



Curriculum links to the experiences, outcomes and benchmarks of the Scottish Curriculum for Excellence



Infants/P1		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Pet Cushion	Design and create an indoor pet cushion for a small dog or cat.	1 plastic weaving needle, thread or wool, fabric, cushion filling.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
2. Miniature Worm Farm	Design and create a miniature worm farm.	1 plastic, transparent storage container; 15 worms; soil; small pebbles; 1 dark covering and dark lid; food scraps.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
3. Bird Feeder	Design and create a bird feeder for wild birds.	Recycled materials, 1 cup birdseed, 10 marbles, rope or string, water, digital camera.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-01a – using digital products TCH 0-04b – selecting materials TCH 0-06a – recycled materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
4. Self-Watering Potted Plant	Design and create a self-watering potted plant so the soil is always damp.	Pre-cut 2 litre plastic bottle, 3 cups of soil, 3 cups of water, 1 seedling, 1 pair of tights.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-03a – growing plants TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
5. Growing Grass House	Design and create a house that grows grass on the walls and roof.	Sponges, toothpicks, grass seeds, water spray bottle.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-03a – growing plants TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
6. Rug Tent	Design and create a tent that keeps people safe from the sun and wind.	Rugs or blankets; rope; chairs, sticks, sweeping brushes; heavy books/objects.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials

7. Class Fruit and Vegetable Garden	Design and create a garden bed to add to a class fruit and vegetable garden, providing healthy food for children's lunch boxes.	1 garden bed or large plastic tub, soil, seedlings, hose for watering, gardening tools.	EXA 0-06a – solve design problems HWB 0-30a – healthy foods LIT 0-09a – communicate ideas SCN 0-03a – growing plants TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
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Infants/P1 Energy and Forces			
Card	Task	Suggested Materials	CfE Link
1. Spinning Top	Design and create a spinning top using craft materials.	Cereal box, paper, matchstick or a pencil, circle stencil or plastic cup, plasticine or playdough, colouring pencils.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
2. Balloon Rocket	Design and create a rocket that flies using air power from a balloon.	Cardboard tube, paper, string, balloon, straws, Sellotape.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
3. Paper Clip Container	Design and create a paper clip container that uses a magnet and that will keep all of your teacher's paper clips together in one place.	Small jam jar or plastic pot, magnets of different shapes and sizes, plasticine, paper clips, coloured paper, pencils, colouring pencils.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
4. Zip Line	Design and create a zip line with a carriage that slides down the zip line.	Fishing line or thin twine, Sellotape, paper clips, marbles, recycled materials, metre stick.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-06a – recycled materials TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
5. Wobble-bottom Toy	Design and create a toy that wobbles on its bottom.	Plastic egg that splits in half, plasticine, craft materials.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
6. String Puppet	Design and create a cardboard person that you can control like a string puppet.	Cardboard, split pins, straws, string, pencils, digital camera or iPad®.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-01a – using digital products TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product

7. Pinball Machine	Design and create a pinball machine using recycled materials (like an obstacle course).	Cardboard cereal box, cardboard, lollipop sticks, marble, table tennis ball, small rubber bouncy ball, masking tape.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces TCH 0-01a – using digital products TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product
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Infants/P1		Materials	
Card	Task	Suggested Materials	CfE Link
1. Rope Bridge	Design and create a model of a rope bridge that hangs between two cliffs.	Lollipop sticks, string/wool, scissors, Sellotape, 10 toy farm animals, 2 desks, digital camera or iPad®.	<p>EXA 0-06a – solve design problems</p> <p>LIT 0-09a – communicate ideas</p> <p>SCN 0-15a – use of materials based on physical properties</p> <p>TCH 0-01a – using digital products</p> <p>TCH 0-04b – selecting materials</p> <p>TCH 0-09a – use materials to construct product</p>
2. Pirate Ship	Design and create a pirate ship that floats in water.	Recycled materials, 10 people figurines, large basin.	<p>EXA 0-06a – solve design problems</p> <p>LIT 0-09a – communicate ideas</p> <p>SCN 0-15a – uses of materials – floating/sinking</p> <p>TCH 0-04b – selecting materials</p> <p>TCH 0-06a – recycled materials</p> <p>TCH 0-09a – use materials to construct product</p> <p>TCH 0-10a – use of materials</p> <p>TCH 0-12a – engineering principles</p>
3. Mud Hut	Design and create a model of a mud hut-style house.	1 paper plate; air-dry clay/plasticine/playdough; toothpicks; fan or hairdryer.	<p>EXA 0-06a – solve design problems</p> <p>LIT 0-09a – communicate ideas</p> <p>SCN 0-15a – uses of materials based on physical properties</p> <p>TCH 0-04b – selecting materials</p> <p>TCH 0-09a – use materials to construct product</p> <p>TCH 0-10a – use of materials</p> <p>TCH 0-12a – engineering principles</p>
4. Waterproof Outfit	Design and create a waterproof outfit that keeps you dry when it's raining.	Plastic tablecloth, Sellotape, hose or watering can to create rain.	<p>EXA 0-06a – solve design problems</p> <p>LIT 0-09a – communicate ideas</p> <p>SCN 0-15a – use of materials based on physical properties</p> <p>TCH 0-04b – selecting materials</p> <p>TCH 0-09a – use materials to construct product</p> <p>TCH 0-10a – use of materials</p> <p>TCH 0-12a – engineering principles</p>

5. Newspaper Hat	Design and create a wide-brimmed hat for each group member using newspaper.	Newspaper, Sellotape.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-06a – recycled materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
6. Ice Cube Igloo	Design and create a small igloo using ice cubes.	Ice cubes, salt, plastic plate, person figurine.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-05a – states of water TCH 0-10a – use of materials TCH 0-12a – engineering principles
7. Class Lego™ Land	Design and create a strong Lego™ house to add to a class Lego™ Land.	Lego™, A4 piece of paper, glue stick.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-09a – use materials to construct product TCH 0-10a – use of materials TCH 0-12a – engineering principles

Infants/P1 Earth and the Environment			
Card	Task	Suggested Materials	CfE Link
1. Wellington Boots	Design and create wellington boots that keep your feet dry while jumping in puddles.	Sellotape, waterproof materials.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
2. Summer Sandcastle	Design and create a sandcastle that could be made at the beach on a hot summer's day.	Sandpit, sandpit equipment, water, digital camera or iPad®.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-01a – using digital products TCH 0-09a – use materials to construct product TCH 0-12a – engineering principles
3. Umbrella	Design and create an umbrella that keeps you dry when it's raining.	Recycled materials, waterproof materials, hose to make rain.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-06a – recycled materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
4. Sleeping Masks	Design and create a set of sleeping masks that let you sleep in darkness during the day.	Scrap fabric, elastic, plastic weaving needle, Sellotape.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-06a – patterns of day and night SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
5. Spring Flowerpots	Design and create a set of flowerpots that show different types of flowers that can be seen in spring.	Plasticine, coloured pipe cleaners, Unifix™ cubes, soil, digital camera or iPad®.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas MNU 0-11a – units of measure TCH 0-01a – using digital products TCH 0-09a – use materials to construct product TCH 0-12a – engineering principles

6. Water Slide	Design and create a water slide that carries two people figurines safely down the slide and into a small pool.	Recycled materials, waterproof materials, 2 people figurines, water, basin.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas SCN 0-07a – simple forces SCN 0-15a – use of materials based on physical properties TCH 0-04b – selecting materials TCH 0-06a – recycled materials TCH 0-09a – use materials to construct product TCH 0-10a – use of materials
7. Seasonal Fashion Show	Design and create an outfit for a season of your choice. Model your outfit at a class fashion show.	Newspaper, Sellotape, digital camera or iPad®.	EXA 0-06a – solve design problems LIT 0-09a – communicate ideas TCH 0-01a – using digital products TCH 0-09a – use materials to construct product

Box 1/P2		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Koala Enclosure	Design and create a model of a zoo enclosure for a koala.	A3 piece of cardboard; cardboard tubes; clay, plasticine/playdough; coloured paper.	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. Owl Mask	Design and create an owl mask with binocular vision.	2 short cardboard tubes, empty cereal boxes, elastic, paint, feathers.	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Frog Habitat	Design and create a habitat for a frog that caters for its needs.	1 medium-sized rectangular plastic tub, water, sand, twigs leaves, rocks.	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
4. Salt Dough Salad Sculpture	Design and create a salad sculpture using salt dough.	1 small paper plate, salt dough, plastic knives, paint, oven (Teacher).	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
5. Potato Maze	Design and create a potato maze to see how plants grow features to meet their needs.	1 shoebox, cardboard, 1 potato, water spray bottle, 10p coin.	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-03a – grow plants SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. Human Movement Video	Design and create a video that names and demonstrates different types of human movement.	1 digital camera, play equipment, grassed area.	EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-12a – use of body parts TCH 1-01a – use of digital technologies

<p>7. Class Farmyard</p>	<p>Design and create a papier mâché farm paddock to add to a class farmyard scene. The class farmyard scene must have a different type of farm animal in each paddock.</p>	<p>1 A3-sized piece of thick cardboard, newspaper, PVA glue, paint.</p>	<p>EXA 0-06a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials</p>
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Box 1/P2			
Energy and Forces			
Card	Task	Suggested Materials	CfE Link
1. Stained-glass window	Design and create a model of a stained-glass window that uses sunlight to shine coloured shapes into the classroom.	Craft materials, coloured tissue paper, black card.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
2. Candle Holder	Design and create a candle holder that keeps people safe from the flame and the hot wax.	Recycled materials, craft materials, one tea light candle, timer or clock.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-06a – recycled materials</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
3. Lighthouse	Design and create a working lighthouse using recycled materials.	Recycled materials torch, metre stick, paint, reflective materials.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-06a – recycled materials</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
4. Straw Pan Pipes	Design and create a set of straw pan pipes so each member of the group can play the pan pipes for people to listen to.	Straws, craft materials, digital camera or iPad®.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-11a – pitch of sound</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
5. Stringed Instruments	Design and create a stringed instrument for each group member to make music for people to listen to.	Recycled materials, craft materials, string, digital camera or iPad®.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-11a – pitch of sound</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-06a – recycled materials</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>

6. Stormy Soundscape	Design and create a soundscape of stormy weather.	Classroom materials, audio recorder.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials
7. 3-D Disco Scene	Design and create a 3-D disco scene showing how you would combine different sources of light and sound.	Shoebox, craft materials, matchsticks, tinfoil, polystyrene ball, source of light, source of sound.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 1/P2		Materials	
Card	Task	Suggested Materials	CfE Link
1. Tinfoil Tower	Design and create a model of the Eiffel Tower using tinfoil.	Tinfoil, metre stick, 5 people figurines.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-11a – pitch of sound SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. Bubble Wands	Design and create a set of bubble wands to blow bubbles with.	Pipe cleaners, wooden skewers, bucket, water, dishwashing liquid.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Newspaper Table	Design and create a table made from newspaper and masking tape.	Newspaper, masking tape, 1 classroom desk, 5 reading books.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
4. Noughts and Crosses	Design and create a game of noughts and crosses.	Salt dough, plasticine or playdough; plastic knives; oven (Teacher).	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
5. Sensory Bottles	Design and create three sensory bottles at different temperatures.	3 x 600-ml plastic bottles, water, food colouring, olive oil, decorations, fridge, freezer.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. Chocolate Fondue	Design and create a dessert made of chocolate fondue and fresh strawberries and bananas.	Chocolate, strawberries, bananas, microwave or tea light candle (Teacher), microwave-safe or flame-safe bowl, plastic plate, chopping board, plastic knife.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials

7. Class Paper Plane Contest	Design and create a paper aeroplane. Hold a class contest to see which plane travels the furthest.	A4 piece of paper.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
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Box 1/P2		Earth and the Environment	
Card	Task	Suggested Materials	CfE Link
1. Day and Night Felt Board	Design and create a felt board that has a day and night scene.	Felt, A3 piece of cardboard, scissors, digital camera or iPad®.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-06a – day and night SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. Anti-litter Campaign Poster	Design and create an anti-litter campaign poster that helps others to see how litter destroys the environment and how we can improve the environment through simple steps.	A3 piece of card, markers, crayons, pencils, magazines and newspapers, PVA glue.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Snow Globe	Design and create a snow globe in a jar.	Cylindrical glass jar, plasticine, water, white glitter.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – freezing of water SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
4. Model Tree House	Design and create a model tree house sitting in a tree.	Cardboard tubes, tissue paper, lollipop sticks, Sellotape, 5 people figurines.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
5. Miniature Zen Garden	Design and create a miniature Zen garden.	Moveable surface (30cm long x 20cm wide), natural materials, craft materials.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials

6. National Park	Design and create a model of a national park using air-dry clay.	Air-dry clay, plastic knife, wooden skewer, paint, digital camera or iPad®.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials
7. Daily Weather News Report	Design and create a daily weather news report for each day of the week. Show your weather report at the end of each day on an interactive whiteboard or computer screen.	Measuring jug, digital camera or iPad®, timer, computer, interactive whiteboard.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – water changing form SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 2/P3		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Bird's Nest	Design and create a nest to keep a bird's egg safe and warm.	Lollipop sticks, matchsticks, cotton wool, PVA glue, 1 plastic egg.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. A Butterfly's Life Cycle	Design and create a model of the three main stages of the life cycle of a butterfly—egg, caterpillar and butterfly.	Salt dough, plastic cutlery, wooden skewers, paint, oven (Teacher).	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Animal Matching Card Game	Design and create a card game where players match different animals with their babies.	Computer, printer, cardboard.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-14a – comparing generations TCH 1-01a – use of digital technologies
4. Baby Animals Calendar	Design and create a calendar showing a photograph of a different animal and its baby for each month of the year.	A3 paper, computer, printer.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-14a – comparing generations TCH 1-01a – use of digital technologies
5. Growing a Radish	Design and create a garden to grow a radish from seed to harvest.	1 plastic pot, approximately 20 cm deep; soil; radish seeds or similar; water; digital camera or iPad®; adhesive label.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-03a – grow plants SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. The Human Life Cycle Film	Design and create a film of how humans grow and change from birth to old age.	Digital camera or iPad®, costumes, props, script.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-14a – comparing generations TCH 1-01a – use of digital technologies
7. Broad Bean Time-lapse Video	Design and create a time-lapse video of a broad bean seed growing into a plant.	Broad bean seed, large plastic cup, cotton wool, water sprayer, digital camera or iPad®, computer, video-making software.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-03a – grow plants TCH 1-01a – use of digital technologies

Box 2/P3		Energy and Forces	
Card	Task	Suggested Materials	CfE Link
1. Fidget Spinner	Design and create a fidget spinner using plastic bottle lids.	Plastic bottle lids, cardboard, wooden skewer, glitter, PVA glue, digital camera or iPad®.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
2. Paper Helicopters	Design and create three paper helicopters that fall at different speeds when the force of gravity pulls them towards the ground.	Thick craft paper, paper clips, stopwatch.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
3. Catapult	Design and create a working catapult that pushes an object into motion.	Craft materials, elastic bands, A5 piece of paper, table tennis ball, metre stick.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
4. Construction Crane	Design and create a construction crane that pulls an object into motion.	Recycled materials, string, 10 Duplo® blocks, pulley wheels.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-06a – recycled materials</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p> <p>TCH 1-12a – solution with moving parts</p>

5. Hang-glider	Design and create a hang-glider that flies when pushed.	Craft materials, scrap fabric, wooden skewers, 25 Unifix™ cubes, person figurine, metre stick, digital camera or iPad®.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. Cart on Wheels	Design and create a cart on wheels that can be used to push and pull objects from one classroom to another.	Recycled materials, 30 pencils, dowel rods.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-06a – recycled materials
7. Class Miniature Golf Course	Design and create a miniature golf green and golf club to add to a class miniature golf course for everyone to play.	Recycled materials, golf ball, paint.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-06a – recycled materials TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 2/P3		Materials	
Card	Task	Suggested Materials	CfE Link
1. Crazy Kite	Design and create a crazy kite that will fly on a windy day.	Cereal box, cellophane, string, lollipop sticks or skewers, Sellotape, one A4 piece of paper.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
2. Cardboard Car	Design and create a cardboard toy car that is powered by a balloon.	Cardboard tubes, wooden skewers, plastic bottle lids, recycled materials, one balloon, Sellotape, people figurines.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p> <p>TCH 1-12a – solution with moving parts</p>
3. Baking Biscuits	Design and create a batch of biscuits by mixing ingredients (the materials) together.	2 cups of self-raising flour; pinch of salt; 180 g of butter; ½ cup of sugar; 1 egg beaten; bowl; wooden spoon; sieve; baking tray; oven (Teacher).	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-04c – using problem solving strategies to meet food challenge</p> <p>TCH 1-13a – follow instructions</p>
4. Parachute Drop	Design and create a parachute that will drop carefully to the ground.	Plastic tablecloth, plastic egg, styrofoam cup, string, ruler, Sellotape.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
5. House on Stilts	Design and create a house built on stilts that could survive a flood.	Lollipop sticks, matchsticks or twigs; plastic covering for windows, such as cling film; straw; 8 people figurines; large basin; plasticine.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-07a – investigating forces on toys</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>

6. 3-D Glasses	Design and create a set of glasses that can view images in 3-D.	Cardboard, red and blue cellophane, Sellotape.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
7. Recycled Paper Treasure Map	Design and create your own recycled paper treasure map.	Fine-wire mesh sheet, scrap paper, scissors, water, rubber gloves, permanent markers, audio recorder.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 2/P3 Earth and the Environment			
Card	Task	Suggested Materials	CfE Link
1. Woodland and Seashore Animals Poster	Design and create an A3 poster showing the similarities and differences among animals living in a woodland habitat and in a seashore habitat.	A3 paper or card, digital camera or iPad®, computer, printer, glue stick, markers, pencils.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-01a – sorting living things TCH 1-01a – use of digital technologies TCH 1-10a – use of materials
2. A Water Well	Design and create a model of a water well to get water.	Cardboard, plastic bucket, plastic cup, rope or twine, cardboard tubes, water.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Underground Pipe Maze	Design and create an underground pipe maze showing how water gets from a source to a house.	20 flexible straws, large plastic tub, Sellotape, water, funnel (as the source of water), sand, toy houses.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
4. Rainwater Tank	Design and create a rainwater tank that collects clean water.	2-litre plastic bottle, materials to make a filter, hose for water.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – water collection SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
5. Shoebox Solar Oven	Design and create a shoebox solar oven that can melt an ice cube.	Shoebox, tinfoil, skewers, ice cube, cling film, Sellotape, black card.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. Saving Water Video	Design and create a short video to teach younger children different ways to save water.	Digital camera or iPad®, school grounds, water sources.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-01a – use of digital technologies TCH 1-06a – impact of actions on environment

<p>7. Class Wind Farm</p>	<p>Design and create a windmill to add to a class wind farm.</p>	<p>Cardboard tubes, cardboard, lollipop sticks, dowel rod or pencil, masking tape, string, fan or hairdryer, 1 person figurine.</p>	<p>EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys SCN 1-15a – choose materials to solve practical challenges TCH 1-06a – impact of actions on environment TCH 1-09a – design and construct models TCH 1-10a – use of materials TCH 1-12a – solution with moving parts</p>
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Box 3/P4		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Guess Which Living Thing	Design and create a 'Guess Who?' [®] -style game based on animals.	Cardboard, printed images of living things from the Internet.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. Non-living Tree	Design and create a 3-D tree from the future that is made from non-living things.	Cardboard, cellophane, crêpe paper, polystyrene foam, newspaper, glitter, plastic bottles.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. Paper Planes	Design and create a paper plane based on the wings of a flying animal.	Paper/card, Sellotape, metre stick.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces on toys TCH 1-09a – design and construct models TCH 1-10a – use of materials
4. A Day in the Life of a Snail	Create and produce a short documentary about a day in the life of a snail.	Digital camera or iPad [®] , snail in its habitat, iMovie [®] application or similar.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-01a – use of digital technologies
5. Recipe for Muffins	Design and create a recipe for muffins that includes products of living things.	Mixing bowl, weighing scales and measuring spoons, mixing spoon, ingredients, muffin tin, digital camera or iPad [®] .	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-04a – food preparation TCH 1-13a – follows sequences
6. Designer Shoe	Design and create a shoe based on the features of a duck's foot.	Fabric/Lycra, plastic sheets, straws, sheets of rubber, foam, stockings.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
7. Living Things Twister Game	Design and create a 'Twister'-style game based on living things.	Cardboard, split pin, plastic sheets, paints, digital camera or iPad [®] .	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-01a – use of digital technologies TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 3/P4			
Energy and Forces			
Card	Task	Suggested Materials	CfE Link
1. Simple Thermometer	Design and create a simple thermometer using a glass bottle.	Clear straw, small glass bottle with a lid, food colouring, modelling clay, rubbing alcohol (Teacher), water.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly MNU 1-11a – estimating and measuring volume SCN 1-04a – energy sources, heat SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
2. Winter Hat	Design and create a hat to keep your head warm in winter.	Insulating materials, fabric, elastic, cotton, sewing needles or sewing machine.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
3. How-to Video: Starting a Fire	Design and create a simple how-to video explaining how to start a fire using only friction and sticks.	Digital camera or iPad®, sticks.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-07a – investigating forces TCH 1-01a – use of digital technologies TCH 1-10a – use of materials
4. Invisible Ink	Design and create an invisible ink picture about heat.	Lemon juice, card, paintbrush, candle, digital camera or iPad®.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies TCH 1-10a – use of materials
5. Solar Toasted Sandwich Maker	Design and create a solar toasted sandwich maker big enough to fit a slice of bread.	Cardboard box or old pizza box, materials to conduct heat, materials to attract sunlight and heat, bread and cheese slices.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
6. Frying Pan	Design and create a frying pan that could be used for cooking at a campsite.	Materials that are good conductors, materials that are poor conductors.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials

7. House Insulation	Design and create insulation for two model houses that keeps a cup of hot water hot.	Cardboard, materials that are good insulators, thermometer, cup of hot water.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials
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Box 3/P4		Materials	
Card	Task	Suggested Materials	CfE Link
1. Chocolate Glue	Design and create a building using marshmallows that is held together with chocolate.	Bowl of water, large plate, chocolate pieces, marshmallows (range of shapes and sizes), small sweets for decoration.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-10a – use of materials
2. Igloo	Design and create an igloo using only water and salt.	Water, plastic tray, salt, ice cube tray, digital camera or iPad®.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – freezing and melting water TCH 1-09a – design and construct models
3. Ice Sculpture	Design and create an ice sculpture by freezing water into different shapes.	Water, moulds, plasticine or playdough, food colouring, salt, plastic plate.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – freezing and melting water TCH 1-09a – design and construct models
4. Plastic Milk	Design and create a hanging ornament by turning milk into plastic.	Milk, white vinegar, food colouring, sieve, moulds, baking parchment, cup, teaspoon, microwave (Teacher).	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly TCH 1-09a – design and construct models TCH 1-10a – use of materials
5. Slushie Stall	Design and create a flavoured slushie and a stall to sell your slushie from.	Water, fruit cordial flavours, small clear plastic cups, straws, cardboard, freezer (Teacher).	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – freezing and melting water TCH 1-04a – food preparation
6. Memory Matching Game	Design and create two sets of cards to be used in a game of 'Memory'.	Card, laminating machine and pouches, computer with word processing program, glue stick.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-05a – freezing and melting SCN 1-15a – choose materials to solve practical challenges TCH 1-01a – use of digital technologies
7. Paper Birthday Card	Design and create a birthday card using recycled paper	Sieve, shredded paper/newspaper, decorative materials, bucket, water, towels, rolling pin, backing parchment.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-15a – choose materials to solve practical challenges TCH 1-06a – impact of actions on environment TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 3/P4 Earth and the Environment			
Card	Task	Suggested Materials	CfE Link
1. Papier Mâché Globe	Design and create a globe of Earth, with an axis it can spin on and a stand for it to be placed on.	Strips of newspaper, round balloon, PVA glue, large basin, printouts of Internet images of the continents of the world, dowel rods.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-06a – Earth’s movement</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
2. DIY Sunglasses	Design and create a pair of sunglasses.	Card, cellophane, digital camera or iPad®.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-06a – Earth’s movement</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-01a – use of digital technologies</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>
3. Night and Day Time-lapse Video	Design and create a time-lapse video showing the sky turning from day to night.	Digital camera or iPad®, iMovie® application or similar.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-06a – Earth’s movement</p> <p>TCH 1-01a – use of digital technologies</p>
4. A Day in the Life of ...	Create a short story about a day in the life of a made-up character and act it out to create a film.	Digital camera or iPad®, iMovie® application or similar, costume/settings.	<p>EXA 1-02a – solve design problems</p> <p>EXA 1-14a – drama exploring real situations</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-06a – Earth’s movement</p> <p>TCH 1-01a – use of digital technologies</p>
5. Parasol	Design and create a parasol that blocks out the sunlight instead of the rain.	Sunroof materials/fabrics, long tubes, lollipop sticks, plastic bottles, newspaper.	<p>EXA 1-02a – solve design problems</p> <p>LIT 1-09a – communicate clearly</p> <p>SCN 1-06a – Earth’s movement</p> <p>SCN 1-15a – choose materials to solve practical challenges</p> <p>TCH 1-09a – design and construct models</p> <p>TCH 1-10a – use of materials</p>

6. 2-D Earth, Moon and Sun Display Model	Design and create a 2-D display model that shows the relative sizes of Earth, the moon and the sun, and the relative distances they are from each other.	Card, lollipop sticks, straws, string.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly SCN 1-06a – Earth’s movement TCH 1-09a – design and construct models TCH 1-10a – use of materials
7. Sundial	Design and create a sundial using a paper plate.	Paper plate, permanent marker, sharpened pencil, ruler, pushpins or drawing pins, drinking straw, compass.	EXA 1-02a – solve design problems LIT 1-09a – communicate clearly MTH 1-17a – directional words SCN 1-06a – Earth’s movement SCN 1-15a – choose materials to solve practical challenges TCH 1-09a – design and construct models TCH 1-10a – use of materials

Box 4/P5		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Sapling Protector	Design and create a protective device for a sapling that will allow it to reach maturity.	Plastic tubing, recycled plastic bottles, rubber bands, wire mesh, toothpicks/skewers, string, sapling.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-14a – life cycle stages</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
2. A Bird's Life Cycle	Design and create a claymation video of the life cycle of a bird.	Digital camera or iPad®, iMovie® or similar application to compile photographs, playdough, strips of paper, markers.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-14a – life cycle stages</p> <p>TCH 2-01a – use digital products</p>
3. A Fictitious Animal's Life Cycle	Design a fictitious animal and create a model of each of the life stages it goes through.	Playdough, paper/card, various craft supplies and recycled materials, digital recording device or iPad®.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-14a – life cycle stages</p> <p>TCH 2-01a – use digital products</p>
4. Predator and Prey Game	Design and create a board game based on <i>Snakes and Ladders</i> , using animals that are predators and prey instead.	Cardboard, drawing supplies, printouts of Internet images.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-02a – food chains</p> <p>TCH 2-01a – use digital products</p>
5. A Home in a Tree	Design and create a squirrel's drey that can be placed in a tree.	Chicken wire or old hanging baskets; wire cutters; twigs, dry leaves and dry grass; string or cable ties; digital camera or iPad®.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-02a – wildlife area</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
6. Human Skeleton	Design and create a life-sized model skeleton of a pupil in your group.	Long strips of white card, sheets of white card, split pins, metre stick, measuring tape, scissors, stapler.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – problems involving measure</p> <p>SCN 2-12a – skeletal system</p> <p>TCH 2-04c – solve problems</p>

7. Mini Biodome	Design and create a mini biodome based on one type of environment.	2-litre plastic bottles or other plastic disposable containers, modelling clay, string, Sellotape, seeds, soil.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-02a – wildlife area TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
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Box 4/P5			
Energy and Forces			
Card	Task	Suggested Materials	CfE Link
1. Magnet Maze	Design and create a maze which will allow a metal object to be moved through it using a magnet.	Sturdy cardboard, coloured sticky tape or narrow masking tape, magnet, magnetic object, cardboard tubes or plastic bottles.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-08a – applications of magnets TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
2. Marble Run	Design and create a vertical marble run that will make the marble travel the slowest.	Cardboard; cardboard rolls; newspaper; various coverings for the ramps such as fabric, carpet scraps, aluminium, rubber or bubble wrap; timer; marbles.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-07a – moving objects TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
3. Simple Newton's Cradle	Design and create a simple Newton's cradle to show how forces travel.	Lollipop sticks, marbles, glue gun (Teacher), string, audio recorder or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-07a – moving objects TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
4. Hoverboard	Design and create a hoverboard model using the science of magnetic repulsion.	Magnets/bar magnets, lollipop sticks, plastic bottles, polystyrene, cardboard.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-08a – applications of magnets TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
5. Air Boat	Design and create a sail for a boat that can only be moved by blowing through a straw.	Small plastic figurine, large lid, paper, fabric scraps, straw, large plastic tray and water, digital recording device or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-07a – moving objects TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
6. Obstacle Course	Design and create an obstacle course with three stations that involve bouncing, throwing and rolling a ball.	Plastic cones, variety of balls, cardboard, timer.	EXA 2-06a – design problem HWB 2-22a – manipulate objects LIT 2-09a – share information, processes, ideas SCN 2-07a – moving objects

7. Leapfrog Catapult Game	Design and create a catapult game to launch toy frogs into a lily pad.	Lollipop sticks, elastic bands, plastic teaspoon, coloured cardboard, plastic toy frogs.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – problems involving measure SCN 2-07a – moving objects TCH 2-04c – solve problems
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Box 4/P5		Materials	
Card	Task	Suggested Materials	CfE Link
1. Create an Ice Cream Float Flavour	Design and create a new ice cream float flavour, by combining ice cream and a soft drink.	Spoons, large cups or sundae glasses, ice creams, soft drinks, flavourings, digital recording device or iPad®.	<p>EXA 2-06a – design problem</p> <p>HWB 2-37a – advertising food products</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-15a – substance changes</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
2. Natural Thermos Flask	Design and create a simple thermos flask that uses a natural material as the insulator.	Cardboard; Sellotape for outer part of thermos flask; wool, cotton, feathers; timer; thermometer; glass of warm water.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
3. Magnet Board	Design and create a magnet board to hang on a wall.	Old baking tray or other metal pan/sheet, fabric, magnets.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-08a – applications of magnets</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
4. Keep a Toy Dry	Design and create a cover for a soft toy that will keep it dry when placed underwater.	Various waterproof materials for the cover; rubber bands, string, sellotape to secure the cover; soft toy; digital camera or iPad®.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
5. Repurposing Plastic Bottles	Design and create something out of a plastic bottle, so that it can be repurposed rather than recycled.	Different-sized plastic bottles, various craft materials.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
6. Mini Parachute	Design and create a parachute for a small toy figurine.	Various test materials such as tissue paper, fabric scraps, newspaper, cellophane, feathers; timer; toy figurine.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-07a – moving objects</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>

7. Soundproof Box	Design and create a soundproof box that will contain the sound of an alarm clock or beeping timer.	Shoebox or small box; rubber, foam, wadding; alarm clock or timer that beeps; audio recorder.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-11a – vibration waves TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
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Box 4/P5 Earth and the Environment			
Card	Task	Suggested Materials	CfE Link
1. Science Materials Storage Box	Design and create a recycled storage box to display small materials that are needed for science lessons.	Cardboard box; cardboard pieces; self-adhesive labels; egg cartons; small science materials such as marbles, magnets bulbs and batteries.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
2. Volcano Village	Design and create a model of a volcano village to show the effects of lava flow on the surrounding areas.	Plastic tray; modelling clay; lava: vinegar, bicarbonate of soda, food colouring, drops of dishwashing liquid; digital recording device or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-15a – substance changes SOC 2-07a – natural disasters TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
3. Earthquake Maker	Design and create a model using cardboard sheets and sand that shows how an earthquake occurs and its effects on the landscape.	2 cardboard sheets, damp sand, digital camera or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SOC 2-07a – natural disasters TCH 2-01a – use digital products
4. Disaster-proof Building	Design and create a structure that is safe from wind, floods and earthquakes.	Matchsticks/toothpicks, modelling clay, bamboo skewers, plastic tray to hold the structure, digital recording device or iPad®, fan or hairdryer.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SOC 2-07a – natural disasters TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
5. Soil Erosion Demonstrator	Design and create a soil erosion demonstrator using recycled plastic bottles	Soil, woodchips, plant, 6 plastic bottles, string, digital camera or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-05a – water cycle TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

6. Community Playground Landscape Plan	Design and create a playground landscape that improves and enhances an unused or derelict piece of land in the local community.	Drawing supplies, card, squared paper, scanner.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-02a – wildlife area SOC 2-08b – community land use TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Flood-proof Barrier	Design and create a barrier for a paper house that is able to resist flood waters.	Sand, fabric scraps, modelling clay, plastic basin, jug, polystyrene cups, sponges, paper/card, tinfoil, baking parchment, lollipop sticks.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SOC 2-07a – natural disasters TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

Box 5/P6		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Camouflage Animals	Design and create a camouflaged animal in a habitat.	Modelling clay, craft supplies, cardboard box/shoebox.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation
2. Desert Garden	Design and create a drawing of a landscaped garden for a desert home.	Drawing supplies, card, squared paper, scanner.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11c – measuring area SCN 2-01a – adaptation
3. A Camel in the Arctic	Design and create a 3-D model of a camel with adapted features that could survive in the Arctic.	Craft supplies, modelling clay, digital recording device or iPad®, props as required for the video.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products
4. A Super-animal	Design and create an animal made up from adapted features of other animals, which will enable your animal to live in any environment.	iPad® or computer, colour printer, scissors, glue, A3 card.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products
5. Cactus Model	Design and create a 3-D cactus, showing its modified roots, stem and leaves.	Sponges or other absorbent material, green balloons, toothpicks, string/floss, plastic cup.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-01a – adaptation TCH 2-10a – properties and uses of materials
6. Trivia Quiz	Create an online quiz to test your classmate's knowledge on producers, consumers and decomposers.	Internet access, non-fiction books.	LIT 2-09a – share information, processes, ideas SCN 2-02a – food chains TCH 2-01a – use digital products
7. Nocturnal Animal Short Film	Create and produce a short film about the night-time adventures of a Scottish nocturnal animal.	Costumes made from fabric and recycled materials, props made from cardboard and recycled materials, digital recording device or iPad®.	EXA 2-12a – theatre arts technology LIT 2-09a – share information, processes, ideas SCN 2-01a – characteristics TCH 2-01a – use digital products TCH 2-10a – properties and uses of materials

Box 5/P6		Energy and Forces	
Card	Task	Suggested Materials	CfE Link
1. Secret Quiz	Design and create a series of quiz question cards that are only revealed by placing a glass of water in front of the card.	Glass or jar of water, card, markers.	LIT 2-09a – share information, processes, ideas SCN 2-11b – properties of light
2. Superhero Signal	Design and create two symbols for a superhero signal that can be projected onto a wall.	Torch, tubing, card.	LIT 2-09a – share information, processes, ideas SCN 2-11b – properties of light
3. Kaleidoscope	Design and create a kaleidoscope that uses mirrors and light to display an image.	Reflective materials, tubing, card, craft supplies.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-11b – properties of light TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
4. Shadow Puppet Theatre	Design and create a shadow puppet stage and shadow puppet characters.	Various opaque materials, cardboard boxes or other recycled materials, torch, lollipop sticks, curtain/fabric, baking parchment/tissue paper, digital recording device or iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-11b – properties of light TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
5. Radiation Shield	Design and create a spacecraft with a radiation shield to protect the astronauts from the sun.	Various opaque materials, cardboard boxes or other recycled materials to create the body of the spacecraft, strong spotlight torch to represent the sun.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-11b – properties of light TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
6. Laser Light Maze	Design and create a light maze using mirrors to bend light.	Mirrors, laser light or torch, safety goggles, cardboard, shoebox.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-11b – properties of light TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

<p>7. Carnival Funhouse Mirror</p>	<p>Design and create a funhouse mirror that distorts your reflection.</p>	<p>Reflective materials, cardboard boxes, plastic sheeting, recycled materials (such as cardboard or wood), digital camera or iPad®.</p>	<p>EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11a – estimate of measure SCN 2-11b – properties of light TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials</p>
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Box 5/P6		Materials	
Card	Task	Suggested Materials	CfE Link
1. Oobleck Speaker	Design and create a music video using dancing oobleck.	Digital recording device or iPad®; speaker or sub-woofer; cling film or tray placed on the speaker; oobleck: 1 cup of water, 2 cups of cornflour, drops of food colouring.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-15a – changing materials TCH 2-01a – use digital products
2. Home-made Fire Extinguisher	Design and create a fire extinguisher that extinguishes a tea light candle by producing carbon dioxide from a chemical reaction.	Empty washing-up liquid bottle with a 'pop-up' cap (or 'squirt-top' water bottle), white vinegar, cold water, bicarbonate of soda, toilet tissue paper, string, scissors, tea light candle, wide coffee cup.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-07a – everyday contexts, ratio SCN 2-15a – changing materials TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
3. Underwater Relay Race	Design and create a way for a floating tea light to be moved around underwater in a relay race against other groups.	Large, clear bowl or basin of water; water; tea light candle; tinfoil; recycled plastic bottles.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-08b – floating SCN 2-15a – changing materials TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
4. Build a Bridge	Design and create a bridge from a material that is strong enough to hold a toy lorry.	Small toy lorry; building supplies such as lollipop sticks, dowel rods, cardboard, plastic, metal rulers, newspaper; string; Sellotape.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-08a – gravitational force TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
5. Zoetrope Animation	Design and create a simple animation, called a zoetrope, based on the changing state of a substance; for example, a melting ice cream.	Black card, white card, recycled materials, cardboard cylinders, pencil or dowel rod, glue stick, scissors.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-15a – changing materials TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

6. Hot-air Balloon	Design and create a small hot-air balloon.	Thin, medium-sized bin liners (the cheap brands are best); tea light candles; straws; tinfoil; iPad® or digital recording device.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-07a – forces SCN 2-15a – changing materials TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Cookery Segment Video	Create and produce a cookery segment video to demonstrate how to make a recipe that involves the heating and cooling of solids and liquids.	Ingredients for the recipe, cooking equipment and utensils, props for the video, digital recording device or iPad®.	LIT 2-09a – share information, processes, ideas SCN 2-15a – changing materials TCH 2-01a – use digital products TCH 2-04c – solve problems

Box 5/P6 Earth and the Environment			
Card	Task	Suggested Materials	CfE Link
1. Alien Planet	Design and create an alien from one of the planets in our solar system and create an audio recording of the alien describing its planet.	Digital audio recorder or iPad®, modelling clay, pipe cleaners, card, recycled materials.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-06a – space</p> <p>SCN 2-15a – changing materials</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
2. Make a Rock	Design and create a rock that replicates a sedimentary rock.	Sand, gravel and pebbles, small shells, plastic cup, salt, sugar, plaster of Paris.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-17a – rock formation</p> <p>TCH 2-04c – solve problems</p>
3. Energy-saving Tips Video	Design and create a short video to teach children different ways to use energy wisely in school and at home.	Computer with Internet access, digital recording device or iPad® school grounds, classrooms.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-04b – sustainability</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
4. Solar Power Tower	Design and create a tower that will use the sun to power a pinwheel connected to the top.	Various thermal materials, lollipop sticks, rubber bands, modelling clay, card/paper, recycled materials, digital recording device or iPad®.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-04a – energy sources</p> <p>SCN 2-04b – sustainability</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
5. Comic Book Character	Design and create a comic book character whose powers are obtained from the sun.	Drawing materials, card/paper, computer, comic strip creator website such as https://www.pixton.com (ask the teacher to register).	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-04a – energy sources</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>

6. 3-D Solar System Display Model	Design and create a display model of the solar system, using accurate relative sizes.	Fabric, wool/string/wire/fishing line, coat hangers, dowel rods, newspaper, recycled materials.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-06a – space TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Parabolic Cooker	Design and create a parabolic cooker that focuses the sun’s energy onto one spot to melt a marshmallow.	Rectangular cardboard box/shoebox, piece of card, piece of black card, tinfoil, glue, marshmallows, timer.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-04a – energy sources SCN 2-15a – changing materials TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

Box 6/P7		Living Things	
Card	Task	Suggested Materials	CfE Link
1. Antarctic Memes	Design and create a series of memes using images of animals that live in Antarctica.	Internet images, program to create a meme such as Microsoft® PowerPoint® or Word®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products
2. Food Web Poster	Design and create a large poster that shows a woodland habitat food web based on an oak tree as the producer.	Large chart paper; computer with Internet access; colour printer; green, red and orange card; scissors; glue stick.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-02a – food chains TCH 2-01a – use digital products
3. 3-D Desert Viewer	Design and create a stereoscope viewer and view images of the desert environment in 3-D.	Cardboard, recycled materials, magnifying lenses (optional), iPad®.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
4. Yeast Challenge	Create a method to make bread dough rise the quickest.	Strong white flour, salt, sachet of fast action dried yeast, warm water, bowls, thermometers, digital kitchen scales, teaspoon, digital camera, timer.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-13a – microorganisms SCN 2-15a – changing materials TCH 2-01a – use digital products TCH 2-04c – solve problems
5. Greenhouse Effect in a Bottle	Design and create a small-scale greenhouse effect in a bottle.	Light/heat source, plastic bottles, thermometer, small plant, soil, Sellotape, timer.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-20b – environmental issues TCH 2-01a – use digital products TCH 2-10a – properties and uses of materials
6. Winter Hibernation News Report	Design and create a short news report about the hibernating abilities of three different animals.	iPad® or digital recording device, materials to create a news desk, digital images of three hibernating animals.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products

7. Claymation Film of Humpback Whale Migration	Design and create a claymation film of the migration path of a humpback whale.	Modelling clay, iPad® or digital camera, cardboard, craft supplies, iMovie® application or similar.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-01a – adaptation TCH 2-01a – use digital products
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Box 6/P7		Energy and Forces	
Card	Task	Suggested Materials	CfE Link
1. Robot Artist	Design and create a simple robot that can draw a pattern as it moves.	Cup, 3 markers, Sellotape, 3V coin cell battery, DC motor, eraser, piece of card.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-09a – electrical circuits</p> <p>TCH 2-04c – solve problems</p>
2. Simple Wind Turbine	Design and create a simple wind turbine that can lift a weighted cup off the floor.	Plastic cup, weights, cardboard, pencil, Sellotape, string, Blu-tack®, hairdryer or fan.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-04b – renewable energy</p> <p>TCH 2-04c – solve problems</p>
3. Potato Battery	Design and create a system of potatoes and wires to light a 12V light bulb.	12V LED bulb, potatoes, copper nails, zinc nails, circuit wires with crocodile clips.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-09a – electrical circuits</p> <p>SCN 2-10a – batteries</p> <p>TCH 2-04c – solve problems</p>
4. Sustainable Home of the Future	Design and create a model of a house and its gardens that shows three forms of sustainable energy that can be used to power the home.	Recycled plastic bottles, cardboard box, index cards, straws, card/paper, tinfoil, Lego™, mirrors.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-04b – renewable energy</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
5. Fairy Light Circuit	Design and create an electrical circuit to light up a series of fairy lights.	String of fairy lights, scissors, tinfoil, brass split pin, 9V battery, Sellotape, piece of card.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-09a – electrical circuits</p> <p>TCH 2-04c – solve problems</p>

6. Waterwheel	Design and create a waterwheel that makes at least two full rotations.	Plastic bottles, plates, cups, tubing, straws; craft supplies; Blu-tack®; timer; large plastic basin; dowel rods; bucket; iPad® or digital recording device.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-04b – renewable energy TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Light-up Art	Design and create a piece of A5 cardboard art with LED lights incorporated into the design.	Coloured card, surface mounted LED lights, 3V coin cell battery, copper foil tape, cardboard, craft supplies.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SCN 2-09a – electrical circuits TCH 2-04c – solve problems

Box 6/P7		Materials	
Card	Task	Suggested Materials	CfE Link
1. Eggs for Breakfast	Design and create a breakfast menu for a café, featuring all the ways an egg can be cooked.	Computer, printer, laminator and pouches.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-15a – changing materials</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
2. Gas-powered Boat	Design and create a gas-powered boat.	Recycled plastic materials, cans and milk cartons; craft supplies such as tinfoil, plastic lids and Sellotape; glue gun; Blu-tack®; large tub or basin of water; straws; bicarbonate of soda; vinegar.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-07a – moving objects</p> <p>SCN 2-15a – changing materials</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
3. Plastic Bag Fusing	Design and create a product using fused plastic bags.	Plastic bags, baking parchment, iron/ironing board, glue, needle and thread, fabric strips, craft supplies.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-15a – changing materials</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
4. Soluble Crystal Designs	Design and create a pattern, word or object by growing crystals.	Pipe cleaners; solution: ½ cup of Epsom salts dissolved in ½ cup of hot water; string; food colouring; large jars or containers to suspend the pipe cleaners in; digital camera or iPad®.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-15a – changing materials</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
5. Dirty to Clean with Evaporation	Design and create a way to obtain clean water from dirty water using evaporation.	Large bowl or container, cling film, plastic cup, warm water, soil.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SCN 2-15a – changing materials</p> <p>SCN 2-16a – separating materials</p> <p>TCH 2-04c – solve problems</p>

6. Rusty Garden Sculpture	Design and create a garden sculpture using steel coat hangers and rust it to make it appear antique.	Steel coat hangers; rusting solution: 475 ml hydrogen peroxide 3%, 60 ml white vinegar, ½ tablespoon of salt; safety goggles; large plastic tub or basin; gloves; wire.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-15a – changing materials TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Home-made Hair Gel Mixture	Design and create a mixture which works as a hair gel.	Various ingredients that dry stiff, various ingredients that smell pleasant, various ingredients that make hair lustrous, bowls, iPad® or digital recording device, plastic container to store final product.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas SCN 2-15a – changing materials TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials

Box 6/P7		Earth and the Environment	
Card	Task	Suggested Materials	CfE Link
1. DIY Seismograph	Design and create a simple seismograph that measures shaking from an earthquake.	Cardboard/cereal box, plastic cups, sand, pen, string, Sellotape, strips of paper/card.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SOC 2-07a – natural disasters</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
2. Flood Garden Raft	Design and create a model floating garden that could survive a flood.	Recycled plastic containers, polystyrene cups and trays, bubble wrap, bamboo skewers, string/Sellotape, materials that float, soil and small plants/herbs, basin of water, hose, iPad® or digital recording device.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SCN 2-08b – floating</p> <p>SOC 2-07a – natural disasters</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
3. Shake Table Buildings	Create a shake table and design and create buildings to place on top that can withstand an earthquake.	Shake table: 2 rectangular cardboard pieces, 4 small rubber balls placed between the cardboard pieces and rubber bands to secure it together; various recycled materials and craft supplies; iPad® or digital recording device.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11b – units of measure</p> <p>SOC 2-07a – natural disasters</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p> <p>TCH 2-10a – properties and uses of materials</p>
4. Tectonic Plate Jigsaw	Design and create a jigsaw puzzle of a map of the world's tectonic plates.	Thick card, computer, printer, laminator and pouches, digital map image, craft knife.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>SOC 2-07a – natural disasters</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>
5. Drought-tolerant Garden	Design and create a Mediterranean garden landscape plan that uses drought-tolerant plants.	A4 squared paper taped together to form A3 size, A3 card, scanner.	<p>EXA 2-06a – design problem</p> <p>LIT 2-09a – share information, processes, ideas</p> <p>MNU 2-11c – measuring perimeter</p> <p>SOC 2-07a – natural disasters</p> <p>TCH 2-01a – use digital products</p> <p>TCH 2-04c – solve problems</p>

6. Flood-proof House	Design and create a model house that can withstand rising flood waters.	Recycled materials, modelling clay, lollipop sticks, cardboard, tinfoil, bamboo skewers, bucket, water, plastic basin, iPad® or digital recording device.	EXA 2-06a – design problem LIT 2-09a – share information, processes, ideas MNU 2-11b – units of measure SOC 2-07a – natural disasters TCH 2-01a – use digital products TCH 2-04c – solve problems TCH 2-10a – properties and uses of materials
7. Hurricane Warning Video	Design and create a hurricane warning video to educate people in order to manage and minimise the effects of this natural disaster.	iPad® or digital recording device, props or costumes, iPad® applications like iMovie® or Keynote®.	EXA 2-06a – design problem EXA 2-12a – theatre arts technology LIT 2-09a – share information, processes, ideas SOC 2-07a – natural disasters TCH 2-01a – use digital products TCH 2-04c – solve problems

Experiences and Outcomes <i>Early Level</i>	Benchmarks
<p>Within real and imaginary situations, I share experiences and feelings, ideas and information in a way that communicates my message.</p> <p style="text-align: right;">LIT 0-09a</p>	<ul style="list-style-type: none"> • Talks clearly in simple sentences using an appropriate range of vocabulary in different contexts. • Uses own words to make up stories or recount events. • Uses new vocabulary and phrases in different contexts; for example, when expressing ideas and feelings or discussing a text. • Talks about experiences and events in a logical order. • Communicates in a range of real and imaginary contexts.
<p>I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.</p> <p style="text-align: right;">MNU 0-11</p>	<ul style="list-style-type: none"> • Shares relevant experiences in which measurements of length, height, weight and capacity are used; for example, in baking. • Describes common objects using appropriate measurement language; for example, tall, heavy and empty. • Compares and describes lengths, heights, weights and capacity using everyday language, including longer, shorter, taller, heavier, lighter, more and less.
<p>Working on my own and with others, I use my curiosity and imagination to solve design problems.</p> <p style="text-align: right;">EXA 0-06a</p>	<ul style="list-style-type: none"> • Solves simple design problems, working on their own and with others, using a degree of trial and error; for example, designs a simple container for an agreed purpose.
<p>Together we enjoy handling, tasting, talking and learning about different foods, discovering ways in which eating and drinking may help us to grow and keep healthy.</p> <p style="text-align: right;">HWB 0-30a</p>	<ul style="list-style-type: none"> • Recognises that eating more of some types of foods and less of others is good for health. • Identifies, prepares and tastes a range of foods; for example, fruit, vegetables.
<p>I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them.</p> <p style="text-align: right;">SCN 0-03a</p>	<ul style="list-style-type: none"> • Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil. • Demonstrates understanding of how plants grow from seeds.
<p>By investigating how water can change from one form to another, I can relate my findings to everyday experiences.</p> <p style="text-align: right;">SCN 0-05a</p>	<ul style="list-style-type: none"> • Investigates the different properties of water and shares their findings with others. • Talks about water in nature and how it influences their everyday lives. • Identifies three main states of water (ice, water and steam) and uses scientific vocabulary such as 'melting', 'freezing' and 'boiling' to describe changes of state.

<p>I have experienced the wonder of looking at the vastness of the sky, and can recognise the sun, moon and stars and link them to daily patterns of life.</p> <p style="text-align: right;">SCN 0-06a</p>	<ul style="list-style-type: none"> • Describes how the rotation of Earth in relation to the sun gives us day and night. • Talks about how the pattern of night and day changes over the course of a year.
<p>Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects.</p> <p style="text-align: right;">SCN 0-07a</p>	<ul style="list-style-type: none"> • Explores and sorts toys and objects into groups according to whether they need to be pushed or pulled. • Measures, using simple equipment, how the movement of an object is affected by the size of the force or the weight of the object. • Demonstrates, through play, how a force can make an object stay still, start to move, speed up, slow down and change shape.
<p>Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes.</p> <p style="text-align: right;">SCN 0-15a</p>	<ul style="list-style-type: none"> • Explores and sorts materials into different groups depending on their properties; for example, whether they are strong, smooth or rough, and if they float or sink. • Justifies the selection of appropriate materials for different uses based on their physical properties.
<p>I can explore digital technologies and use what I learn to solve problems and share ideas and thoughts.</p> <p style="text-align: right;">TCH 0-01a</p>	<ul style="list-style-type: none"> • Uses digital technologies in a responsible way and with appropriate care.
<p>I enjoy experimenting with a range of textiles.</p> <p style="text-align: right;">TCH 0-04b</p>	<ul style="list-style-type: none"> • Demonstrates simple techniques with textiles; for example, threading cards, selecting materials, gluing. • Explores and identifies at least two ideas by using given resources to solve the problem. • Selects an appropriate solution.
<p>To help care for the environment, I reduce, re-use and recycle the resources I use.</p> <p style="text-align: right;">TCH 0-06a</p>	<ul style="list-style-type: none"> • Understands what can be reduced, re-used and recycled.
<p>I explore ways to design and construct models.</p> <p style="text-align: right;">TCH 0-09a</p>	<ul style="list-style-type: none"> • Builds models using different materials; for example, junk modelling, wooden blocks. • Uses tools and materials (paper, card, wood, plastic) to create models.
<p>I explore everyday materials in the creation of pictures/models/concepts.</p> <p style="text-align: right;">TCH 0-10a</p>	<ul style="list-style-type: none"> • Uses a range of materials when creating pictures/models/concepts. • Identifies whether a material is suitable or not for specific function or task.
<p>I explore a variety of products covering a range of engineering disciplines.</p> <p style="text-align: right;">TCH 0-12a</p>	<ul style="list-style-type: none"> • Recognises engineering in the world around them; for example, bridges, construction, electronics, computers.

Experiences and Outcomes <i>First Level</i>	Benchmarks
<p>When listening and talking with others for different purposes, I can exchange information, experiences, explanations, ideas and opinions, and clarify points by asking questions or by asking others to say more.</p> <p style="text-align: right;">LIT 1-09a</p>	<ul style="list-style-type: none"> • Communicates clearly and audibly. • Contributes to group/class discussions, engaging with others for a range of purposes. • Selects and shares ideas/information using appropriate vocabulary in a logical order.
<p>I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.</p> <p style="text-align: right;">MNU 1-11a</p>	<ul style="list-style-type: none"> • Makes accurate use of a range of appropriate instruments including rulers, metre sticks, digital scales and measuring jugs when measuring lengths, heights, mass and capacities. • Records measurements of length, height, mass and capacity to the nearest standard unit; for example, millimetres (mm), centimetres (cm), grams (g), kilograms (kg), millilitres (ml), litres (l).
<p>I can describe, follow and record routes and journeys using signs, words and angles associated with direction and turning.</p> <p style="text-align: right;">MTH 1-17a</p>	<ul style="list-style-type: none"> • Knows and uses the compass points: North, South, East and West.
<p>I have the opportunity to choose and explore a range of media and technologies to create images and objects, discovering their effects and suitability for specific tasks.</p> <p style="text-align: right;">EXA 1-02a</p>	<ul style="list-style-type: none"> • Solves at least one design problem related to real life, showing some evidence of planning; for example, designs a simple item to be worn on the head or body.
<p>I can use exploration and imagination to solve design problems related to real-life situations.</p> <p style="text-align: right;">EXA 1-06a</p>	<ul style="list-style-type: none"> • Solves at least one design problem related to real life, showing some evidence of planning; for example, designs a simple item to be worn on the head or body.
<p>I have developed confidence and skills in creating and presenting drama which explores real and imaginary situations, using improvisation and script.</p> <p style="text-align: right;">EXA 1-14a</p>	<ul style="list-style-type: none"> • Creates, chooses and takes on a role within a drama; for example, a real or imagined situation, re-enactment of a story, a traditional tale.

<p>I can distinguish between living and non living things. I can sort living things into groups and explain my decisions.</p> <p style="text-align: right;">SCN 1-01a</p>	<ul style="list-style-type: none"> • Explains the difference between living and non-living things, taking into consideration movement, reproduction, sensitivity, growth, respiration, excretion and feeding. • Sorts living things into plant, animal and other groups using a variety of features. • Creates criteria for sorting living things and justifies decisions.
<p>I can help to design experiments to find out what plants need in order to grow and develop. I can observe and record my findings and from what I have learned I can grow healthy plants in school.</p> <p style="text-align: right;">SCN 1-03a</p>	<ul style="list-style-type: none"> • Observes, collects and measures the outcomes from growing plants in different conditions; for example, by varying levels of light, water, air, soil/nutrients and heat. • Structures a presentation or report, with support, to present findings on how plants grow.
<p>I am aware of different types of energy around me and can show their importance to everyday life and my survival.</p> <p style="text-align: right;">SCN 1-04a</p>	<ul style="list-style-type: none"> • Identifies and talks about types of energy that we get from different energy sources; for example, light, sound, heat and electrical. • Uses knowledge of different energy sources; for example, sun, food, fuel, wind and waves, to discuss the importance of different types of energy for everyday life and survival.
<p>By investigating how water can change from one form to another, I can relate my findings to everyday experiences.</p> <p style="text-align: right;">SCN 1-05a</p>	<ul style="list-style-type: none"> • Uses more complex vocabulary to describe changes of states of water; for example, 'condensation' and 'evaporation'. • Contributes to the design of an experiment to determine the temperature at which water boils, freezes and melts, ensuring appropriate use of units. • Knows that pure water boils at 100° and freezes at 0°.
<p>By safely observing and recording the sun and moon at various times, I can describe their patterns of movement and changes over time. I can relate these to the length of a day, a month and a year.</p> <p style="text-align: right;">SCN 1-06a</p>	<ul style="list-style-type: none"> • Describes how Earth spins around its axis in 24 hours, resulting in day and night. • Observes and records the different patterns of movement of the moon and explains why it appears to have different shapes and positions in the sky at different times in a lunar month. • Demonstrates understanding of how Earth takes one year to completely orbit the sun. • Demonstrates understanding of how the tilt of Earth on its axis as it circles the sun, causes seasons and changes to the number of daylight hours.
<p>By investigating forces on toys and other objects, I can predict the effect on the shape or motion of objects.</p> <p style="text-align: right;">SCN 1-07a</p>	<ul style="list-style-type: none"> • Predicts, then investigates, how a force can make an object change speed, direction or shape, and uses vocabulary such as pushing, pulling, stretching, squashing and twisting to describe forces. • Investigates balanced forces and explains that if a push and pull are equal in strength and opposite in direction then there is no change in movement.
<p>By collaborating in experiments on different ways of producing sound from vibrations, I can demonstrate how to change the pitch of the sound.</p> <p style="text-align: right;">SCN 1-11a</p>	<ul style="list-style-type: none"> • Demonstrates how sounds can be made higher or lower pitch by altering tightness, length, width, thickness or other physical characteristics of the sound source. • Explains that sound is caused by a vibration in a material.

<p>By researching, I can describe the position and function of the skeleton and major organs of the human body and discuss what I need to do to keep them healthy.</p> <p style="text-align: right;">SCN 1-12a</p>	<ul style="list-style-type: none"> • Uses components to make simple models of a skeleton which identifies the skull, spine, ribcage and some bones of the arms and leg, and which shows how the skeleton gives us support and protects our organs.
<p>By comparing generations of families of humans, plants and animals, I can begin to understand how characteristics are inherited.</p> <p style="text-align: right;">SCN 1-14a</p>	<ul style="list-style-type: none"> • Uses their experiences to illustrate how inherited characteristics are passed from one generation to the next.
<p>Through exploring properties and sources of materials, I can choose appropriate materials to solve practical challenges.</p> <p style="text-align: right;">SCN 1-15a</p>	<ul style="list-style-type: none"> • Classifies materials into natural and human-made (synthetic). • Identifies properties of different materials—for example, rigidity, flexibility, rough, smooth and waterproof—and their uses linked to their properties.
<p>I can explore and experiment with digital technologies and can use what I learn to support and enhance my learning in different contexts.</p> <p style="text-align: right;">TCH 1-01a</p>	<ul style="list-style-type: none"> • Uses digital technology to collect, capture, combine and share text, sound, video and images.
<p>I can use a range of tools and equipment when working with textiles.</p> <p style="text-align: right;">TCH 1-04b</p>	<ul style="list-style-type: none"> • Uses a range of equipment when working with textiles; for example, scissors, rulers/tape measures, bodkin and wool.
<p>I can adapt and improve my ideas and can express my thinking in different ways.</p> <p style="text-align: right;">TCH 1-04d</p>	<ul style="list-style-type: none"> • Investigates a simple problem/challenge. Explores and identifies a range of ideas to solve the problem/challenge. Selects and uses resources to reach the solution/solve the problem. Assesses solution against given criteria.
<p>I can take appropriate action to ensure conservation of materials and resources, considering the impact of my actions on the environment.</p> <p style="text-align: right;">TCH 1-06a</p>	<ul style="list-style-type: none"> • Identifies ways in which energy can be saved. • Understands how and where we waste materials and resources. • Demonstrates an understanding of how technologies, by meeting our needs and wants, affect the environment in which we live.
<p>I can design and construct models and explain my solutions.</p> <p style="text-align: right;">TCH 1-09a</p>	<ul style="list-style-type: none"> • Creates and justifies a solution to a given design challenge, considering who is it for and where and how will it be used. • Uses appropriate tools and joining methods to construct a model.

<p>I can recognise a variety of materials and suggest an appropriate material for a specific use.</p> <p style="text-align: right;">TCH 1-10a</p>	<ul style="list-style-type: none"> • Identifies different materials. • States the properties of materials; for example, hard, soft. • Recognises different materials and why they have been selected for a task. • Selects materials to use in a specific task.
<p>I explore and discover engineering disciplines and can create solutions.</p> <p style="text-align: right;">TCH 1-12a</p>	<ul style="list-style-type: none"> • Recognises and identifies different engineering disciplines. • Builds a solution to a specific task, which has moving parts.
<p>I can explore and comment on processes in the world around me making use of core computational thinking concepts and can organise information in a logical way.</p> <p style="text-align: right;">TCH 1-13a</p>	<ul style="list-style-type: none"> • Follows sequences of instructions /algorithms from everyday situations; for example, recipes or directions, including those with selection and repetition. • Identifies steps in a process and describes precisely the effect of each step.
Second Level	
<p>When listening and talking with others for different purposes, I can:</p> <ul style="list-style-type: none"> – share information, experiences and opinions – explain processes and ideas – identify issues raised and summarise main points or findings – clarify points by asking questions or by asking others to say more. <p style="text-align: right;">LIT 2-09a</p>	<ul style="list-style-type: none"> • Communicates clearly, audibly and with expression in different contexts. • Plans and delivers an organised presentation/talk with relevant content and appropriate structure. • Uses suitable vocabulary for purpose and audience. • Selects and uses resources to support communication.
<p>I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems.</p> <p style="text-align: right;">MNU 2-07a</p>	<ul style="list-style-type: none"> • Uses knowledge of equivalent forms of common fractions and decimal fractions.
<p>I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.</p> <p style="text-align: right;">MNU 2-11b</p>	<ul style="list-style-type: none"> • Chooses the most appropriate measuring device for a given task and carries out the required calculation, recording results in the correct unit.

<p>I can explain how different methods can be used to find the perimeter and area of a simple 2-D shape or volume of a simple 3-D object.</p> <p style="text-align: right;">MNU 2-11c</p>	<ul style="list-style-type: none"> Calculates the perimeter of simple straight-sided 2-D shapes in millimetres (mm), centimetres (cm) and metres (m).
<p>I can develop and communicate my ideas, demonstrating imagination and presenting at least one possible solution to a design problem.</p> <p style="text-align: right;">EXA 2-06a</p>	<ul style="list-style-type: none"> Creates a simple plan that explains how they will investigate and develop ideas in response to a design brief. Follows a step-by-step process to develop and communicate ideas in response to a design brief. Explains, with supporting reasons, what works well and what could be improved in their own or others' work, using appropriate art and design vocabulary.
<p>I can create, adapt and sustain different roles, experimenting with movement, expression and voice and using theatre arts technology.</p> <p style="text-align: right;">EXA 2-12a</p>	<ul style="list-style-type: none"> Uses theatre arts technology such as props, basic lighting and sound to enhance a performance effectively; for example, chooses appropriate music or makes sound effects to create atmosphere.
<p>I practise, consolidate and refine my skills to improve my performance. I am developing and sustaining my levels of fitness.</p> <p style="text-align: right;">HWB 2-22a</p>	<ul style="list-style-type: none"> Demonstrates eye-, foot- and hand-eye coordination to execute movement skills; for example, kicking a ball towards a target or striking a ball with a bat.
<p>I can understand how advertising and the media are used to influence consumers.</p> <p style="text-align: right;">HWB 2-37a</p>	<ul style="list-style-type: none"> Identifies three methods of persuasion used by media/advertisers to influence consumers; for example, logos.
<p>I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction.</p> <p style="text-align: right;">SCN 2-01a</p>	<ul style="list-style-type: none"> Classifies living things into plants (flowering and non-flowering), animals (vertebrates and invertebrates) and other groups through knowledge of their characteristics. Begins to construct and use simple branched keys which can be used to identify particular plants or animals. Identifies characteristics of living things and their environment which have contributed to the survival or extinction of a species. Describes how some plants and animals have adapted to their environment; for example, for drought or by using flight.
<p>I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area.</p> <p style="text-align: right;">SCN 2-02a</p>	<ul style="list-style-type: none"> Describes how energy flows between plants and animals in more complex food chains; webs and ecosystems, using vocabulary such as 'producers', 'consumers' and 'herbivore'.

<p>By considering examples where energy is conserved, I can identify the energy source, how it is transferred and ways of reducing wasted energy.</p> <p style="text-align: right;">SCN 2-04a</p>	<ul style="list-style-type: none"> • Demonstrates understanding of the law of conservation of energy (energy can be converted from one form to another but cannot be created or destroyed). • Identifies the common types of energy (kinetic, potential, electrical, chemical, light, sound and heat) used in energy transfers and transformations that occur in everyday appliances. • Explains that when energy transfers and transformations take place, energy is converted into 'useful' and 'wasted' energy; for example, a mechanical braking system transforms kinetic energy into heat energy which is dissipated to the atmosphere as 'waste' heat.
<p>Through exploring non-renewable energy sources, I can describe how they are used in Scotland today and express an informed view on the implications for their future use.</p> <p style="text-align: right;">SCN 2-04b</p>	<ul style="list-style-type: none"> • Draws on increasing knowledge and understanding to suggest ways in which they can reduce their own energy use and live more sustainably.
<p>I can apply my knowledge of how water changes state to help me understand the processes involved in the water cycle in nature over time.</p> <p style="text-align: right;">SCN 2-05a</p>	<ul style="list-style-type: none"> • Discusses the necessity of water for life; for example, for the growth of crops, for drinking and in river formation/flow. • Demonstrates understanding of the processes involved in the water cycle.
<p>By observing and researching features of our solar system, I can use simple models to communicate my understanding of size, scale, time and relative motion within it.</p> <p style="text-align: right;">SCN 2-06a</p>	<ul style="list-style-type: none"> • Reports collaboratively on the key features of the planets including size, distance from the sun, length of day, length of year, temperature, materials from which they are predominantly made and the number of moons. • Uses simple models to communicate understanding of size, scale, time and relative motion within our solar system, including how solar and lunar eclipses occur.
<p>By investigating how friction, including air resistance, affects motion, I can suggest ways to improve efficiency in moving objects.</p> <p style="text-align: right;">SCN 2-07a</p>	<ul style="list-style-type: none"> • Describes friction as a force which opposes the motion of moving objects; for example, two solid surfaces rubbing against one another or a solid surface moving through air or water. • Finds an association between air resistance (drag), the speed of the object being investigated and the surface area exposed to the air, making links to original predictions. • Demonstrates understanding of how friction and air resistance can both be useful—for example, in braking systems—and also a problem; for example, causing moving parts to wear. • Describes efficient movement as that which requires the least possible energy and suggests ways to improve efficiency in moving objects; for example, by streamlining.
<p>I have collaborated in investigations to compare magnetic, electrostatic and gravitational forces and have explored their practical applications.</p> <p style="text-align: right;">SCN 2-08a</p>	<ul style="list-style-type: none"> • Investigates and demonstrates understanding that magnetic and electrostatic forces can both repel and attract.

<p>By investigating floating and sinking of objects in water, I can apply my understanding of buoyancy to solve a practical challenge.</p> <p style="text-align: right;">SCN 2-08b</p>	<ul style="list-style-type: none"> • Explores the factors which affect floating—for example, the object's shape and the density of the material that the object is made of—and collates, organises and summarises findings with assistance.
<p>I have used a range of electrical components to help to make a variety of circuits for differing purposes. I can represent my circuit using symbols and describe the transfer of energy around the circuit.</p> <p style="text-align: right;">SCN 2-09a</p>	<ul style="list-style-type: none"> • Designs and builds a variety of electrical circuits for differing purposes, using an increasing range of components. • Draws circuit diagrams using appropriate symbols to denote a bulb, switch, motor, bell, buzzer, wires, cell and a battery. • Describes how components in a circuit transfer energy into different forms.
<p>To begin to understand how batteries work, I can help to build simple chemical cells using readily-available materials which can be used to make an appliance work.</p> <p style="text-align: right;">SCN 2-10a</p>	<ul style="list-style-type: none"> • Applies knowledge and understanding to build simple batteries (chemical cells) and demonstrates understanding that a battery (cell) is a portable energy source which has a store of chemical energy. • Explains the process of energy transformation from battery (cell) to electrical components.
<p>Through research on how animals communicate, I can explain how sound vibrations are carried by waves through air, water and other media.</p> <p style="text-align: right;">SCN 2-11a</p>	<ul style="list-style-type: none"> • Discusses and demonstrates through experiments how sound travels differently through air, water and solids. • Explains how hearing is limited by a range of factors; for example, age, position, and flexibility (direction) of ears.
<p>By exploring reflections, the formation of shadows and the mixing of coloured lights, I can use my knowledge of the properties of light to show how it can be used in a creative way.</p> <p style="text-align: right;">SCN 2-11b</p>	<ul style="list-style-type: none"> • Demonstrates and records, through practical investigations, that light travels in straight lines, can be reflected by highly-polished surfaces and that curved faces can distort the image. • Predicts and investigates how the position, shape and size of a shadow depend on the position of the object in relation to the light source. • Demonstrates that white light/sunlight can be dispersed to show the colours of the visible spectrum and identifies the colours and order of the rainbow as red, orange, yellow, green, blue, indigo and violet. • Explains that we see objects because they give out or reflect light rays that enter our eyes. • Draws on findings from practical investigations to describe the effect that coloured filters have on white light and how they can be used to make other colours. • Explains how we can recognise the colour of an object due the reflection and absorption of particular parts of the visible spectrum.

<p>By investigating some body systems and potential problems which they may develop, I can make informed decisions to help me to maintain my health and wellbeing.</p> <p style="text-align: right;">SCN 2-12a</p>	<ul style="list-style-type: none"> • Describes the function of the skeleton (skull, spine, ribcage some bones of the arm and leg); for example, to provide support, protection and enable movement.
<p>I have contributed to investigations into the role of microorganisms in producing and breaking down some materials.</p> <p style="text-align: right;">SCN 2-13a</p>	<ul style="list-style-type: none"> • Demonstrates understanding of how microorganisms, including bacteria, viruses and fungi, can multiply rapidly. • Investigates and explains the action of some microorganisms used in food production; for example, yeast in bread and bacteria in yogurt. • Describes how some microorganisms break down food, causing it to be inedible or harmful if digested, and how others exist in the gut to break down food to aid digestion. • Investigates, observes and records how microscopic organisms are necessary for the process of decomposition (the breaking down of dead material – decay).
<p>By investigating the life cycles of plants and animals, I can recognise the different stages of their development.</p> <p style="text-align: right;">SCN 2-14a</p>	<p>Plants</p> <ul style="list-style-type: none"> • Describes how pollination occurs when the male cell (pollen) lands on the stigma. • Describes how fertilisation (sexual reproduction) occurs when the genetic information in the male cell fuses (joins) with the genetic information in the female cell. • Describes how the fertilised ovule develops into a seed and how the ovary ripens to form a fruit. • Investigates and explains how a seed germinates into a plant using water, oxygen, a food store and warmth. <p>Animals</p> <ul style="list-style-type: none"> • Identifies and compares the two distinct groups of animals—vertebrates and invertebrates. • Researches the life cycles of the five main types of vertebrates including fish (spawn), birds (eggs which are rigid but fragile), amphibians (spawn and metamorphosis), reptiles (leathery shelled eggs) and mammals (live young), and communicates findings using a range of media. • Compares the life cycles of some invertebrates; for example, ladybird and spider.
<p>By exploring the characteristics offspring inherit when living things reproduce, I can distinguish between inherited and non-inherited characteristics.</p> <p style="text-align: right;">SCN 2-14b</p>	<ul style="list-style-type: none"> • Knows that genetics is the study of inherited characteristics and that inherited characteristics are carried on genes and can sometime skip a generation. • Explores and categorises characteristics into inherited (eye and hair colour, height and right- /left-handedness) and non-inherited (native language spoken and favourite colour). • Describes how every living thing has its own DNA fingerprint.

<p>By contributing to investigations into familiar changes in substances to produce other substances, I can describe how their characteristics have changed.</p> <p style="text-align: right;">SCN 2-15a</p>	<ul style="list-style-type: none"> • Investigates and explains physical changes to the properties of materials which are fully and partially reversible; for example, salt dissolving in water, chocolate melting and water freezing. • Uses scientific vocabulary such as 'melting', 'freezing', 'evaporating' and 'condensing' to describe changes of state. • Investigates and records chemical changes to the properties of materials which are irreversible; for example, cooking, rusting and striking a match. • Observes and identifies some of the signs of a chemical reaction; for example, production of bubbles, colour/texture change and heat given out/taken in. • Explores and describes the characteristics of solids, liquids and gases; for example, solids retain the same volume and shape, liquids keep the same volume but the shape changes to fit the container and that gases change shape and volume to fill the container.
<p>I have participated in practical activities to separate simple mixtures of substances and can relate my findings to my everyday experience.</p> <p style="text-align: right;">SCN 2-16a</p>	<ul style="list-style-type: none"> • Justifies the selection of appropriate materials for different uses based on their physical properties.
<p>I can report and comment on current scientific news items to develop my knowledge and understanding of topical science.</p> <p style="text-align: right;">SCN 2-20b</p>	<ul style="list-style-type: none"> • Shares opinions about a variety of topical scientific issues considering; for example, moral, ethical, societal, cultural, economic and environmental aspects.
<p>I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape.</p> <p style="text-align: right;">SOC 2-07b</p>	<ul style="list-style-type: none"> • Describes the causes of a natural disaster such as a volcano, earthquake or extreme weather event. Describes the impact of the natural disaster giving at least three examples for people and one for the landscape. Impact can be positive or negative.
<p>I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally-responsible way.</p> <p style="text-align: right;">SOC 2-08a</p>	<ul style="list-style-type: none"> • Identifies at least three impacts of human activity on the environment. • Suggests at least three ways in which people can live in a more environmentally responsible way.
<p>To extend my mental map and sense of place, I can interpret information from different types of maps and am beginning to locate key features within Scotland, UK, Europe or the wider world.</p> <p style="text-align: right;">SOC 2-14a</p>	<ul style="list-style-type: none"> • Provides explanation as to why their local physical environment influences the way in which people use land in comparison to a contrasting areas.

<p>I can extend and enhance my knowledge of digital technologies to collect, analyse ideas, relevant information and organise these in an appropriate way.</p> <p style="text-align: right;">TCH 2-01a</p>	<ul style="list-style-type: none"> • Selects and use applications and software to capture, create and modify text, images, sound and video. Selects the most appropriate digital software to perform a task.
<p>I can extend and explore problem solving strategies to meet increasingly difficult challenges with a food or textile focus.</p> <p style="text-align: right;">TCH 2-04c</p>	<ul style="list-style-type: none"> • Investigates a challenge/problem. Identifies and demonstrates ways to solve the challenge/problem. Identifies and selects appropriate resources to solve the challenge/problem. Plans and makes the solution. Assesses solution against own criteria. Identifies at least one possible improvement.
<p>I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task.</p> <p style="text-align: right;">TCH 2-10a</p>	<ul style="list-style-type: none"> • Recognises characteristics of groups of materials such as wood, plastic and metal. • Selects suitable materials to use in a task. • Discusses the uses of materials.