St Paul's C of E Primary School

Man or Machine, which is better?

In this unit of work, pupils will explore elements of the Science, Computing and History curriculum leading to a Great Debate style event to discuss which is better, man or machine? Pupils will understand how travel and transport has changed since the past and how the Indisutrial Revolution has changed the landscape of Britain. Pupils will build upon their computing knowledge and learn about coding and animaton, developing the basic skills to understand how to make simple algorithms and follow increasingly complex instructions. Interleaved with this knowledge and understanding, pupils will develop their Scientific skills and knowledge. Pupils will be exposed to learning around forces and electricity, whilst understanding how this has also changed through time.

Science Subject Pathway

	Phase 1	Phase 2	Phase 3
	Through practical experience, pupils will be encouraged to:		
Working Scientifically	**Ask simple questions and make basic observations by testing using simple equipment**.	**Ask relevant questions using prior knowledge.**	**Ask detailed and relevant questions.** **Plan enquires, recognising how to control certain variables and choose appropriate techniques and apparatus during fieldwork and laboratory work.**
	Through investigation of their environment, pupils begin to ask questions to aid their understanding of the world around them. (e.g. What is it? What makes it work? How is it like/different from other things? How has it changed? What makes it change?) Pupils are guided by the teacher to plan, investigate and trial different scenarios to help answer their questions. Pupils should begin to recognise that these questions can be answered in different ways. Pupils make observations by exploring their environment and begin to take measurements. This could be by simple comparisons (larger, smaller, lighter, heavier, best, worst) or by measuring in non-standard units.	Pupils refer to prior knowledge when asking questions using a range of questions stems that lead them to resolve them independently. Using straightforward scientific reasoning, pupils begin to answer questions from the teacher and begin to make their own decisions about the most appropriate type of scientific enquiry they might use to confirm or negate these answers; They should begin to recognise when a simple fair test is necessary and help to decide how to set it up. Pupils make systematic and careful observations and begin to measure parameters such as time, temperature and capacity using a range of equipment and recording in standard units.	Pupils begin to ask scientific questions based on prior knowledge or their findings. Using a greater range of apparatus and resources, pupils independently decide on procedures for answering questions, justifying their choices with scientific reasoning. They use prior knowledge to make scientific predictions, explaining their reasoning before presenting their findings using more complex scientifically accurate recording methods. Pupils select the most appropriate equipment for precisely measuring their results and decide whether to repeat testing or adjust parameters to obtain the most accurate data.
	Use the equipment and apparatus in their environment to be inquisitive. Pupils use the resources in their environment or provided by the teacher to gather evidence to answer questions generated by themselves or the teacher. They carry out tests to classify and compare, looking for patterns and making basic observations over time. (Verbal or pictorial)	**Use scientific equipment and apparatus to be inquisitive.** Given a greater range of resources, pupils decide for themselves how to gather evidence. They begin to use other evidence (e.g. Textbook or Internet search) to back up their practical work. They carry out tests to classify and compare, looking for patterns	**Use more complex equipment and apparatus to be inquisitive.** Pupils select from a greater range of practical resources to gather evidence to answer their questions. They begin to take precise and accurate measurements, deciding for themselves which data is relevant to the investigation and why.

	Pupils use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. They use simple secondary sources (such as identification sheets) to name living things. They begin to describe the characteristics they used to identify a living thing.	and making detailed observations over time. (Verbal, pictorial and written) Pupils predict outcomes before gathering, recording, classifying and presenting data in different ways to help answer questions. They make accurate measurements using a range of equipment and use evidence to draw simple conclusions and suggest improvements or indicate where further testing may be necessary.	They use their findings to explain causal relationships and to draw scientific conclusions. They use prior knowledge to discuss and describe scientific ideas, identifying scientific evidence that can been used to support or refute ideas or arguments. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.
	Begin to use scientific language to identify and classify, explaining their findings orally or by using simple annotated drawings.	**Use scientific language to explain their findings either orally or in written form, using labelled drawings and diagrams, bar charts and tables for clarity.**	**Use scientific language to explain, in a greater variety of scientific formats, their results and findings**

Forces -Background information

A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall. Air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object. A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover. Pulleys, levers and gears are all mechanisms, also known as simple machines.

A magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. If two like poles, e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract.

Materials (Physics) – FORCES

Phase 1	Phase 2	Phase 3
Push Pull Introduce the idea of pulling, as a force. To understand that when I pull something, it moves towards me To understand that different objects can be pulled towards me To know that push is the opposite of pull To understand that to push something means it moves away from me To investigate different objects and how they move when they are pulled or pushed – roll/stack/slide To notice and describe how different things move. (*May include but not limited to: fast, slow, forwards, backwards).* To explore whether the surface of a material or the incline of the surface changes the movement of an object To begin to predict how the object might move. To understand that a force makes an object move	**Compare how things move on different surfaces (Yr3)** To understand that a force is a pull or a push and that the surface of both an object and the area it is on affects how it moves. (Frictional forces) To understand that a force exerted by a surface may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.	**Identify the effects of air resistance, water resistance and friction, that act between moving surfaces (Yr5)** To understand that air, water and friction are contact forces that act between moving surfaces To explain how a force affects the movement of an object and may hinder or help its movement
Begin to investigate that the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (forces) (Pre-learning for Yr2 objective)	To understand that the shape of solid objects made from certain materials can be changed by squashing, bending, twisting and stretching (applying forces to the object)	**Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Yr5)** To investigate how devices such as levers, pulleys and gears allow a small force to be increased to a greater force that might allow for greater ease of movement. (e.g. Can opener) and that these mechanisms are simple machines.

To investigate what happens when you drop something. To begin to think about why an object falls	To understand that gravity is the force of attraction between two objects. It is what makes things fall and what keeps us from floating off into space. Gravity is a fundamental force of nature. To understand that for some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees. Compare this to the concept that some forces can act at a distance e.g. gravity and magnetism. An object falls when you drop it. A magnet does not need to touch the object that it attracts	**Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object (Yr5)** To understand that gravity is a force that pulls all objects towards the centre of the Earth. To explore and explain why unsupported objects always fall. To verbalise that the force exerted by a support counteracts gravity (link to strength of stems/trunks/bones)
Magnetism To understand that some metals can be magnetic To know that magnetic means for two metals to attract each other To begin to investigate whether an object is magnetic or not. To begin to understand that magnetism works at a distance. Is it 'sticky'? To investigate how far/close to an object they can get before the force is effective.	**Magnetism** **Notice that some forces need contact between two objects, but magnetic forces can act at a distance (Yr3)** **Observe how magnets attract or repel each other and attract some materials and not others (Yr3)** **Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials (Yr3)** **Describe magnets as having two poles (Yr3)** **Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Yr3)** To have a basic understanding of magnetism and understand that whereas most forces need contact, magnets work from a distance. Materials containing iron and nickel are magnetic and will be attracted by magnets. The strongest parts of a magnet are its poles. Poles are classified as North and South. Like poles will repel each other (i.e. North-North) and unlike poles attract (North-South).	**Magnetism** ***These Yr3 objectives are included in 2022 to cover missed learning due to the Covid pandemic.*** ***Observe how magnets attract or repel each other and attract some materials and not others (Yr3)*** ***Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials (Yr3)*** ***Describe magnets as having two poles (Yr3)*** ***Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Yr3)*** To investigate how strong a magnet is. To investigate using different types of magnets and materials

Common Misconceptions	Some children may think: • the bigger the magnet the stronger it is • all metals are magnetic • the heavier the object the faster it falls, because it has more gravity acting on it • forces always act in pairs which are equal and opposite • smooth surfaces have no friction • objects always travel better on smooth surfaces • a moving object has a force which is pushing it forwards and it stops when the pushing force wears out • a non-moving object has no forces acting on it • heavy objects sink and light objects float.
Suggested Activities	• Carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc. • Explore what materials are attracted to a magnet. • Classify materials according to whether they are magnetic • Explore the way that magnets behave in relation to each other. • Use a marked magnet to find the unmarked poles on other types of magnets. • Explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table. • Devise an investigation to test the strength of magnets. • Investigate the effect of friction in a range of contexts e.g. trainers, bathmats, mats for a helter-skelter. • Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water and pulling shapes, such as boats, along the surface of water. • Investigate the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats. • Explore how levers, pulleys and gears work. • Make a product that involves a lever, pulley or gear.

Electricity -Background information

Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on and off.

Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity.

Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. You can use recognised circuit symbols to draw simple circuit diagrams.

Materials (Physics) – ELECTRICITY

Phase 1	Phase 2	Phase 3
ELECTRICITY To observe and name common appliances that run on electricity. (*may include but not limited to computer, kettle, oven, remote-control car)* To understand that an appliance needs to be switched on and off and that the electricity travels through cables/wires which are covered up for protection.	**Identify common appliances that run on electricity (Yr4)** To know that not all electrical items plug into the wall. Some run on batteries (toys, laptops, tablets) which are the source of energy. (power) **Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers (Yr4)** **Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery (Yr4)** **Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit (Yr4)** To investigate independently, and through peer observation, using electrical components, how to make a working circuit before they are introduced to a switch which will make/break the circuit. **Recognise some common conductors and insulators, and associate metals with being good conductors. (Yr4)** To investigate which material allow electricity to flow through them (conductors) and which do not (insulators)	**Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit (Yr6)** **Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches (Yr6)** To build on prior knowledge of electrical circuitry to show that adding more cells (or a higher voltage battery) to a circuit will increase the energy allowing a bulb to glow brighter or raising the volume of a buzzer. They improve their knowledge of the function of on/off switches **Use recognised symbols when representing a simple circuit in a diagram. (Yr6)** To be able to correctly recognise and use electrical symbols when drawing an electrical circuit.

Common Misconceptions

Some children may think

- electricity flows to bulbs, not through them
- electricity flows out of both ends of a battery
- electricity works by simply coming out of one end of a battery into the component.
- larger-sized batteries make bulbs brighter
- a complete circuit uses up electricity
- components in a circuit that are closer to the battery get more electricity

Vocabulary		
Phase 1	**Phase 2**	**Phase 3**
Forces (Physics) push, pull, roll, slide, stack, magnetic, metal, force, attract, repel, opposite	**Materials (Physics)** as for Phase 1 plus: physics, magnet, poles, friction, forces, attract, repel, iron, nickel, force, push, pull, twist, contact force, non-contact force, magnetic force, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, steel, north pole, south pole	**Materials (Physics)** as for Phase 1&2 plus: resistance, friction, levers, pulleys, gears, machine, gravity, Earth, air resistance, water resistance, mechanisms, simple machines,
Electricity Electricity, mains, plug	**Electricity** as for Phase 1 plus: Electrical appliance/device, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	**Electricity** as for Phase 1&2 plus: Circuit diagram, circuit symbol, voltage N.B. Pupils do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably.
Working Scientifically Tables, compare, contrast, chart, natural, observations, equipment, pattern, testing, identify, group, record, results, materials,	**Working Scientifically** as for phase1 plus: Method, investigation, predict, conclusion, apparatus, data, describe, measure, diagram, Comparative, fair, controlled, systematic, practical, measurement, thermometer, data logger, bar chart, graph, values function, microscope	**Working Scientifically** as for phase 1&2 plus: Calibration, analyse, variables, precision, scatter graph, causal, illustrate, theory

History Curriculum Pathway

Phase 1	Phase 2	Phase 3
Through exploration and application of the essential concepts, pupils will:		
Architecture (buildings and settlements) *ELG (UtW)* *Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class.* *Focus: Middle Ages (Robin Hood) and Modern Day* Use a basic structure of a timeline to indicate the passing of time and simple events that have occurred before/after they were born: Then, Now and Next. Identify the differences between past and present buildings in the forms of houses. Give basic explanations about how homes and houses have changed throughout time i.e. in Middle Ages (Robin Hood era), homes were made of wood with thatched roofs whereas Modern day homes are made from brick and cement.	**Architecture (buildings and settlements)** *KS1 History: Understand events beyond living memory that are significant* *KS2 History:To develop a chronologically secure knowledge and understanding of British History* *KS2 History: To understand changes in Britain from Stone Age to Iron Age* *Focus: Stone Age, Iron Age, Modern Day* Develop a basic understanding of chronology in relation to BC and AD. Use and/or develop a timeline to identify points in time, dating from Early Civilisations (earliest BC) through to the Birth of Jesus Christ and up to the present day. Begin to place periods in History in chronological order upon a timeline. Begin to think about how homes and buildings have changed throughout time by creating a chronological timeline from Stone Age to Iron Age to Modern Day displaying types of building. Compare with prior knowledge of Tudor buildings Compare and contrast materials, structure and design of buildings across all 4 time periods.	**Architecture (buildings and settlements)** *KS2 History:To develop a chronologically secure knowledge and understanding of British History* *KS2 History: To Britain's settlement by the Anglo Saxons and the Scots* *Focus: Recap of Phase 2 information and extension to Anglo Saxon and Scots* Develop a timeline to identify points in time, including prior knowledge and learning, dating from Early Civilisations (earliest BC) through to the Birth of Jesus Christ and up to the present day. Place periods in History in chronological order upon a timeline. Study the development of architecture from Ancient Civilisations (taught in Are The Arts…) through to Britain's settlement by Anglo-Saxons and Scots and to Modern Day Britain Through the study of architecture, pupils will understand how methods, materials and designs of buildings have changed and give reasons for these changes. Understand how civilisation has evolved over centuries and develop their knowledge of cultures. Understand the importance of building upon and learning from designs in the past.

Technology To begin to understand that ways of communicating now are very different ot methods of communication in the past i.e. pigeon post, smoke signals compared to mobile phones, Facetime and emails.	**Technology** To begin to understand that ways of communicating now are very different ot methods of communication in the past To understand how communication and technology has made it easier for individuals around the world to connect To understand that technology is the use of knowledge to invent new devices or tools. To understand how Ancient Civilisations (Stone Age) used natural materials to make tools To use prior knowledge to compare tools from the past (Stone Age) to tools from Modern Day civilisation.	**Technology** To understand what the digital revolution is and the impact on human life, particularly over the last 50 years. To consider why and how the digital revolution happened To understand what life was life prior to the digital revolution To predict and infer what life might be like in 100 years after current day (building upon prior knowledge and learning from the past) To understand that technology is the use of knowledge to invent new devices or tools.
Transport and Trade To begin to understand that ways of transport have changed significantly over time and to place different transport methods in order on a timeline. *KS1: Life of significant individual* Know about the life of Neil Armstrong and understand how he contributed towards improvements in technology - *Who was Neil Armstrong?* - *How long ago did he live?* - *What did he do and why was it important?* - *What have we learnt from his life?* To use this information to understand the history of space exploration, from 1942 (first rocket V2 is launched) to 1969 (Neil Armstrong lands on the moon) To begin to understand about the first flight and the significance of it (How has it brought the world closer together?)	**Transport and Trade** To understand that transport and trade has changed significantly over time. Beginning with transport in ancient civilisations, put different methods of transport on a timeline using dates. To understand how transport and trade are linked – look at the modes of transport in the Bronze age. Learn about what they traded, where they traded and how this also meant people settled in new places. To begin to understand what the industrial revolution was and how it changed the world. - Think about what did and didn't exist before the Industrial Revolution To understand why the invention of the steam engine was one of the most significant inventions of the industrial revolution.	**Transport and Trade** To understand that different things have been trading throughout history, such as tools in the Stone Age and salt, iron and wood in Anglo Saxon and Viking times. To understand what the Silk Road was and consider how it played a significant role in the development of many civilisations. Consider how trade route have changed throughout history and why. To understand the impact that canals had on trade and transport in Britain (and Gloucester) during the Industrial Revolution. Analyse a wide range of sources to consider opposing views on industrialisation. Showing an awareness of propaganda. Contrast the Industrial Revolution (a period with rapid change) to a time with relatively little change.

	- List things that can fly. Categorise them into man made and natural objects.	To understand what it was like to work in the factories during 18th and 19th centuries using a	
	Suggested Visits Gloucester Museum Medieval Home: Acton Court, Iron Acton Berkeley Castle, Berkeley National Space Centre	**Suggested Visits** Gloucester Museum Gloucester walk – building focus The Black History Museum	**Suggested Visits** National Waterway Museum Gloucester Museum The Black History Museum
	Continuous Provision *How? What? Why? Table* Picture match – past or present?	**Continuous Provision**. *How? What? Why? Table* Chronology games – Asmodee, Placing the Past, History Top Trumps Timelines Brain Challenge – British History	**Continuous Provision** *How? What? Why? Table* Chronology games – Asmodee, Placing the Past, History Top Trumps Timelines Brain Challenge – British History

Vocabulary		
Phase 1	**Phase 2**	**Phase 3**
Old/new Past/present Before Long ago Timeline The past The present Before I was born After I was born Same/different Time order	Living memory Beyond living memory Decade Century Chronological order BC/AD Era/period Ancient civilisations Significant (individual) Source Evidence Reliable Artefact Impact Historian	*Decade* *Century* *Chronological order* *BC/AD* *Era/period* *Civilisation* *Significant (individual)* *Sources* *Artefact* *Archaeologist* *Impact* Legacy Primary evidence Secondary evidence Interpretation Bias Propaganda Ancient civilisations Change Development Continuity
Subject specific Thatched roof Wood Bricks Achievement Discovery Pigeon post Smoke signals Telegram Telephone Sail boat Steam boat Horse Steam train Carriage Electric car Aeroplane Wright brothers	**Subject specific** Round houses Thatched Timber frames Wattle and daub Ore Conflict Spears Javelins Harpoons Achievement Breakthrough Exploration Industrial Revolution Factory Engine Mass produce Steam engine Locomotive	**Subject specific** Trade routes Silk Road Prosperity irrigation Packhorse Canal Barge

Computing Curriculum Pathway

Phase 1	Phase 2	Phase 3
Through exploration and application of the essential concepts, pupils will:		
Programming (including algorithms)	**Programming (including algorithms)**	**Programming (including algorithms)**
ELG and KS1: To use a programme to solve a simple problem (use of bee-bots)	*KS1:To understand what algorithms are, how they are implemented as programmes on digital devices and that programs execute by following precise and unambiguous instructions* *KS1:To create and debug simple programs* *KS2: To use reasoning to predict the behaviour of simple programs*	*As Phase 2 and including…* *KS2: To design, write and debug programs that accomplish specific goals, including controlling or stimulating physical systems, solve problems by decomposing them into smaller parts* *KS2: To use sequence, selection and repetition in programs, work with variables and various forms of input and output* *KS2: To use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs*
To understand that an algorithm is a sequence of commands To begin to explain what an algorithm can do and why they are used To begin to describe an algorithm to complete a simple task To begin to write a 3 step algorithm to complete a simple task To begin to explore outcomes (what happens when…) when commands are given in different orders To combine 3 commands to follow a route, controlling a range of electronic toys i.e. electric cars, bee bots	To understand that an algorithm is a sequence of precise commands as a program on a digital device To describe and write an algorithm for a simple task (no more than 5 steps) To explain what a program is and understand that programs execute by following precise and unambigious instructions To investigate how the sequence of commands can impact or change an algorithm and it's outcome To begin to debug programs that accomplish specific goals To use repetition in programs To begin to use logical reasoning to predict behaviour of a simple, 4 step program and give reasons for this To reorder a sequence of instructions and correct errors in programs	To understand that an algorithm is a sequence of precise commands as a program on a digital device To design programs that accomplish specific goals by creating a procedure (group of commands) to do a specific task i.e. draw a specific shape To solve problems by decomposing them into smaller steps To reason about why the sequence of commands is important when creating an algorithm To work with variables and understand how a small change can alter an outcome To use logical reasoning to predict, detect and correct errors in algorithms, bulding to more complex sequences of commands. To use 'if…' then a command within a series of commands and discuss the potential changes, impacts of this command

To begin to understand that correcting errors is called debugging a program	To understand that correcting errors is called debugging a program	To plan and test algorithms and programs, detecting and correcting errors as required
Animation	**Animation**	**Animation**
To understand objects move to make an animation.	To understand pictures and objects move to make an animation.	To understand the process of pictures and objects moving to make an animation.
To begin to move a physical object to five positions and link in sequence to form an animation.	To plan an animation using objects on a six step storyboard.	To plan an animation using pictures and objects on a six or more step storyboard.
	To create models and then take photographs and combine into a logical sequence to produce a simple animation.	To create pictures or models, then take photographs and combine into a logical sequence to produce ananimation.
		To produce a consistent design for an animation presentation and present to others.
To look for errors in a class animation (debugging).	To edit their animation to improve (debugging).	To edit their animation to improve and make more realistic (debugging).
	To evaluate the effectiveness of their animation and improve by adding a title and sounds.	To evaluate the effectiveness of their animation and improve by adding a title, sounds and combining their animation with other software/hardware (Eg WeDo Lego).

	Suggested Resources/Apps Beebots Remote control cars Stick nodes (Amazon app) Aardmann animator (Google play)	**Suggested Resources/Apps** *Lightbot hour app* *Getting started with Scratch (https://scratch.mit.edu/studios/20438856/)* *Scratch* *Stick nodes (Amazon app)* *Aardmann animator (Google play)* *Draw 'n' animate (Amazon app)*	**Suggested Resources/Apps** *Lightbot hour app* *Scratch* *SEND – Stick nodes (amazon apps)* Pixle studio lite (Amazon app) Draw 'n' animate (Amazon app) Python (advanced users)
	Continuous Provision/ **Unplugged activities** *Playdough programming (make a face using instructions)* *Jigsaws (logic)* *Build a duck (Logic, algorithm, problem solving)* *Origami-orithms (algorithms)* *Guess who! (algorithms)* *More details of tPixle studio litehese activities can be found here:* https://www.digitalschoolhouse.org.uk/computing-at-home-10-activities	**Continuous Provision/** **Unplugged activtiies** Flip books Thaumatropes Zoetropes Storyboards Phenakistiscope More details can be found below: http://www.mhs.ox.ac.uk/exhibits/fancy-names-and-fun-toys/	**Continuous Provision/** **Unplugged activities** Flip books Thaumatropes Zoetropes Storyboards Phenakistiscope More details can be found below: http://www.mhs.ox.ac.uk/exhibits/fancy-names-and-fun-toys/

Vocabulary		
Phase 1	**Phase 2**	**Phase 3**
Equipment	debug	game
Buttons	find	command
Movement	plan	score
Algorith / Instructions	direction	instructions
Buttons	up	instruct
Robots / beebot	down	analyse
Commands	turn	sound
Sequence	angles	instruction
Patterns	quarter	pattern
Program	clockwise	improve
direction	anti-clockwise	characters
directions	shapes right-angled	command
Forward/ Backward	script	colour
Turn	sprite	speech
Left / Right	reasoning	movements
Stop/ start /end	sequencing	sensing
predict	sequence	movement
half	error	variables
programme	detect	'if'
plan	logical	'then'
devices	correct	sprite
beginning	route	edit
position	instructions	predict
program	program	co-ordinates
app	selection	rotation
fix / debug	repetition	events
move	procedure	variables
shape	instructions	pen up
steps	command	pen down
repeat	programmable	
	properties	