

Cognition and Learning – Science and Technology KS1-4

To support teachers with ICT, (an ever-changing and specialist area of the curriculum), skills have been broken down into the four components of the ICT curriculum: *computer science, (i.e. programming), digital literacy (i.e. using technology), information technology (i.e. digital networks & the way technology is connected) and e-safety*

Emerging Learners	Early Learners	Established Learners
<p>At KS1 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Develop an awareness of and respond to familiar, people, including peers</li> <li>• Begin to notice when people or faces appear or disappear in familiar games and activities</li> <li>• Develop an awareness of their whole body and separate body parts and the sensation of movement</li> <li>• Through assisted exploration and using their whole body, encounter and explore a range of stimuli with a strong sensory input from the natural world, e.g. water, bright light, being outside in cold weather</li> <li>• Show awareness of and begin to respond to features of the natural environment – e.g. rain, dappled light, wind, bird song, a strongly scented flower</li> <li>• Engage with and show awareness of contrasting weather through immersion in</li> </ul>	<p>At KS 1 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Begin to notice and name obvious changes in the natural environment including changes in weather &amp; seasonal changes, e.g. leaves on trees</li> <li>• Explore and experience (through images, objects and direct contact) a range of natural environments in their local community &amp; link these to a growing vocabulary</li> <li>• Differentiate between different environments &amp; habitats in very simple ways, e.g. cold, trees</li> <li>• Differentiate between things that are dead &amp; alive</li> <li>• With assistance plant seeds &amp; grow &amp; care for simple plants. Explore some of their basic characteristics and begin to identify these with a growing vocabulary</li> <li>• Identify common animals &amp; learn typical actions &amp; their offspring, e.g. bird, fly. Meet some basic care needs with support.</li> <li>• Identify parts of their body &amp; face</li> <li>• Recognise everyday materials &amp; their simple properties through supported exploration, e.g. cold, hard, shiny</li> <li>• Manipulate everyday materials to discover their pliability</li> <li>• Participate in simple, adult-led science experiments &amp; observe what happens when things are heated and cooled both in the classroom &amp; nature</li> </ul>	<p>At KS1 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Observe and comment on obvious changes in the natural environment including changes in weather &amp; seasonal changes and apply early enquiry skills, e.g. asking simple questions</li> <li>• Purposefully engage with images, objects and through direct contact, a range of natural environments, e.g. beach, forest, park</li> <li>• Identify simple differences between things that are dead &amp; alive</li> <li>• Differentiate a range of habitats / environments through the plants &amp; animals that can be found there</li> <li>• Identify basic parts of plants &amp; observe how plants grow from seeds to buds to plants. Identify simple attributes of leaves, flowers, trees. Explore what plants need to grow by carrying out simple experiments</li> <li>• Identify human body parts &amp; the movements they make, the senses they control, develop a basic understanding of what the human body is made up of, e.g. bones, blood &amp; skin &amp; the role these parts play – e.g. skeleton helps us stand up</li> <li>• Identify characteristics &amp; attributes of different animals &amp; humans, e.g. birds, feathers, fly. Meet their basic care needs.</li> <li>• Develop an understanding that humans are different</li> </ul>

<p>it</p> <ul style="list-style-type: none"> <li>• Take part in shared guardianship of the natural world, e.g. petting an animal, planting seeds</li> <li>• Through assisted exploration and using their whole body, encounter and explore a range of scientific phenomena with a strong sensory input, e.g. bright light, loud noises, strong textures, gross body movements</li> <li>• Show awareness of everyday materials, textures and tactile experiences, e.g. wet, dry hands, soft pillows, teeth being brushed, modelling dough.</li> <li>• To explore with assistance, the outcome of contact &amp; non-contact forces on familiar, everyday objects, e.g. banging, splashing, dropping objects on the floor</li> <li>• Begin to show awareness of and respond to their familiar environment and changes to it, e.g. scanning it visually or auditorily for novel and interesting objects or events</li> <li>• Through assistance, begin to respond to a reactive or immersive environment, e.g.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the outcome of contact &amp; non-contact forces on different everyday objects and begin to link to words: e.g. push, pull, float, sink, stick (magnet), stop, fall</li> <li>• Explore different light sources, observe how objects create silhouettes &amp; shadows, distinguish dark &amp; light, name main colours correctly</li> <li>• Explore different sources of sound, including a range of instruments &amp; identify some when out of view, observe sound vibrations, e.g. on a stringed instrument</li> <li>• Explore a variety of objects that use electricity to make light, sound, move &amp; how to activate them – i.e. buttons, switches etc. Observe the difference between when the source is present and not present.</li> <li>• Follow basic safety rules when using electricity</li> <li>• Compare night &amp; day in terms of stars, moon, sun. Explore different surfaces in the natural environment especially rock &amp; soil.</li> <li>• Explore different properties of rocks &amp; minerals, e.g. shape size, colour &amp; link these observations to a growing vocabulary</li> <li>• Find out about phenomena they have noticed in experiments through books, videos and online sources</li> <li>• Use a selection of equipment to make simple measurements, e.g. hand lenses and egg timers and record their data in very simple ways with assistance</li> <li>• Undertake fieldwork with support</li> <li>• Participate in simple unplugged games &amp; activities to help build early problem-solving skills</li> <li>• Activate floor robots in order to repeat programmed actions</li> <li>• Control digital content on screen (of familiar, everyday</li> </ul>	<p>genders, that they grow &amp; age &amp; sequence basic stages, e.g. baby, child, adult, that they have basic needs, e.g. food, water, air</p> <ul style="list-style-type: none"> <li>• Identify &amp; compare everyday materials &amp; their properties through exploration, e.g. cold, hard, shiny &amp; group them according to simple properties</li> <li>• Manipulate everyday materials &amp; group them according to their pliability</li> <li>• Carry out simple science experiments, observe and question what they notice when things are heated &amp; cooled, both in the classroom &amp; nature</li> <li>• Explore the outcome of contact &amp; non-contact forces on different everyday objects &amp; comment on what they observe in simple ways: push, pull, float, sink, stick (magnet), stop, fall. Begin to predict what might happen</li> <li>• Explore different light sources, create silhouettes &amp; shadows, mix colours to create new colours, name colours correctly</li> <li>• Explore different sources of sound, including a range of instruments. Experiment how to create different sounds. Identify a range of sources when out of view &amp; when they are near or far. Observe &amp; comment on sound vibrations, e.g. on a stringed instrument</li> <li>• Explore a variety of objects that use electricity &amp; how activate them. Observe &amp; comment on the difference between when the source is present and not present.</li> <li>• Follow basic safety rules when using electricity</li> <li>• Communicate differences about night &amp; day in terms of stars, moon, sun. Explore &amp; comment on different surfaces in the natural environment especially rock &amp; soil.</li> <li>• Explore &amp; comment on different properties of rocks &amp;</li> </ul>
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sensory room

- Using their whole body in assisted exploration, discover a range of digital toys & experiences, e.g. a vibrating cushion, a toy with a moveable element, a screen with changing light patterns
- Begin to notice when objects appear or disappear on screen in familiar games and activities
- Become familiar with & begin to respond to, a range of everyday appliances with a strong sensory input, e.g. hairdryers, lights, fans, radio
- Begin to develop an understanding of cause and effect & apply this to switches or other access controls/devices
- Engage in early self-awareness, communication & social interaction activities: e.g. respond to their name, engage in intensive interaction with familiar adults, show awareness of familiar peers

objects, people & places) in simple ways, in games and creative applications. Press a control device or the screen directly in response to prompts or through an understanding of cause & effect.

- Operate a range of access/control devices with support, (e.g. touch screen, foot pedal, finger button) in order to activate a range of everyday appliances: e.g. fans, cooking appliances
- Turn on & access a range of devices with support, (e.g. computers, tablets) using their preferred access method: roller ball, joystick, mouse, touch screen, eye-gaze, voice
- Build their understanding of e-safety through e.g., recognising their work as their own, pointing to their friends when asked, following simple rules in relation to use of ICT, working with a peer on an activity with the support of adult, making simple choices when working as a group on an ICT activity

minerals, e.g. shape size, colour & carry out simple experiments to explore properties further – e.g. does water pass through them? do they sink?

- Find out about phenomena they have noticed in experiments through books, videos and online sources
- Use a selection of equipment to make simple measurements, e.g. hand lenses and egg timers and record their data in simple ways
- Undertake fieldwork with a degree of independence
- Apply basic principles of code & early problem-solving skills: e.g. sequencing and precision to a range of simple unplugged games & activities e.g. give instructions to make a drink of squash
- Programme simple operations into floor robots and explore and refine the results with support
- Manipulate, (e.g. move or select) digital content on screen, (of familiar, everyday objects, people & places), in games and creative applications by pressing a control device or the screen directly in response to prompts or through an understanding of cause & effect.
- Operate a range of access/control devices, (e.g. touch screen, foot pedal, finger button) in order to activate a range of everyday appliances: e.g. fans, cooking appliances
- Turn on & access a range of devices, (e.g. computers, tablets) using their preferred access method: roller ball, joystick, mouse, touch screen, eye-gaze, voice. Identify some of the key parts of computers.
- Build their understanding of e-safety through e.g., identifying their work as their own, distinguishing between friends and strangers, following simple rules

		<p>in relation to use of ICT, take turns using ICT, working with a peer on an activity, contributing to decisions when working as a group on an ICT activity</p> <ul style="list-style-type: none"> <li>• Build and construct simple objects with a range of construction toys, exploring how components fit together to make something</li> <li>• Explore different physical structures in the classroom and natural environment</li> <li>• Investigate and begin to use a range of everyday mechanisms, e.g. scissors, screw lids, door knobs</li> </ul>
<p>At KS2 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Recognise and demonstrate preferences for people, including peers</li> <li>• Observe and explore how their whole body and separate body parts feel and move in different ways</li> <li>• Using their whole body, encounter and engage in more independent exploration of a wider range of objects &amp; their contrasting properties from the natural world, e.g. soil, trees, rocks, sunlight, shadow</li> <li>• Recognise familiar words, symbols, tactile reference, photos, objects of reference or music of reference linked to phenomena in the natural world</li> <li>• Recognise a range of</li> </ul>	<p>At KS2 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Observe and comment on obvious changes in the natural environment including changes in weather &amp; seasonal changes and apply early enquiry skills, e.g. asking simple questions</li> <li>• Purposefully engage with images, objects and through direct contact, a range of natural environments, e.g. beach, forest, park</li> <li>• Differentiate a range of habitats / environments through the plants &amp; animals that can be found there</li> <li>• Identify simple differences between things that are dead &amp; alive</li> <li>• Identify basic parts of plants &amp; observe how plants grow from seeds to buds to plants. Identify simple attributes of leaves, flowers, trees. Explore what plants need to grow by carrying out simple experiments. Explore plants in local &amp; native biomes</li> <li>• Identify human body parts &amp; the movements they make, the senses they control, &amp; develop a basic understanding of what the human body is made up of, e.g. bones, blood &amp; skin &amp; the role these parts play – e.g. skeleton helps us stand up</li> </ul>	<p>At KS2 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Name &amp; describe the 4 seasons &amp; their associated weather – compare and describe similarities and differences between them &amp; record these on simple charts &amp; tables</li> <li>• Sequence the life cycle of a plant &amp; list what plants need to grow. Compare different types of plant life by their attributes. Apply simple scientific working skills to their study of plants, e.g. with assistance, measure &amp; record the growth of a plant. Explore plants in local &amp; native biomes. Use some scientific terms, e.g. germinate</li> <li>• Identify features of different animals &amp; plants which help it to survive in a particular habitat. Identify how habitats provide animals with food &amp; shelter, which includes an understanding of simple food chains. Recognise that species have adapted over time to help them survive in particular habitats.</li> <li>• Identify simple differences in the life cycles of different animals</li> <li>• List &amp; categorise a range of pets, wild &amp; farm animals, what they eat &amp; how to care for them &amp; identify differences &amp; similarities between them with an increasingly complex vocabulary, e.g. claws, beak. Become confident &amp; independent in meeting the care needs of common animals.</li> </ul>

<p>environmental sounds, e.g. bird song, barking dog</p> <ul style="list-style-type: none"> <li>• Demonstrate awareness of (through responding differently to and/or focusing more intently on) weather conditions, different natural environments: e.g. school grounds, park, garden, woodland, wetland, under a tree, in a naturally perfumed environment and contrasts in the natural environment, e.g. sunlight, wind, sound of waves</li> <li>• Take part in shared guardianship of the natural world with greater consistency &amp; responsibility, e.g. watering the allotment over a term</li> <li>• Using their whole body, encounter and engage in more independent exploration of a wider range of scientific phenomena, e.g. light patterns &amp; shadows, more subtle noises</li> <li>• Apply, explore and observe the outcome of a range of contact and non-contact forces on different objects: pushing, pulling, banging, pressing, rolling, tearing, ripping, scrunching, pouring</li> <li>• Focus more fully on activities</li> </ul>	<ul style="list-style-type: none"> <li>• Identify characteristics &amp; attributes of different animals &amp; humans, e.g. birds, feathers, fly. Meet their basic care needs.</li> <li>• Develop an understanding that humans are different genders, that they grow &amp; age &amp; sequence basic stages, e.g. baby, child, adult, that they have basic needs to live, e.g. food, water, air</li> <li>• Recognise some changes their bodies make as they approach adolescence</li> <li>• Identify &amp; compare everyday materials &amp; their properties through exploration. Allocate them to groups according to simple properties</li> <li>• Manipulate everyday materials &amp; group them according to their pliability</li> <li>• Participate in a wider range of simple, adult &amp; pupil-led science experiments &amp; observe what happens. Apply a growing vocabulary.</li> <li>• Observe solids, liquids &amp; gasses in the classroom &amp; nature &amp; how states of matter are changed by heating or cooling</li> <li>• Begin to make simple predictions about the outcome of contact &amp; non-contact forces on different everyday objects &amp; carry out simple experiments to compare similar objects with each other, e.g. rolling cars down a slope, record their findings in simple ways</li> <li>• Explore different light sources, create silhouettes &amp; shadows, Explore light on different surfaces, mix colours to create new colours, name colours correctly. Follow basic safety rules when exploring the sun as a light source.</li> <li>• Experiment how to create different sounds on a range of sound sources including instruments. Muffle or reduce sound. Identify a growing range of sources</li> </ul>	<ul style="list-style-type: none"> <li>• List what animals &amp; humans need to live, including a balanced diet, rest &amp; physical exercise</li> <li>• Identify different parts of the internal body &amp; their functions, e.g. muscles, skeleton for protection, movement &amp; support and think about the impact of diet, exercise, drugs &amp; lifestyle choices on the human body</li> <li>• Identify &amp; discuss some changes their bodies make as they approach adolescence &amp; how this links to personal hygiene</li> <li>• Identify different senses &amp; the body parts that link to these</li> <li>• Investigate which materials are best for particular purposes through experiments</li> <li>• Identify solids, liquids &amp; gasses in the classroom &amp; nature &amp; explain how states of matter are changed by heating or cooling. Use thermometers to measure &amp; compare relative temperatures</li> <li>• Carry out a wider range of simple science experiments, observe and question what they notice, with a growing scientific vocabulary, e.g. separating out colours using filter paper</li> <li>• Follow basic safety rules when carrying out experiments</li> <li>• Make predictions about the outcome of contact &amp; non-contact forces on different objects &amp; surfaces &amp; carry out simple experiments to test their predictions e.g. rolling different size cars down slopes made of different materials &amp; at different angles. Record their findings &amp; identify patterns. Use scientific terms to describe what they see, e.g. gravity, friction, repel, attract</li> <li>• Identify which forces are at play in observable phenomena, e.g. stretching rubber, attracting metal to a magnet</li> </ul>
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<p>and games which develop an understanding of object permanence</p> <ul style="list-style-type: none"> <li>• Respond more purposefully, including showing enjoyment and excitement of reactive &amp; immersive environments, e.g. sensory room</li> <li>• <b>Develop a more consistent understanding of cause and effect in order to start: independently activating a range of digital toys &amp; experiences producing visual, auditory and tactile feedback &amp; independently operating a range of everyday appliances with a sensory input, e.g. hairdryers, lights, fans, radio, mixers &amp; blenders</b></li> <li>• <b>Practice these skills using adapted access &amp; simply programmed latch-timers &amp; in context of other activities to help build connections between time, place &amp; experience – e.g. using a blender in the ILS room whilst cooking</b></li> <li>• <b>Begin to track a digitally created visual stimulus across a screen or a stimulus which has been auditorily generate</b></li> </ul>	<p>when out of view &amp; when they are near or far.</p> <ul style="list-style-type: none"> <li>• Identify everyday electrical appliances. Follow basic safety rules when using electricity with increasing recall. Identify which type of power source an object uses. Build their proficiency in activating a power source - i.e. operating switches etc.</li> <li>• Observe what the earth &amp; other planets of the solar system look like &amp; some of their key features. Observe how planets move in space.</li> <li>• Carry out simple experiments to explore properties of rocks &amp; stones – e.g. does water pass through them? do they sink? Identify ways in which they are different.</li> <li>• Observe obvious things in rocks such as fossils and explore how these link to dinosaurs</li> <li>• Undertake practical experiments to find out answers to simple questions, applying scientific methods in simple ways with support, e.g. controls, trial &amp; error, observations &amp; recording over time</li> <li>• Use a range of simple measuring equipment &amp; other equipment with support to help them carry out their investigations, chart &amp; record their finding</li> <li>• <b>Apply basic principles of code &amp; early problem-solving skills to a range of simple unplugged &amp; digital games &amp; activities, e.g. accurately sequencing making a drink of squash, programming a Beebot to move forwards, turn left and right, getting a sprite to perform very simple actions on Scratch Junior with full adult support</b></li> <li>• <b>Manipulate, (e.g. move or select) digital content on screen, in games and creative applications with growing confidence &amp; independence</b></li> <li>• <b>Combine digital content from different software applications with support, e.g. add text or an image to</b></li> </ul>	<ul style="list-style-type: none"> <li>• Explore how shadows change with the movement of the sun, how light responds to different surfaces, shiny, matt. Begin to use scientific terms, translucent, opaque transparent. List the colours of the rainbow in order. Apply basic safety rules when exploring the sun as a light source.</li> <li>• Recall a variety of sound sources. Determine their distance from the sound source. Link pitch to size &amp; length of sound sources. Categorise sounds sources. Explain how they can muffle sound.</li> <li>• Identify everyday electrical appliances &amp; how they are activated. List common dangers of using electricity. Use mains powered appliances safely. Sort objects into those running off batteries &amp; mains. Links power source size to object size. Build their understanding of how electricity travels differently through different materials &amp; requires an unbroken circuit. Begin to build simple circuits.</li> <li>• Describe the earth, moon &amp; other planets in simple terms, e.g. shape, rings &amp; what the earth looks like from space. Name the planets of the solar system.</li> <li>• Describe how the planets move in relation to each other &amp; make simple connections between the movements of the planets &amp; phenomena on earth, e.g. day &amp; night, seasons</li> <li>• Match samples of rock/minerals to charts to identify them. Carry out simple experiments to find what soil consists of. Explore layers of rock. Sort rocks/minerals according to simple criteria.</li> <li>• Link some fossils to dinosaur remains. Explore what these fossils tell us about dinosaurs.</li> <li>• Build a basic understanding of the chronology of the earth &amp; when certain features were formed or</li> </ul>
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<ul style="list-style-type: none"> <li>Continue to develop early self-awareness, communication &amp; social interaction skills: e.g. begin to show preferences for digitally generated images &amp; sound &amp; greater consistency in communicating these, show an awareness of and response to familiar peers, participate in shared social activities and opportunities</li> </ul>	<p>slides in a presentation</p> <ul style="list-style-type: none"> <li>Operate a range of access/control devices, (e.g. touch screen, foot pedal, finger button) with growing confidence &amp; independence in order to activate a range of everyday appliances</li> <li>Use some basic terms to describe hardware &amp; software they come across: internet, keyboard, folder, mouse, screen, file, search bar, website</li> <li>Carry out some basic operations: turn on, shut down, log in &amp; out with support, navigate their way round screens with support, print &amp; collect their work</li> <li>Recall basic personal data from choices if necessary: name, age, school, family</li> <li>Build their understanding of e-safety through e.g. contributing to decisions when working as a group on an ICT activity, distinguishing between friends and strangers, recalling simple rules in relation to ICT &amp; know how they relate to them, e.g. know there are age limits to some games &amp; activities and know what age they are, tell someone if they see something they don't like</li> </ul>	<p>existed</p> <ul style="list-style-type: none"> <li>Undertake practical experiments to find out answer to their questions, applying scientific methods, e.g. controls, trial &amp; error, observations &amp; recording over time</li> <li>Use a range of measuring equipment &amp; other equipment to help them carry out their investigations, chart &amp; record their findings, e.g. microscopes, cameras, thermometers</li> <li>Be aware of some famous naturalists, animal behaviourists &amp; evolutionist, e.g. David Attenborough and Jane Goodall, Carl Linnaeus, Mary Anning, Charles Darwin and Alfred Wallace, chemists, e.g. Ruth Benerito, physicists, e.g. Galileo Galilei, Isaac Newton, Ptolemy, Alhazen and Copernicus</li> <li>Identify everyday devices that contain computers &amp; what these computers do. Understand that computers need to be <i>programmed</i> to carry out actions &amp; will only do what they are programmed to do.</li> <li>Begin to develop a basic understanding of binary code, the role this plays in computing &amp; how it is stored</li> <li>Give precise and unambiguous lists of instructions in order to achieve a desired result in a range of unplugged and digital games &amp; activities. Use logic &amp; reasoning to correct &amp; refine their results if not as expected.</li> <li>Apply logic, creativity and problem-solving skills to a range of block-based programming projects, e.g. Scratch Junior, Blockly</li> <li>Use the correct terms for the concepts they encounter code, algorithms, events, sequencing, programming, bug &amp; debug, loop, repetition, input, output, hardware, software, bits, bytes, hard-drives, cloud</li> <li>Manage their own account &amp; organise, save &amp;</li> </ul>
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		<p>retrieve information effectively with support, e.g. naming documents and files sensibly</p> <ul style="list-style-type: none"> <li>• Manipulate &amp; combine digital content in a range of software applications for a range of purposes &amp; across devices with support, e.g. format images &amp; add these to simple presentations, send an image taken on a tablet to a PC via an email</li> <li>• Record and process data digitally using simple applications</li> <li>• Work on digital projects collaboratively, sharing their ideas &amp; building on the ideas of peers in simple ways</li> <li>• Appreciate the role the internet plays in our day-to-day lives, what it can be used for &amp; which devices &amp; programmes are best for which purposes</li> <li>• Report digital content that concerns them to a trusted adult &amp; not give up until they have been listened to</li> <li>• Abide by the school e-safety rules and codes of conduct, (appropriate to their age &amp; understanding): be kind online, respect age limits, keep passwords to themselves, (or a trusted adult if they have difficulty remembering it), log out when finished, treat hardware with respect, be mindful of the environment &amp; financial cost to school when printing</li> <li>• Build healthy online behaviours: limit quantity &amp; timing of screen access, (well-being) think before posting – consider how something might be received, (relationships, bullying, intimidation) remember their own digital footprint, (reputation, identity), protect their personal information, remember not everyone is who they say they are online</li> </ul>
<p>At KS3 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Recognise, demonstrate and express clear preferences for</li> </ul>	<p>At KS3 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Name &amp; describe the 4 seasons &amp; their associated weather – compare and describe similarities and differences between them &amp; record these on simple</li> </ul>	<p>At KS3 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Identify extreme weather types both nationally &amp; globally &amp; build their understanding of why these</li> </ul>



<p>people, including less familiar people, using words, symbols, tactile reference, photos or objects of reference</p> <ul style="list-style-type: none"> <li>• Become aware of how their body is changing and become more consistent and varied in how they move their body &amp; body parts</li> <li>• Engage in independent exploration of a wide range of objects from the natural world for extended periods &amp; interact with them in increasingly complex &amp; deliberate ways</li> <li>• Recognise, demonstrate and express clear preferences for objects &amp; experiences from the natural world using words, symbols, tactile reference, photos or objects of reference</li> <li>• Consolidate awareness of, show anticipation of and express preferences for different types of weather, contrasts in the natural environment, e.g. sunlight, wind, sound of waves and different natural environments, e.g. beach, park, forest</li> <li>• Take part in shared guardianship of the natural world beyond school through</li> </ul>	<p>charts &amp; tables</p> <ul style="list-style-type: none"> <li>• Sequence the life cycle of a plant &amp; list what plants needs to grow. Compare different types of plant life by their attributes. Apply simple scientific working skills to their study of plants, e.g. with assistance, measure the growth of a plant. Explore plants in biomes across the world</li> <li>• Identify simple features of different animals &amp; plants, which help it to survive in a particular habitat. Identify, in simple ways, how habitats provide animals with food &amp; shelter, how changes to a habitat can be dangerous for the things that live there. Recognise that species have adapted over time to help them survive in particular habitats.</li> <li>• Identify simple differences in the life cycles of different animals</li> <li>• List &amp; categorise a range of pets, wild &amp; farm animals, what they eat &amp; how to care for them &amp; identify differences &amp; similarities between them with an increasing vocabulary, e.g. claws</li> <li>• List what animals &amp; humans need to live, including a balanced diet, rest &amp; physical exercise. Become confident &amp; independent in meeting the care needs of common animals.</li> <li>• Identify different parts of the internal body &amp; their functions, e.g. teeth, muscles, skeleton for protection, movement &amp; support and think about the impact of diet, exercise, drugs &amp; lifestyle choices on the human body</li> <li>• Build their understanding of changes to the human body through adolescence, the differences between the male &amp; female body how this links to reproduction &amp; personal hygiene</li> <li>• Explore which materials are best for particular purposes through, where possible pupil-led experiments &amp; communicate their observations with a growing vocabulary</li> <li>• Identify solids, liquids &amp; gasses in the classroom &amp;</li> </ul>	<p>occur</p> <ul style="list-style-type: none"> <li>• Apply scientific working skills to their studies of plants that they observe either in nature or within controlled environments, e.g. measuring, recording, charting, describing, labelling, categorising. Give examples of plants in different biomes across the world. Use scientific vocabulary, e.g. germination, nutrition. Investigate the workings of a plant through simple experiments</li> <li>• Explain how habitats &amp; micro habitats suit the things that live there &amp; how they depend on each other. Explain food chains and food sources. Consider how changes to an environment / habitat may pose a danger to the things that live there.</li> <li>• Identify differences in the life cycles of a range of animals</li> <li>• Expand the range of animals they can identify &amp; categorise &amp; the differences &amp; similarities between them with an increasing scientific vocabulary, e.g. amphibians, reptiles, omnivores, herbivores, carnivores. Become independent &amp; confident in meeting the care needs of a wider range of animals. Explain more fully how animals have adapted over time to survive in different environments.</li> <li>• Identify different parts of internal organs &amp; skeleton, including teeth &amp; build a basic understanding of how they link to different systems, e.g. circulatory or digestive system. Further develop their understanding of the impact of diet, exercise, drugs &amp; lifestyle choices on the human body</li> <li>• Identify the differences between the male &amp; female body &amp; the role each plays in reproduction</li> <li>• Grow in confidence &amp; independence in caring for their changing bodies, in terms of physical fitness, &amp; personal hygiene &amp; understand why this is important</li> <li>• Build their understanding of internal body parts, including the skeleton, organs and bodily functions such as the digestive system</li> </ul>
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<p>participation in local events</p> <ul style="list-style-type: none"> <li>Engage in independent exploration of a wide range of scientific phenomena for extended periods</li> <li>Purposefully control, in increasingly complex ways, the outcome of a range of contact and non-contact forces on different objects: e.g. pouring from one container to another, starting and stopping objects move, changing their direction</li> <li>Initiate actions leading to a desired result in reactive environments in order to influence the world around them, whether objects, events or people</li> <li>Make reliable selections from two or more items by developing and expanding their knowledge and understanding of familiar words, symbols, tactile reference, photos, objects or sounds of reference</li> <li>Engage in early problem-solving in the exploration of objects within their environment, e.g. watch an object being hidden and try to find it, modify an action when repeating an action does not</li> </ul>	<p>nature &amp; observe &amp; record changes as a result of heating or cooling.</p> <ul style="list-style-type: none"> <li>Follow &amp; apply basic safety rules when carrying out experiments</li> <li>Make predictions about the outcome of contact &amp; non-contact forces on different objects &amp; surfaces &amp; carry out simple experiments to test their predictions e.g. rolling different size cars down slopes made of different materials &amp; at different angles. Build their vocabulary to communicate these experiments.</li> <li>Explore how shadows change with the movement of the sun, how light responds to different surfaces, (shiny &amp; matt) and how it passes through some materials but not others. List the colours of the rainbow in order. Recall basic safety rules when exploring the sun as a light source.</li> <li>Develop their understanding that sound travels. Determine their approximate distance from the sound source. Link pitch to size &amp; length of sound sources. Categorise sounds sources.</li> <li>Use mains powered appliances safely. Sort objects into those running off batteries &amp; mains &amp; install batteries to different appliances. Build a basic understanding that electricity travels &amp; travels differently through different materials &amp; can be stopped.</li> <li>Identify some of the planets of the solar system by name &amp; make simple connections between the movements of the planets &amp; phenomena on earth, e.g. day &amp; night, seasons</li> <li>Match samples of rock/minerals to charts to identify them. Carry out simple experiments to find soil consists of &amp; what can be found there, what i.e.</li> </ul>	<ul style="list-style-type: none"> <li>Carry out a wider range of more complex science experiments, observe and question what they notice, with a growing scientific vocabulary, e.g. reversible, irreversible, magnetic, dissolve, transparent, waterproof, absorbent, rigid</li> <li>Apply safety rules when carrying out experiments</li> <li>Explain the role of different materials in objects made from a variety of materials &amp; suggest alternative materials for certain purposes</li> <li>Explain changing states of matter within the classroom &amp; nature using terms such as condensation &amp; evaporation</li> <li>Identify a range of forces that might be at play in observable phenomena and explain how they might work with or against each other, e.g. walking in water.</li> <li>Begin to develop a basic understanding of how forces work in levers, pulleys &amp; wedges</li> <li>Explore &amp; explain how forces can change the speed, direction &amp; shape of objects. Begin to develop a basic understanding of air &amp; water resistance &amp; balance force.</li> <li>Link the position &amp; shape of shadows to the light source. Build their understanding of how refraction &amp; reflection works by exploring positioning of the light source &amp; different surfaces. Categorise different light sources. Use scientific terms: translucent, opaque, transparent, with growing confidence. Investigate how light &amp; reflections respond to different curved surfaces.</li> <li>Link different pitches &amp; volumes of sound to different soundwave patterns. Explore how sounds interacts with different materials.</li> <li>Construct &amp; problem-solve electrical circuits using</li> </ul>
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<p>work, try a new strategy when an old one fails</p> <ul style="list-style-type: none"> <li>• Recognise and discriminate between a range of environmental sounds and understand where the source of light is</li> <li>• Engage in independent exploration of digital activities, games &amp; experiences for extended periods &amp; interact with them in increasingly complex &amp; deliberate ways</li> <li>• Knowingly control events in reactive &amp; immersive environments to create different outcomes, e.g. sensory room</li> <li>• Engage in early problem-solving activities with a digital element, e.g. selecting from a choice of 2 switches where one is connected to a switch toy &amp; the other isn't, locating an onscreen image which has a changing position</li> <li>• Independently activate a range of digital games &amp; activities with increasing levels of complexity (e.g. following the progression pathways on the switch skills road map)</li> <li>• Independently operate (i.e.</li> </ul>	<p>decaying &amp; non-decaying matter. Explore the effects on weather on different rocks. Observe rocks in their natural environment &amp; identify with support, what can be seen in them, e.g. layers, fossils.</p> <ul style="list-style-type: none"> <li>• Participate in the planning, execution &amp; evaluation of comparative tests in order to find answers to scientific problems</li> <li>• Be aware of some famous naturalists, animal behaviourists &amp; evolutionist, e.g. David Attenborough and Jane Goodall, Carl Linnaeus, Mary Anning, Charles Darwin and Alfred Wallace, chemists, e.g. Ruth Benerito, physicists, e.g. Galileo Galilei, Isaac Newton, Ptolemy, Alhazen and Copernicu</li> <li>• With support, programme more complex commands into simple block-based applications &amp; observe, refine, enjoy &amp; share the results.</li> <li>• Apply logic, creativity and problem-solving skills to simple unplugged games &amp; activities.</li> <li>• Broaden their computing vocabulary: e.g. commands, blocks, sequence</li> <li>• Recall a wider range of personal data from choices if necessary: age, aspects of their address, names of family members. Check with an adult if it's okay to share this information online or off-line</li> <li>• Gather data, record it and represent it digitally in very simple ways with support</li> <li>• Explore new software or devices &amp; their applications &amp; functions with support. Exercise curiosity and resilience in their investigations. Manipulate &amp; combine digital content in increasingly complex ways for a range of age-appropriate purposes, e.g. participate in making a film for the school website, use a digital music app to create music for a school performance, be involved in decision-making in how</li> </ul>	<p>cells, bulbs, buzzers and wires. Use scientific terms; insulators, conductors, current, voltage. Represent a circuit symbolically.</p> <ul style="list-style-type: none"> <li>• Name the planets of the solar system. &amp; identify them by their appearance. Describe the phases of the moon.</li> <li>• Make clearer connections between the movement of the planets &amp; what we observe on earth – e.g. the changing position of the sun during the day, the phases of the moon, length of shadows, climate zones. Record &amp; chart these changes &amp; differences. Appreciate the role of the sun to life on earth.</li> <li>• Describe the movement of the planets in increasingly scientific ways &amp; the effects with increased precision, e.g. axis, slant, rotation, orbit, numbers of hours, days etc.</li> <li>• Describe different rock formations &amp; identify different types of rocks in the environment &amp; describe the effects of weather on different rocks. Differentiate between living &amp; non-living matter in soil &amp; rocks &amp; identify where &amp; how things have decayed or been preserved, e.g. fossils, insects in amber, plastics. Sort &amp; classify fossils. Use a growing scientific vocabulary, e.g. sedimentary, organic matter</li> <li>• Contribute to the planning, execution &amp; evaluation of comparative tests in order to find answers to more challenging scientific problems, including taking a lead in how they will carry out fieldwork</li> <li>• Appreciate the contribution of famous naturalists, animal behaviourists &amp; evolutionist, e.g. David Attenborough and Jane Goodall, Carl Linnaeus, Mary Anning, Charles Darwin and Alfred Wallace, chemists, e.g. Ruth Benerito, physicists, e.g. Galileo Galilei, Isaac</li> </ul>
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<p>turn on &amp; off) a growing range of familiar &amp; less familiar household appliances using a variety of access methods/devices &amp; more complex programmed latch timers</p> <ul style="list-style-type: none"> <li>• Become familiar with a range of new, age-appropriate equipment, e.g. electric razor</li> <li>• Continue to develop early self-awareness, communication &amp; social interaction skills: e.g. show clear anticipation of &amp; preferences for digitally generated images &amp; sound &amp; consistency in communicating these, extend their friendship circle to less familiar peers, initiate social interactions with an adult or peer using their PMC, express simple feelings through their PMC with increasingly reliability</li> </ul>	<p>to use social media to promote a fundraising campaign</p> <ul style="list-style-type: none"> <li>• Explore basic input &amp; output devices in technology, practice operating &amp; controlling them what they are used for in the world around us &amp; how they can enhance their DT projects</li> <li>• Develop an understanding of the role the internet plays in our day-to-day lives &amp; what it can be used for</li> <li>• Take increasing responsibility for their own account &amp; know it is theirs</li> <li>• Carry out simple searches with growing independence. Evaluate in simple ways the outcome of their search, e.g. if it gave them what they were looking for, (i.e. spelt correctly), if it is useful to them, (i.e. accessible content)</li> <li>• Communicate in a variety of ways online &amp; explore which ones are best for which purposes, e.g. video chats for socialising, emails for sending work messages, social media posts to promote something or fundraise, webpages to communicate information. With support. Make decisions about who they would like to communicate with and for what purpose &amp; with support, do so.</li> <li>• Abide by the school e-safety rules and codes of conduct, (appropriate to their age &amp; understanding): be kind online, respect age limits, keep passwords to themselves, (or a trusted adult if they have difficulty remembering it), log out when finished, treat hardware with respect, be mindful of the environment &amp; financial cost to school when printing</li> <li>• Work on digital projects collaboratively, sharing their ideas &amp; building on the ideas of peers in simple ways</li> <li>• Report digital content that concerns them to a trusted adult &amp; not give up until they have been listened to</li> <li>• Establish healthy online behaviours: e.g. limit quantity</li> </ul>	<p>Newton, Ptolemy, Alhazen and Copernicus</p> <ul style="list-style-type: none"> <li>• Further develop their computational thinking skills to write simple games &amp; carry out other more complex, creative projects using block-based programming e.g. Hopscotch and Scratch. Consider what a good digital game consists of. Understand that blocks are more intuitive user interfaces for the programming code that lies beneath it. Explore what this looks like. Where interest and ability - apply their understanding of concepts such as decomposition, sequencing, selection, repetition, variables, syntax &amp; logical bugs to their programmes &amp; understand how these apply to computer programmes in the world around them.</li> <li>• Further develop their understanding of binary code &amp; practice applying it to unplugged games &amp; activities</li> <li>• Identify databases in the world around them, what data is stored and processed about them, how &amp; why they might like to record and process data digitally, basic rights &amp; responsibilities around storing &amp; processing data, how to protect their personal data to prevent it from being compromised</li> <li>• Understand what physical computing is. Understand how it applies to everyday life, e.g. sensors, motors, simulators, machines, remote controlled toys and apply it to technology projects of their own, i.e. simple robotics or DT projects</li> <li>• Develop their understanding of how the internet works &amp; related terminology: networks, IP addresses, domain names, browsers, routers, web servers, hosts, requests, fibre optics, satellites, world wide web, search engines, protocols, packets, digital data, pixels and advances in technology &amp; related terminology: analytics, user interface, voice recognition.</li> <li>• Use their understanding of how the internet searches work to carry out effective, reliable internet searches with support. Critically evaluate content by cross-</li> </ul>
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& timing of screen access, be careful what they share

referencing information and verifying sources.

- Explore a range of forms of digital communication to communicate appropriately & effectively for a range of purposes: email, texting & group chats, promotional social networking pages, video conferencing. Understand the differences between each one. Use intuitive, template-based programmes e.g. Wix, to create their own webpages and sites with support.
- Gain in confidence in exploring new software or devices & their applications & functions. Exercise curiosity and resilience in their investigations, e.g. learn to customise devices & programmes, learn to touch type
- Manage their own accounts & organise, save & retrieve information effectively on different devices if they have them
- Manipulate & combine digital content in increasingly complex ways across devices & software applications for a growing range of age-appropriate purposes, e.g. a film to promote the school that they have scripted, recorded, edited & uploaded which requires them to: apply their knowledge of filming techniques such as camera angles & views, use a range of filming hardware & video editing software, use music they have created, mixed & stored on music apps, share through digital networks such as school-based social media sites & the school website.
- Know and apply basic e-courtesy & codes of conduct to online communications. Devise their own group rules. Explore possible outcomes of breaking these rules for the victim & the perpetrator
- Manage impulses & emotions in relation to online behaviours. Build a positive online identity rather than a negative online reputation through: words of support for others' posts, challenging stereotypes, exploring their own interests
- Be aware of viruses and malware, how they can

		<p>protect themselves against it: e.g. exercise caution &amp; seek help if asked for financial or personal details, use trusted sites, don't download attachments from emails you don't recognise, install anti-virus software.</p> <ul style="list-style-type: none"> <li>• Work on digital projects collaboratively, using digital platforms to share and build ideas with others. Credit other people's work in their collaborations &amp; distinguish between copyright &amp; loyalty-free content such as music &amp; images.</li> </ul>
<p>At KS4 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Demonstrate and express consistently clear preferences for familiar and less familiar people beyond the school or home setting sometimes from choices or by unprompted initiation</li> <li>• Be open to building new relationships in any new environments encountered</li> <li>• Become more independent and self-reliant in how they move their body &amp; body parts &amp; develop their understanding of their changing body</li> <li>• Be more independent and self-reliant in how they engage with objects &amp; experiences from the natural world</li> <li>• Demonstrate clear recognition of and express clear preferences for contrasts in the natural environment, e.g.</li> </ul>	<p>At KS4 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Apply their knowledge of seasons &amp; associated weather to real life situations in order to make sensible, independent choices</li> <li>• Apply scientific working skills to their studies of plants that they observe either in nature or within controlled environments, e.g. measuring, recording, charting, describing, labelling, categorising</li> <li>• Build their understanding of how different environments/habitats suit the things that live there &amp; how they depend on each other &amp; make simple connections between human behaviour &amp; threats to natural environments/habitats &amp; understand what they can do to help</li> <li>• Identify simple differences in the life cycles of a range of animals</li> <li>• Expand the range of animals they can identify &amp; categorise &amp; the differences &amp; similarities between them with an increasing scientific vocabulary, e.g. amphibians, reptiles. Become independent &amp; confident in meeting the care needs of a wider range of animals, e.g. through work experience placements on care farms, through project work in qualifications</li> <li>• Further develop their understanding of the impact of diet, exercise, drugs &amp; lifestyle choices on the human body.</li> <li>• Grow in confidence &amp; independence in caring for their</li> </ul>	<p>At KS4 pupils will be taught to:</p> <ul style="list-style-type: none"> <li>• Continue to build on their understanding of extreme weathers types both nationally &amp; globally &amp; make links between human behaviour with the causes of some of these weather systems</li> <li>• Continue to apply scientific working methods &amp; skills to their studies of plants to explore them in greater depth: e.g. pollination &amp; seed dispersal, nutrition &amp; photosynthesis</li> <li>• Explore in more detail how human behaviour can help or hinder a range of environments / habitats, e.g. nature reserves, deforestation, population growth</li> <li>• Identify differences in the life cycles of a range of animals, using scientific vocabulary, e.g. reproduction</li> <li>• Name, describe, categorise a wide range of animals &amp; their attributes using correct scientific terms. Care for a range of animals in a confident &amp; responsible way e.g. through work experience placements on care farms, through project work in qualifications.</li> <li>• Build on their understanding of the workings of the internal &amp; external body &amp; how they link to different systems, e.g. circulatory system. Take responsibility for their diet &amp; exercise routines. Make informed lifestyle choices &amp; understand the importance of making positive ones.</li> <li>• Take responsibility for caring for their changing</li> </ul>

<p>sunlight, wind, sound of waves and different natural environments, e.g. beach, park, forest</p> <ul style="list-style-type: none"> <li>• Be open to, confident and comfortable in visiting and engaging with unfamiliar natural environments, e.g. sailing on a lake, within the tree canopy of an outdoor adventure park, being around a campfire in a forest at night</li> <li>• Be more independent and self-reliant in their engagement with different weather conditions and natural environments as a result of having developed the skills to communicate these preferences and knowledge effectively</li> <li>• Participate in shared guardianship of the natural world beyond their familiar environment through participation in local or even international events</li> <li>• Apply their knowledge, skills and understanding to specific goals and projects to gain nationally recognised accreditation and qualifications relating to the world around</li> </ul>	<p>changing bodies, in terms of physical fitness, personal hygiene &amp; sexual health</p> <ul style="list-style-type: none"> <li>• Investigate further, with support &amp; according to their interests, the lives of famous scientists, e.g. naturalists, animal behaviourists, chemists</li> <li>• Grow in confidence in carrying out pupil-led experiments &amp; communicating their findings with scientific vocabulary</li> <li>• Identify which materials are best for particular purposes &amp; suggest sensible alternatives where these materials may not be available</li> <li>• Apply their knowledge of solids, liquids &amp; gasses in the classroom &amp; nature to practical situations, e.g. don't leave chocolate in the sun</li> <li>• Continue to explore forces in everyday situations and, with support, apply their knowledge of forces to practical situations, e.g. making sure they put down a bathmat, sliding something heavy over a shiny floor rather than pushing it</li> <li>• Begin to predict how shadows change with the movement of the sun &amp; how light will respond to different surfaces &amp; materials. Categorise different sources of light. Apply their knowledge to practical situations, e.g. creating different effects in their theatre productions</li> <li>• Begin to predict the volume or pitch of a sound they might hear. Apply their knowledge of sound to practical situations, e.g. know they must move into the same room as someone else to be clearly heard when speaking</li> <li>• Take responsibility for their habits &amp; behaviour in the use of electricity in view of cost &amp; safety. Apply their knowledge of electricity to practical situations, e.g. avoid resting their devices on flammable surfaces</li> <li>• Continue to build on their knowledge &amp; understanding of planets, their movements &amp; phenomena we observe on earth according to their interests, e.g. e.g. the changing position of the sun during the day, the</li> </ul>	<p>bodies, in terms of physical fitness, &amp; personal hygiene &amp; sexual health &amp; the effects of not looking after their bodies</p> <ul style="list-style-type: none"> <li>• Pulling on their accumulated scientific knowledge &amp; understanding, decide for themselves which methods they might use or experiments they might need to carry out in order to find answers to their questions</li> <li>• Apply their knowledge of changing states of matter within the classroom &amp; nature to explain different phenomena, e.g. the water cycle</li> <li>• Develop their understanding of the range of forces that might be at play in observable phenomena &amp; how they work with or against each other</li> <li>• Further develop their understanding of how forces work in levers, pulleys &amp; wedges</li> <li>• Further develop a basic understanding of air &amp; water resistance &amp; balance force.</li> <li>• Link the way light travels to the eye to how we see objects. Use the term translucent, opaque &amp; transparent with confidence &amp; explain how light behaves when it meets these different surfaces &amp; why.</li> <li>• Link the way sound travels to the ear to how we hear sounds. Develop their understanding of soundwave patterns &amp; how these link to pitch, volume &amp; the medium sound travels through.</li> <li>• Further their understanding of electrical circuits using cells, bulbs, buzzers and wires. Gain in confidence in the use of scientific terms; insulators, conductors, current, voltage. Appreciate the role electricity plays in their lives &amp; take responsibility for their habits &amp; behaviour in view of cost &amp; safety</li> <li>• Further develop their knowledge of the planets, their movements &amp; our observations on earth. Build their confidence in using scientific language to describe &amp; explain their understandings. Widen their research according to their interests.</li> </ul>
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<p>them</p> <ul style="list-style-type: none"> <li>Control a growing range of digital events &amp; experiences in a growing range of reactive &amp; immersive environments with growing confidence e.g. sensory rooms in other provisions, sensory spaces in creative environments – (theatre stages, in art installations), in pop-up sensory spaces – e.g. Christmas grottos in shops</li> <li>Continue to develop early problem-solving skills in activities with a digital element, following the progression pathways on the switch skills road map, e.g. using 2 switches to cause an event, e.g. move &amp; drop</li> <li>Operate (i.e. turn on &amp; off) a range of familiar &amp; less familiar household appliances &amp; age-appropriate equipment using a variety of access methods/devices &amp; more complex programmed latch timers in a variety of familiar &amp; less familiar settings, e.g. college visits, work experience placements, public performances</li> </ul>	<p>phases of the moon, length of shadows, climate zones. Record &amp; chart these changes &amp; differences with support. Appreciate the role of the sun to life on earth.</p> <ul style="list-style-type: none"> <li>Link their understanding of rocks &amp; soil types to practical purposes, e.g. gardening. Link this knowledge to lifestyle choices &amp; take responsibility for these, e.g. littering, reducing the use of matter that doesn't decompose</li> <li>Follow lines of scientific enquiry with increasing independence and confidence following their own interests. Communicates their findings to others.</li> <li>Continue to develop &amp; apply their computational thinking skills to projects of their own choosing which help them gain nationally recognised accreditation &amp; qualifications.</li> <li>Gain in confidence in exploring new software or devices &amp; their applications &amp; functions. With support, manipulate &amp; combine digital content in increasingly complex ways across devices &amp; software applications for a growing range of age-appropriate purposes, e.g. use a digital programme to mix music for a performance on a public stage</li> <li>Recall personal data for a wide variety of purposes online e.g. setting up accounts, applying for colleges online, making purchases, using SATNAVs, building profiles in social media sites. Know that not all requests for personal data are necessary or safe and to always check with a trusted adult.</li> <li>Explore how data might be used in the adult world &amp; gather, record and represent it digitally in similar ways, e.g. in mock enterprise projects, in mock work-based scenarios</li> <li>Continue to build on their knowledge &amp; skills of a range of input &amp; output devices, their applications in</li> </ul>	<ul style="list-style-type: none"> <li>Link their understanding of rocks &amp; soil types to practical purposes, e.g. which rocks to use for different purposes. Make connections between contents of soil &amp; different types of rock. Link their understanding of rocks &amp; soils to lifestyle choices &amp; take responsibility for these, e.g. consumer choices &amp; decomposition, littering</li> <li>Follow lines of scientific enquiry with increasing independence and following their own interests. Communicates their findings to others.</li> <li>Investigate further, according to their interests, the lives of famous scientists, e.g. naturalists, animal behaviourists &amp; evolutionist, e.g. David Attenborough and Jane Goodall, Carl Linnaeus, Mary Anning, Charles Darwin and Alfred Wallace, chemists, e.g. Ruth Benerito, physicists, e.g. Galileo Galilei, Isaac Newton, Ptolemy, Alhazen and Copernicus</li> <li>Continue to develop &amp; apply their computational thinking skills to projects of their own choosing which help them gain nationally recognised accreditation &amp; qualifications.</li> <li>Develop their own systems for organising, saving &amp; retrieving digital information effectively across a range of devices.</li> <li>Continue to develop digital literacy skills in ways which relate to the adult world, e.g. create games &amp; apps for younger pupils, (e.g. Kahoot) create screencasts to explain how to do something for parents or other school stakeholders, (e.g. Screen-o-matic), explore how adults use suites of apps to plan, execute, monitor &amp; analyse projects, (e.g. Office 365)</li> <li>Continue to build on their understanding of physical computing, its applications in the adult world, e.g. thermostats to control household heating. Apply it to technology projects which will help them gain nationally recognised accreditation &amp; qualifications.</li> <li>Use their understanding of how the internet works to continue to explore new software or devices &amp; their</li> </ul>
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<ul style="list-style-type: none"> <li>• Demonstrate clear recognition of and express clear preferences for a range of digital activities, games &amp; experiences</li> </ul>	<p>the adult world. Apply their knowledge to technology projects which will help them gain nationally recognised accreditation &amp; qualifications.</p> <ul style="list-style-type: none"> <li>• Gain confidence &amp; skills in managing their own accounts &amp; organise, save &amp; retrieve information effectively on different devices if they have them</li> <li>• Continue to develop confidence &amp; independence in a range of digital communications &amp; get better at self-regulating online behaviours through recognising &amp; managing their impulses &amp; emotions. Know and apply basic e-courtesy &amp; codes of conduct. Devise their own group rules. Explore possible outcomes of breaking these rules.</li> <li>• Not trust everything they see online &amp; get better at distinguishing reliable &amp; unreliable information by using trusted sites &amp; cross-checking different sources</li> <li>• Be aware of some of the ways that their devices &amp; data can be compromised, e.g. viruses and malware, scams &amp; phishing &amp; some simple ways to protect themselves against it: e.g. always check with a trusted adult if asked for financial or personal details, make sure they have anti-virus software.</li> <li>• Continue to work on digital projects collaboratively, using digital platforms to share and build ideas with others with support. Credit other people's work in their collaborations &amp; know that this is important. Use loyalty-free content in any published projects.</li> </ul>	<p>applications &amp; functions &amp; how they link to the adult world, e.g. learn to use power or cost saving features. Continue to exercise curiosity, initiative and resilience in their investigations &amp; see how these skills link to work-based expectations.</p> <ul style="list-style-type: none"> <li>• Explore how data can be analysed for different purposes &amp; link this to the adult world, e.g. market research in business &amp; enterprise projects, analysing when expensive purchases</li> <li>• Self-regulate their online behaviours, especially in relation to social networking, e.g. exercise caution in online communications, balance on-line with off-line activities &amp; communication, consider the implications of what they post</li> <li>• Exercise maturity around the need for online popularity. Be aware of ways in which the digital world can impact on self-image &amp; identity &amp; explore genuine ways to build self-esteem.</li> <li>• Become confident in knowing which forms of digital communication are most appropriate &amp; effective for particular purposes. Harness the internet to build positive &amp; healthy online identities, empower &amp; amplify their voice.</li> <li>• Continue to work on digital projects collaboratively with greater independence, using digital platforms to share and build ideas with others. Build basic understanding of more complex, work-related concepts such as target audience whilst carrying out projects &amp; activities. Build their understanding of laws relating to copyright &amp; ownership, downloads &amp; distribution.</li> <li>• Build their ability to carry out effective, reliable internet searches and increase their ability to identify e.g. fake news, bias, attempts to influence, persuade, scam, radicalise etc.</li> </ul>
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