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**Long Term Mapping**

**Science**

**KS1**

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|  | **KS1** | **KS1** |
| **Cycle 1 (2022 – 2023)** | **Cycle (2023-2024)** |
| **Autumn**  | **1** | Animals Including Humans - *Body Parts and Senses*  | Animals Including Humans – *The Skeleton*  |
| **2** | Materials  | Acids and Alkalis  |
| **Spring** | **1** | Light  | Heat  |
| **2** | Animals Including Humans – *Diet and Digestion* | Living Things and Their Habitats – *The Environment* |
| **Summer**  | **1** | Materials  | Rocks – Materials  |
| **2** | Sound  | Electricity  |

 **Medium Term Planning**

**Key Stage 1**

 **Cycle 1 (2022 – 2023)**

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| ***Aspiration for Life*** | Differentiated, aspirational targets dependent on pupil needs. | ***Language for Life*** | Explicit teaching/ exposure to new scientific vocabulary | ***Learning for Life*** | Opportunities to develop cross curricular skills e.g. maths, English and ICT |
| **KS1 Cycle 1 (2022 -2023)** | INTENT; To explore the world around us, observe phenomena, develop scientific vocabulary, be curious and ask questions about what we see, answer scientific questions creatively and form conclusions from our evidence gathered. | **Animals Including Humans Body Parts and Senses** | **Materials**  | **Light** | **Animals Including Humans Diet and Digestion** | **Materials**  | **Sound**  |
| **Autumn 1 –** 7 weeks | **Autumn 2 -** 7 weeks | **Spring 1 –** 6 weeks | **Spring 2 –** 6 weeks | **Summer 1 –** 5 weeks | **Summer 2 –** 7 weeks  |
| Pupils are able to explore senses using sensory means.  | Pupils are able to explore properties materials, physical changes of materials and separating mixtures.  | Pupils are able to explore light, shadows and how light can be split.  | Pupils are able explore healthy and unhealthy foods, food groups and the digestive system | To explore properties of twisting and bending. To explore how we can change materials by mixing and heating and cooling.  | To explore making sounds and how sound travels.  |
| **SUGGESTED PRACTICALS** *(Choose from or use suitable alternative)* |
| Action songs like ‘Heads, shoulders knees and toes’ “ if your happy and you know it clap your … Action games like ‘Simon says’Find someone who e.g. is the same height as you, has the same colour eyes as you.Print with hands and feet using different media e.g. paint, playdoughDescribe (possibly using symbols) how it feels putting feet into different substances e.g beans, water, flourMatch sense to sense organThink of a danger you could be in if you lost e.g. sense of taste or sense of smellPupils volunteer things they can do with part of body e.g. catch ball with 4 fingers: wiggle ears: walk on kneesExplore the dangers of slippery objects and spills – use YouTube clipsPupils select body parts from photos or a symbol list.Cross Curricular:DT Food Technology/ English Speaking and ListeningVISITS: sensory trail to the supermarket, seaside (smells, texture of sand, walk in the countryside(W/S) Group objects that are hot and cold, or loud and quiet. (W/S) Found out which materials stop sound by covering your ears with them. (W/S) Identify other pupils voices (could be recorded) and identify you it is using a picture. SMSC: Interest in investigating and offering reasoned views and moral and ethical issues and appreciate viewpoint of others | Provide pairs of materials with opposing properties to explore and compare e.g.rough/ smooth, shiny/ dull, soft / hard. Use symbols for properties.Use sensory boxes filled with something different like oats or dry beans Explore different slinkys/elastic bands and springs to experience stretching and compressione.g.1) Try holding Slinky vertically and fully extended and then dropping2) Make some springs by coiling wire round different diameter cylinders and seeing if they make good springsSeparate by hand mixtures of two very different materials which can easily be separated. Can extend by giving them 3 materials to separate this way. Containers or trays,dried pasta shapes/ dried peas/ dried butter beansDiscuss whether it was easy to do.Cross Curricular:DT and ArtVISITS: Recycling centre, glass factory, slate mine, church(W/S) Which material is the roughest?SMSC: Ability to recognise the difference between right and wrong | Read story or poem about light/ dark (e.g. The Owl Who Was Afraid of the Dark e.g. <http://www.jamescarterpoet.co.uk/poems.html#thedark>)Blindfolds and some games e.g. crawl under blanket looking for objects and repeat with a torch (consider health and safety and risk assess)Play blindfold games e.g. blind man’s bluff, guess the object (consider health and safety and risk assess)Explore and try out a range of light sources –begin to talk about the best one to have in certain situations e.g. to a find a lost ring, eat dinner by etcPlay guess the shadow or try to match to the actual objectExplore shining light through squares of different materials to see if they make shadows. If appropriate ask pupils before which material they think might stop the light.Try making sun prints<http://www.stevespanglerscience.com/lab/experiments/sun-sensitive-paperexperiment>Experience looking at their reflection in a variety of shiny objects.Use mirrors to look behind and talk about where we use mirrors ineveryday life e.g. dentist, road junctions, in cars,Make a rainbow using a container of water, place a mirror inside. Tilt the mirror slightly and shine a light onto it to create a rainbow. Alter the angle of mirror until rainbow appears on the wall. Let pupils try moving mirror themselves or with help. Talk about what happens and what colours they can see.Cross Curricular:Art and Literacy – stories VISITS: Hall of mirrors, theatre lights, planetarium (W/S) Find out which is the brightest torch (how many sheets of paper do you need to block out the light)? Try different sorts of paper. Shine torch on the wall at a particular distance. SMSC: Recognise and value the things we share in common (cultural, ethnic, socio economic communities) | Add smiley or unhappy faces to foods they should and shouldn’t eat.Using a paper plate, pupils draw their favourite meal and then add smiley faces and unhappy faces.Sort obvious foods into simple groups e.g. fruit and veg, meat and fish, dairy, cerealsObserve and taste a variety of fruit, use magnifiers if appropriate.Talk about what might happen if they didn’t eat or drink. Pupils watch clip about different vitamins and mime some actions to it<http://www.youtube.com/watch?v=5iS8h0J_Ows>Pupils watch clip<http://www.youtube.com/watch?v=TWUq9PUYYLw>…about junk food and pick some junk foods out of a small range of foodsExplore foods that give us energyExplore foods that help us grow<https://www.youtube.com/watch?v=3H8_6gMH4Do>Model digestive system: Teeth (knife chopping), place in funnel and tube, into a bowl that represents the stomach. Tights to mimic the small intestine by filling with cooked oatmeal andsqueezing so that some of the liquid oatmeal comes out of intestines.<https://www.youtube.com/watch?v=ZcJjMnHoIBI>Cross Curricular:PSHE VISITS: Shops, supermarket, bakery, butchers, farms, restaurants(W/S) Survey of fruit and vegetable consumption across class or school. SMSC: Interest in investigating and offering reasoned views and moral and ethical issues and appreciate viewpoint of others | Twisting and bending different objects. Drop plasticine and other objects onto the floor. What happens to them? Explore balloons that have different amounts of air in them.Make salt dough models. Discuss changes after they have been in the oven.Make jelly – how could we make it faster? – place it in the fridge to coolPut a variety of liquids e.g. cooking oil, milk, sauce, salad cream etc in the freezer.Melt things like ice, butter, chocolate, ice cream etc.Make toast using a different setting on the toaster each time and compare to bread. What are the differences?Mix flour with different liquids e.g. water, milk, coke, syrup, oil.Put things in the freezer that aren’t recommended e.g. bananas, lettuce, single cream, mayonnaise, cucumber, jellies. Observe what happens.Cross Curricular:DT and ArtVISITS: Recycling centre, glass factory, slate mine, church(W/S) Which material makes the loudest noise? SMSC: Ability to recognise the difference between right and wrong | Make their own musical instruments using everyday objects. E.g. like the cup girl song from pitch perfect: <http://www.youtube.com/watch?v=weqDCGg0GYs>Make different sounds behind a screen. Ask pupils to select object that made the sound from the selection given – vary the number of objects givenMatch sounds to pictures of animals or household noises or pupils in class<http://www.findsounds.com/types.html>Play musical statues where they only move when music is being played.Pupils explore how distance affects what they hear e.g. go outside listen to far away and near to sounds OR move away from a sound being made in the hall andstop when they can’t hear itDemonstrate how objects vibrate when making a noise and let pupils try for themselves e.g. loud speaker (with netting removed) and ping pong balls/ rice or simply a drum with dried peas/ rice on it. If a microphone is attached to theloudspeaker then pupils can make different noises and see how this affects the…movement of the ping pong balls.Listen to sound effects from:http://www.fndsounds.com/types.htmlMimic sound. Where possible have a body movement to match sound. The ‘people’ section is good for this.Explore how to stop / reduce sound e.g. clock ticking by padding in different materials in a box.Demonstrate vibrations again using a speaker and rice as music is played to see what happens. Pupils could role play and pretend they are ‘rice’ when music is played. Extend by bouncing higher when the volume is louder and bouncing less when volume is turned down.Cross Curricular:Music VISITS: musical concert, airport, railway station, Museum of Science and Industry(W/S) Which material is the best to cover our ears with?(W/S) Which materials make the loudest shakers?SMSC: Listening to sounds and music from different religious and ethnic backgrounds |
| **SKILLS to be developed** |
| Explores objects provided using any sensory modeImitates actions | Communicates awareness of some obvious changes, explores objects provided using any sensory mode,  | Communicates awareness of some obvious changes, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment | Explores objects provided using any sensory mode, responds tosimple scientific questions | Communicates awareness of some obvious changes, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment | Communicates awareness of some obvious changes, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment |
| **VOCABULARY** *(In addition to ‘skills’ terms listed above)* |
| Sense, reflex, sight, hearing, smell, touch, taste and danger | Material, tough, strong, elastic, plastic, flexible and reversible  | Light, dark, bright, shine, shadow, transparent, translucent, opaque | Healthy, unhealthy, diet, balanced diet, growth, carbohydrate, protein, vegetables, fruit, fat, vitamins and fibre, mouth, food pipe, stomach and intestines.  | Twisting, bending, mix, liquid, solid hot, cold, heated and cooled | Sound, vibration, loud, quiet, pitch, wavelength, speaker, collide, distance, ears, noise |
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| Week **1 -2** Name internal and external body parts**Week 3-4** Explore senses and responses **Week 5-6** Explore how our external and internal senses are important for survival.**Week 7** Assessment | **Week 1-2** Explore a range of materials, their properties and their uses**Week 3-4** Explore a range of reversible changes**Week 5-7** Experience materials being separated | **Week 1-2** Identify sources of light**Week 3-4** To know how shadows are formed and the terms opaque, transparent and translucent**Week 5** To explore how light travels and can be split**Week 6** Assessment  | **Week 1-2** To be able to recognise foods which are healthy and unhealthy**Week 3-4**  To explore how food is vital for energy, growth and health**Week 5-6** To explore the main parts of the digestive system and the process of digestion. | **Week 1-2** Explore properties of twisting and Bending **Week 3-4** Explore changes in materials when we mix them together**Week 5** Explore changes in materials made when things are heated and cooled | **Week 1-2** To explore making sounds**Week 3-7** To explore how sound travels |

**Medium Term Planning**

**KS1 Cycle 2 (2023 – 2024)**

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| ***Aspiration for Life*** | Differentiated, aspirational targets dependent on pupil needs. | ***Language for Life*** | Explicit teaching/ exposure to new scientific vocabulary | ***Learning for Life*** | Opportunities to develop cross curricular skills e.g. maths, English and ICT |
| **KS1 Cycle 2 (2023-2024)** | INTENT; To explore the world around us, observe phenomena, develop scientific vocabulary, be curious and ask questions about what we see, answer scientific questions creatively and form conclusions from our evidence gathered. | **Animals Including Humans The Skeleton** | **Acids and Alkalis**  | **Heat**  | **Living Things and Their Habitats The Environment** | **Materials** | **Electricity**  |
| **Autumn 1 –** 7 weeks | **Autumn 2 -** 7 weeks | **Spring 1 –** 6 weeks | **Spring 2 –** 6 weeks | **Summer 1 –** 5 weeks | **Summer 2 –** 7 weeks  |
| To explore skeletons and muscles and how they work. | To explore everyday acids and alkalis and their effect on the earth.  | To explore heat energy and transfer.  | To demonstrate some awareness of own needs e.g. food, drink, warmth, shelter, rest.To name some plants and animals found locally | To explore materials and sort them.  | To explore electrical items and make circuits.  |
| **SUGGESTED PRACTICALS** *(Choose from or use suitable alternative)* |
| Experience moving bones/ part of body to song <http://www.youtube.com/watch?v=e54m6XOpRgU>Experience using body to move in different ways e.g. crawling, rolling, making arms, legs, fingers floppy and then strong maybe to music e.g.<http://www.youtube.com/watch?v=Yn3n2u1kJ98>Watch video clip from BBC Broadband Learning Zone – ‘Muscles needed for movement’ -http://www.bbc.co.uk/learningzone/clips/muscles-needed-formovement/2305.htmlDemonstrate the movement of muscles in pairs using the words ‘contract’ and ‘relax’.Pupils should then mimic the movements of the teacher and TA. (Use push and pull movements). Experience pushing on different objects with different part of the body. Can they feel muscles working?Recreate movement of muscles working in pairs by sitting with feet/ knees touching and holding hands. Then pupils should move to mimic ‘contract’ and ‘relax’ just like muscles. Help them, notice that as one contracts/ stretches theother relaxes/ is less stretchedSing a muscles/ skeleton song and ask pupils to mimic you. Pupils stand in pairs back to back and lean forwards and backwards to mimic antagonistic actions.Cross Curricular: PEVISITS: Museum zoology (to look at bones of instinct animals e.g dinosaurs(W/S) Find out what happens with chicken bones are left to soak in various liquids.(W/S) Find out which is the strongest finger (do this by pushing on bathroom scales, pushing into dough and measuring the depth of the inprint)SMSC: Interest in investigating and offering reasoned views and moral and ethical issues and appreciate viewpoint of others | Look at labels of household chemicals and identify the hazard symbols.Squeeze juice from citrus fruits and test using an indicator (to introduce the idea that acids cause an indicator to change colour).Experience the removal of lime scale from a furry kettle using vinegar.Experience colour changes using different indicators in different household items.Under supervision pupils make own indicator using red cabbage or and use this to identify and record a colour change using photos (before and after).Experience mixing lemon juice and bicarbonate of soda.Pupils explore other protective clothing e.g. gloves, aprons, footwear.Under supervision pupils make their own indicator using other dark fruits or vege.g. beetroot, blueberries, grapes, blackberries and then use this to identify and record a colour change using drawing and colouring.Experience testing indigestion tablets to show that they contain alkalis.Leave containers outside to collect rainwater for acid testing using Litmus paper.Compare results with tap water.Test the strength of rainwater, vinegar, tap-water and lemon juice using long pH paper strips which they match to an enlarged pH scale on a washing line.Pupils use universal indicator solution or paper to test rainwater, water from around the local environment, e.g. streams, lakes, puddles and tap water for differences in pH. Pupils explore dropping acid rain to different rocks.Pupils use universal indicator solution to test soils from around the local environment. Record by placing the appropriate colour card on the soil.Join in a sensory story about Acid Rain e.g. see P1-3 or<https://www3.epa.gov/acidrain/education/site_kids/lucy/3.htm>Cross Curricular: Food Technology VISITS: Supermarket(W/S) Which fruit and vegetables contain acid? Test with bicarbonate of soda or litmus paper. (W/S) Which is the best indigestion cure? SMSC: Understanding of the consequences of their behaviour and actions / sense of enjoyment and fascination in learning about the world around them | Freeze liquids in sealed containers and observe what happens.Make colourful convection currents (see website in general list) and then let pupilsput a jelly cube in the corner of a clear plastic tank and add hot water to a depth ofabout 25/30 cm and watch. Might be useful to video and play backFind objects round school that give out heat and hang different sorts of spirals above them.Using a yogurt pot and anything that will fit inside it and find out who can keep an ice cube the longestMake hot chocolate in different sorts of mugs/ cups and let pupils feel the difference. Repeat wearing different sorts of gloves and talk about what they found.Cross Curricular: Food Technology (heat to cook food, PE (exercise makes you hot), Geography (hot places)VISITS: Bakery, restaurant (W/S) What conditions does the ice cube take the most time to melt ( Ice cube in yogurt pot, use tissue paper or on its own in yogurt pot). (W/S) How does the type of mug affect how fast the mug cools down? (risk assess)(W/S) What happens when different amount of cold water are added to the same amount of hot water? Feel the before and after affects (risk assess)SMSC: Understanding of the consequences of their behaviour and actions / sense of enjoyment and fascination in learning about the world around them | Talk about human’s basic needs for staying alive – what do pupils already know?  Bring into class samples of food and drink. Look around school – where can we find food and drink?Discuss how we would feel if there was no food and drink in school.Go outside for variety of activities e.g. walk, picnic, lesson in unfavourable weather if possible and unusual locations – think about why we need shelter and how we get it – (consider needs of pupils)Build a shelter out of doors.Mini-beast Hunt e.g. ladybird, fly, worm, spider. – record these using photographs/videos Visit recycling collection points at local centreVisit wind turbine farmCross-curricular PSHE – care of living things.Geography/Environmental Science(W/S)Compare living things found in 2 contrasting local environments e.g. 2 different parts of school groundsSMSC: Use of imagination and creativity in their learning | Materials song <https://www.youtube.com/watch?v=xOKr462HLc0>Explore everyday objects and toys (ensuring that there is a range of man-made and natural materials), by touching for the following characteristics:-hard things – the “hardness” of hard, soft things, wet, dry, fluffy, shiny, bendy, prickly, rough, smooth, heavy, light, stretchy .e.g. use feely-bags or box or blindfoldExplore everyday objects and toys, man-made and natural by looking.- transparent- opaque- coloured- shiny- dull- is it easy to push or pull? Material huntSelects material which is the odd one outGrouping and sorting materials. Matches materials according to their properties – can you find another shiny object? VISITS: Woodyard, builders yard, garden centreRecycling centreHardware storeDepartment storeChurchGlass factoryCrafts people – cooper, farrier etcQuarries, slate minesCross-curricular - DT/Art(W/S) Which material makes the loudest noise?(W/S) Which material is the roughest? This could be done using touch or seeing whether it rips a more delicate material like tissueSMSC: Ability to recognise the difference between right and wrong | Mime movement involving mains electrical appliances- can you guess my electrical object? What is it?e.g. Ironing, vacuuming or hair dryingPupils could move to picture/ symbol when adult mimes action of appliance.Join in song and mime “this is the way we iron our clothes, iron our clothes”“Brush our teeth”…“Cook our food” etcHold up a picture and a word for the appliance as do mime.Turn electrical devices on and off, ones that produce light/ Sound/Heat/Move. Can they indicate when item is on or off? Can they indicate the change?Make a sound like the appliance- can you guess what it is? Or Old MacDonald hada shop….and in that shop he had a Hoover…pupils can write their own and perform to an audience / point to a picture.Show pupils a range of appliances, one at a time, and they pick an object / photo it could link to e.g. show a kettle and they pick out a mug, teapot, photo of cup of teaLook for electrically operated devices round schoolShow video or still photos of dangers of electricity e.g.Dexter Duck safety video<http://www.youtube.com/watch?v=igK-DRB5faU>e.g. electrical dangers in the wider world.<http://www.bbc.co.uk/learningzone/clips/the-dangers-of-electricity/1646.html>e.g http://www.youtube.com/watch?v=nyk9cgEdY7UPause videos at appropriate points and use either props or get pupils to make some sort of noise/ action for dangerPupils shout out DANGER! Or hold up danger sign when they see a potential danger in a series of pictures/ video.Spot the danger:-<http://www.juniorcitizen.org.uk/kids/electricalsafety/electricalsafety.php>Watch a different clip:<http://www.bbc.co.uk/learningzone/clips/the-dangers-of-electricity/1646.html>http://www.youtube.com/watch?v=6EM6I0Em1Jc&list=PL1E068DB391B7177E&index=3Pause videos at appropriate points and use either props or get pupils to make some sort of noise/ action for dangerExplores putting batteries into torches or other toys e.g. using the right size of battery and putting in right way roundCross Curricular:VISITS:W/S-Which materials let electricity pass through?SMSC: Recognise and value the things we share in common (cultural, ethnic, socio economic communities) |
| **SKILLS to be developed** |
| Communicates awareness of some obvious changes and completes a simple task with guidance.  | Communicates awareness of some obvious changes, completes a simple task with guidance, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment and responds tosimple scientific questions.  | Communicates awareness of some obvious changes, completes a simple task with guidance, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment and responds tosimple scientific questions. | Completes a simple task with guidance, explores objectsprovided using any sensory mode, and responds tosimple scientific questions. | Completes a simple task with guidance, explores objectsprovided using any sensory mode, and responds tosimple scientific questions. | Communicates awareness of some obvious changes, completes a simple task with guidance, explores objectsprovided using any sensory mode, engages in experimentation using familiar equipment and responds tosimple scientific questions |
| **VOCABULARY** *(In addition to ‘skills’ terms listed above)* |
| Skeleton, bones, support, move, protect, muscles, protects, relax, contract, joint and pairs | Acid, alkali, indicator, solution, neutral, reaction and pH scale.  | Temperature, thermometer, heat, expand, contract, insulator, conductor, hot cold, gets bigger, gets smaller and burns.  | Names of common mini-beasts – worm, snail, fly, spider, environment, camouflage, names of particular plants (whichever relevant locally), names of habitats (whichever relevant locally) | Wet, dry, fluffy, shiny, bendy, hard, soft, prickly, rough, smooth, heavy, light, stretchy, transparent, opaque, names of colours, same/different | Movement, wire, transfer, circuit, wire, fuse, socket, bulb, main electricity, flow, conduct, insulate, current, crocodile, resistance, battery and electricity |
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| **Week 1-2** To explore the skeletons and its use**Week 3-4** To explore muscles and how they work**Week 5-6** To explore muscles and how they work**Week 7** Assessment  | **Week 1-2** To explore acids and alkalis and their everyday uses**Week 3-4** To explore acids and alkalis and their everyday uses**Week 5-6** To begin to recognise how acids can affect the environment | **Week 1-5** To explore heat energy and transfer**Week 6** Assessment  | **Week 1** Naming Mini – beasts**Week 2** Sorting simple objects in environment **(**leaves, flowers, stones, rubbish, sticks)**Week 3**  Describe basic needs of yourself**Week 4** Why do we need shelter? **Week 5** Build a shelter **Week 6** Comparison of living things found in 2 contrasting environments | **Week 1-3** Explore everyday materials/objects and find out how to use them. **Week 4-5** Sorting and grouping materials | **Week 1-2**  To identify everyday things that use electricity and sort according to mains or battery powered**Week 3-4** To recognise that electricity can be dangerous and identify some of the dangers.**Week 5-7** To explore and make a simple circuits |