graphs?	No additional resources

Year 4 Module 2 Good vibrations	Resources
1: What do we know about sounds?	Tambourine, sound recording device
2: How are sounds made?	A range of instruments, e.g. tambourine, triangle, cymbals, drum, penny whistle, guitar, shoe box with lid removed, large rubber bands, ruler, tuning forks, small container of water, table tennis ball, cotton thread, sticky tape
3: How do sounds travel?	Drum, coat hangers, string, scissors, other metal objects of different sizes, such as cutlery, grills from ovens
4: How can we make a sound louder and quieter?	Instruments, paper cups, tins with lids removed, plastic food containers with lids, e.g. margarine tubs, cotton wool, rice, pasta, dried kidney beans, wooden beads, paperclips, data loggers or iPads with an app, e.g. decibel 10th, to measure sound volume
5: How do sounds change as we move away from the source?	PE hoops, PE markers, sound sources, e.g. bell, keys, shakers (from previous lesson), money pot, baby's rattle, maracas, metre sticks, trundle wheels (optional), data loggers
6: How can we change the pitch of a plucked note?	Shoe boxes, elastic bands of different thicknesses and lengths, a violin or guitar
7: How can we use air to make music?	Pan pipes, singing tubes, slide whistle, straws, scissors, sticky tape, rulers
Enrichment 1: How can we make the best string telephone?	Cups of different sizes and materials, e.g. paper, plastic, polystyrene (your local coffee shop may help with this), different types of string, scissors
Enrichment 2: How can we muffle sound?	Materials for testing, e.g. paper, cotton wool, cleaning cloths, dusters, tin foil, sandpaper, fabric, wool, paper cup or yoghurt pots, buzzers, battery and wires, data loggers or iPads with an app to measure sound volume, e.g. Decibel10th
Enrichment 3: Can all animals hear?	No additional resources
Enrichment 4: What is an echo?	No additional resources

Year 4 Module 3 Switched on	Resources
1: What makes it work?	Wind-up torch, solarpowered calculator, other solar-powered item (e.g. a light or a toy), sticky notes
2: Can you light the bulb?	Enough cells (AA batteries), bulbs (1.5 volt), bulb holders, wires, buzzers and motors for children to work in pairs
3: How does a circuit work?	Enough cells (AA batteries), bulbs (1.5 volt), bulb holders, wires, buzzers and motors for children to work in pairs on their different challenges
4: Why doesn't it work?	Enough cells (AA batteries), bulbs (1.5 volt), bulb holders, wires, buzzers and motors for children to work in pairs, magnifiers, digital presenter or microscope
5: What does a switch do?	Enough cells, wires, bulbs and commercially available switches for paired work (at least one toggle switch needed for demonstration, ideally more), examples of handmade toggle and press (push to make) switches, materials for making switches (as listed on the resource sheets), scissors, wire cutters and strippers, hole punches or card drills and safety mats, rulers
6: What can we use instead of wires?	Enough bulbs, cells and wires (3 per circuit) for paired work. Sets of materials to test (1 per table group) which could include: string, plastic drinking straw, milk bottle or jam jar, wooden dowel or ruler, polystyrene, fabric strips, plastic ruler, steel safety ruler or unbent paperclip, aluminium can. (Do not use labelled metal samples and include some materials which are a similar shape to wire. Ensure metal items do not have an insulating coat of paint or varnish.)
7: What types of material conduct electricity?	A range of different materials from those used in Lesson 6, including graphite (a pencil sharpened at both ends, but make sure it is graphite), labelled metal samples; other possibilities are rock, organic material such as a leaf, cork, ceramic. Different items made from some of the materials used in Lesson 5 (Challenge 3 only), children's Venn or Carroll diagrams from Lesson 6, highlighters
8: How are electrical conductors and insulators used?	Human circuit toy (chirping chick, ghost ball or similar), bowl of water, simple electrical circuit with cell, wires and bulb/ buzzer, plastic object or piece of plastic, toggle switch, electrical plug, bulbs, cells and wires for test circuits, suggested materials for making switches: card, corrugated plastic, film canisters, sections of cardboard tubing, wire, selections of beads or balls of suitable size such as marbles, polystyrene balls, ping pong ball (for large tubing), foil, copper tape, paperclips, split pins, glue, tape. Ball bearings could also be provided or children could be expected to work out that they need to cover the balls with foil for them to conduct. Unsuitable materials such as plastic covered paperclips could also be included. Tools: wire cutters and strippers, scissors, hole punches or card drills and safety mats, rulers
9: What do we now know about electricity?	Circuit making equipment and the switches made by children should be available if needed
Enrichment 1: How can we connect up the quiz board?	Cells, wire, bulbs and/or buzzers, card, split pins, wire cutters/strippers, masking tape

Year 4 Module 4 Where does all that food go?	Resources
1: What do we know about food?	No additional resources
2: Where does the food go inside your body?	Large sheets of paper, poster/mounting putty, camera, access to the internet
3: What sort of teeth do we have?	Small plastic mirrors
4: Why do we have different types of teeth?	Scissors, forks, potato mashers, apple segments, long chewy sweets, bananas
5: How can we look after our teeth?	Sticky notes, access to computers and the internet for the creation of PowerPoint presentations and research on looking after teeth
6: What do animals eat?	Straws, scissors, string, access to the internet or books or research
7: What do animals' teeth tell us?	No additional resources
8: How is food broken down?	Fruit, blender, crackers, porridge, digestive enzymes (can be bought at a chemist or health food shop), clear cup or beaker, spoon, video camera, access to the internet or books for research on digestion
9: How can we model the digestive system?	Bowl, scissors, forks, potato masher, blender, socks, plastic bag, empty bottle of digestive enzyme tablets, tights, peppercorns, water, bowl, plastic container with lid, different coloured modelling clay, computer with animation package
Enrichment 1: How good is toothpaste?	Hard-boiled eggs (with shells left on) that have been half covered in toothpaste overnight (see Resource sheet 1), white tiles that have been soaked in either coffee, tea, grape juice or cola for at least two days, toothbrushes, toothpaste of different varieties, hard boiled eggs (shells on) soaked in cola for 24 hours, stopwatch
Enrichment 2: Can we make a good toothpaste?	Bicarbonate of soda, fine salt, flavoured oil (peppermint, clove, citrus etc.), small mixing bowls or yoghurt pots, teaspoons, white ceramic tiles, permanent marker pens, toothbrushes, stopwatch

Year 4 Module 5 Human impact	Resources
1: What impact do humans have locally?	Coloured pens, prepared activity sheets with slides printed out from the slideshow and stuck in the middle of large sheets of paper (A3 or A2)
2: How can we find out about litter?	Items made from different materials may be needed for some children to handle
3: What types of litter are dropped locally?	Litter pickers and/or gardening or disposable gloves (sturdy plastic bags could be an alternative), bags for collecting the litter, clipboards, data collection sheets (one per group, prepared in Lesson 2), digital camera
4: Why does clearing litter matter?	Items of litter/rubbish for each group, to include: drinks can, food tin, plastic bottle or milk container, glass jar, plastic carrier bag, fishing line, plastic can holder, balloon, food packaging (burger box, pre-packed sandwich container). Teacher demonstration item: tin and lid with sharp edges, (handle with care and keep away from children)
5: What happens when a food chain is broken?	Poster paper and pens, access to the internet (Challenge 3), microphone (optional)
6: What is the impact of habitat destruction in other parts of the world?	Poster paper and pens, access to the internet
Enrichment 1: What do zoos do?	No additional resources
Enrichment 2: Should we have zoos?	No additional resources

Year 4 Module 6 Who am I?	Resources
1: Who are you?	Pond/seashore life identification keys, sticky notes
2: Who lives here?	Equipment for collecting and observing animals living in water (nets, trays, magnifiers, etc.), camera, identification charts or keys, glue, large sheets of paper, sticky notes
3: How are vertebrates grouped?	No additional resources
4: How are invertebrates grouped?	Camera, glue, large paper, sticky notes