Wardley CE Primary School
Science Policy

Name of Reviewer	Andrew Houston
Date of Approval of Governing Body	September 2024
Signature of Chair	*Alan Johns*
Signature of Head	*Mark Foster*
Date Due for Review	September 2027

EQUALITY STATEMENT

As a school we welcome our duties under the Equality Act 2010. The general duties are to:

- eliminate discrimination, harassment and victimisation
- advance equality of opportunity
- foster good relations

We review all policies and procedures we operate to ensure there are no negative equality impacts based on the following protected characteristics: age, disability, ethnicity & race, gender (sex), gender identity & reassignment, pregnancy & maternity, sexual orientation, religion & belief and non-belief as outlined in the Equality Act 2010. If you feel, on reading this policy that there may be a negative equality impact, please tell us about this. Please also let us know if you need to access this policy in a different format. You can do this by contacting the school office.

Our school vision

We are a Church of England school that values and recognises the uniqueness of each individual child and acknowledges their fundamental right to be educated to their full potential in a safe, secure and caring environment. Our ethos is built on Christian foundations and drives our belief that we can do all things.

Wardley CE Primary School is committed to continual improvement to ensure that what we do today is even better tomorrow. We provide a happy, secure and supportive learning environment where the children develop independence and work hard to make the most of their talents, and that 'We can do all things' within a deep and rich curriculum.

We can do all things through Christ who strengthens us. Phillippians 4:13

Practical ways in which we attempt to carry out our school vision

Through the Christian value of respect:
-Having strong ethics to underpin our decision making and actions.
-Creating an environment which promotes the Christian ethos of trust, respect and honesty to enable people to flourish.
-Promoting a sense of justice.
-Creating a strong moral purpose which underpins everything we do

Through the Christian value of friendship:
-Having an inclusive ethos to create a school in which everyone is welcome and everyone is equal.
-In celebrating diversity we value the strengths of all and embrace differences.
-Engaging stakeholders within and beyond the school.

Through the Christian value of trust:
-Having a strong sense of teamwork amongst all members of the school community.
-No matter how small, we value every contribution and support each other to reach our goals.
-In respecting each other, we strive to not let each other down.
-In feeling valued and empowered people have a desire to go the extra mile.

Through the Christian value of courage
-Recognising, supporting and developing everyone's potential.
-Nurturing skills and promoting opportunities.
-Creating an environment for people to think positively and take risks.

Through the Christian value of perseverance:
-Through continual enhancement we are constantly striving to achieve high standards, we never stand still.
-All improvements are underpinned with high aspirations.
-When problems arise, we must hold on to our vision and find solutions.
-We inspire and innovate and we support others to do the same.

Spiritual Moral Social & Cultural Statement

At Wardley CE Primary School we aim to promote children's curiosity and understanding about the world in our science lessons. Science contributes to SMSC through encouraging reflection on the wonder of the natural world. By showing an awareness of the way science can affect society and the environment, we show respect for different opinions.

Spiritual Development in Science

Science is using evidence to make sense of the world. It has the ability to make us feel both enormously insignificant (compared to the scale of the visible universe) and enormously significant (we are genetically unique). It helps us understand our relationship with the world around us (how the physical world behaves, the interdependence of all living things). Making new discoveries increases our sense of awe and wonder at the complexities and elegance of the natural world. For scientists, this is a spiritual experience and drives us onwards in our search for knowledge and understanding.

Moral Development in Science

Whether it's the ethics behind certain medical treatments, the environmental impact of industry, or how government funding is allocated to scientific projects; moral decisions are an important aspect of science. Scientific discoveries and inventions need to be used responsibly, and decisions made based on evidence (not prejudice). As teachers, we encourage pupils to be both open minded (generating a hypothesis) and critical (demanding evidence) and to use their understanding of the world around them in a positive manner.

Social Development in Science

Scientists are collaborators. Sharing ideas, data, and results (for further testing and development by others) is a key principle of the scientific method. We encourage pupils to work together on scientific investigations and to share results (to improve reliability). Science supports social development by exposing children to the power of collaborative working in the science community which has led to some amazing and life changing breakthroughs in medicine and the environment. When undertaking experiments and research children work collaboratively. Science has a major impact on the quality of our lives. In Science lessons, pupils consider the social impact (both positive and negative) of science and technology upon our everyday lives

Cultural Development in Science

Science permeates modern culture and has played a key part in developing it. It is (both currently and historically) an international activity. In Science lessons, we explore and celebrate research and developments that take place in many different cultures, both past and present. We explore how scientific discoveries have shaped the beliefs, cultures and politics of the modern world.

Democracy:
Scientific collaboration is inherent upon the democratic process whereby evidence and conclusions undergo peer review by fellow scientists.

Specific examples of Spiritual, Moral Social and Cultural Development in science at Wardley include:

Learning about the scientific perspective on the start of the universe and the evolution of life (with consideration of religious beliefs)

Studying and discussing the impact on human beings on the environment, the problems created by industry and possible solutions.

Investigating the impact of significant scientists from around the world Debating and discussing ethical issues in science such as cloning, genetic modification and climate change

Studying the scientific method and how scientists collaborate to share and test ideas.

Intent

What is science?

“Science consists of observing the world by watching, listening, observing, and recording. Science is curiosity in thoughtful action about the world and how it behaves.”

NASA

“Science is the greatest collective endeavour. It contributes to ensuring a longer and healthier life, monitors our health, provides medicine to cure our diseases, alleviates aches and pains, helps us to provide water for our basic needs – including our food, provides energy and makes life more fun, including sports, music, entertainment and the latest communication technology. Last but not least, it nourishes our spirit.”

UNESCO

The national curriculum for science aims to ensure that all pupils:

Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics

Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

At Wardley, we encourage children to be inquisitive throughout their time at the school and beyond. Our Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and nonliving. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Science is a vibrant subject at Wardley about which we are incredibly passionate. Children have lots of questions about the world around us and we aim to provide them with the necessary core scientific knowledge and investigative skills to answer their questions about those processes.

At present, our curriculum provides a rich variety of topics that cover all the core scientific disciplines and contexts that the children can relate to their everyday lives. At the start of each topic the children are posed a key question or context from which they generate their own scientific lines of enquiry. They will then explore this question using a variety of investigative skills, engaging and becoming more familiar with each of the elements of the scientific method as they progress through the school. These include skills such as working collaboratively, making predictions, analysing results, observing changes over time, collecting results in a variety of ways, drawing conclusions from their observations and evaluating their own method and the reliability of their results. Underpinning this is an emphasis on children actively participating in their own practical investigations and experiments, utilising the classroom, wider school environment and the local environment.

Our subject intent is that to be a scientist at Wardley CE Primary means that you have:

• The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.

• Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.

• Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.

• High levels of originality, imagination or innovation in the application of skills.

• The ability to undertake practical work in a variety of contexts, including fieldwork.

• A passion for science and its application in past, present and future technologies.

Implementation

At Wardley CE Primary School the teaching and learning of science is based upon the CUSP Science curriculum.

CUSP Science pays close attention to guidance provided by the National Curriculum sequence and content. It is infused with evidence-led practice and enriched with retrieval studies to ensure long-term retention of foundational knowledge. The foundations of CUSP science are cemented in the EYFS through learning within the Natural World, and People, Culture and Communities. Our ambitious interpretation of the National Curriculum places knowledge, vocabulary, working and thinking scientifically at the heart of our principles, structure and practice.Through studying CUSP science, pupils become ‘a little more expert’ as they progress through the curriculum, accumulating, connecting and making sense of the rich substantive and disciplinary knowledge.

What Pupils Will Know

Substantive knowledge - this is the subject knowledge and explicit vocabulary used to learn about the content. Common misconceptions are explicitly revealed as non-examples and positioned against known and accurate content. In CUSP Science, an extensive and connected knowledge base is constructed so that pupils can use these foundations and integrate it with what they already know. Misconceptions are challenged carefully and in the context of the substantive and disciplinary knowledge. In CUSP Science, it is recommended that misconceptions are not introduced too early, as pupils need to construct a mental model in which to position that new knowledge.

What Pupils Will Do

Disciplinary knowledge – this is knowing how to collect, use, interpret, understand and evaluate the evidence from scientific processes. This is taught. It is not assumed that pupils will acquire these skills by luck or hope. Pupils construct understanding by applying substantive knowledge to questioning and planning, observing, performing a range of tests, accurately measuring, comparing through identifying and classifying, using observations and gathering data to help answer questions, explaining and reporting, predicting, concluding, improving, and seeking patterns. We call it ‘Working Scientifically.’ CUSP Science provides Working Scientifically coverage maps to check the balance of provision in KS1, Lower and Upper KS2. They are also present in the Whole Class Assessment toolkits. Scientific analysis is developed through IPROF criteria. We call it ‘Thinking Scientifically.’

- identifying and classifying
- pattern seeking
- research

- observing over time
- fair and comparative testing

These will be mapped throughout CUSP Science against each knowledge note.

Substantive concepts include concrete examples, such as ‘plant’ or more abstract ideas, such as ‘biodiversity’. Concepts are taught through explicit vocabulary instruction as well as through the direct content and context of the study.

Principles of Implementation

A guiding principle of CUSP Science is that each study draws upon prior learning. For example, in the EYFS, pupils may learn about The Natural World through daily activities and exploring their locality and immediate environment. This is revisited and positioned so that new and potentially abstract content in Year 1, such as Animals, including humans, is related to what children already know. This makes it easier to cognitively process. This helps to accelerate new learning as children integrate prior understanding.

CUSP Science is organised into three distinct subject domains: biology, physics and chemistry. Where interdisciplinary concepts are encountered, such as the particle model, these are taught explicitly and connected across science domains. CUSP Science has sequenced the national curriculum into meaningful and connected ‘chunks’ of content to reduce the load on the working memory as well as creating coherent and strong long-term memories. The sequence of substantive and disciplinary knowledge enables pupils to become ‘more expert’ with each study and grow an ever broadening and coherent mental model of the subject. This guards against superficial, disconnected and fragmented scientific knowledge and weak disciplinary knowledge. High frequency, multiple meaning words (Tier 2) are taught explicitly and help make sense of subject specific words (Tier 3). Each learning module in CUSP Science has a vocabulary module with teacher guidance, tasks and resources to enhance and deepen understanding.

CUSP Science is planned so that the retention of knowledge is much more than just ‘in the moment knowledge’. The cumulative nature of the curriculum is made memorable by the implementation of Bjork’s desirable difficulties, including retrieval and spaced retrieval practice, word building and deliberate practice tasks. This powerful interrelationship between structure and research-led practice is designed to increase substantive knowledge and accelerate learning within and between study modules. That means the foundational knowledge of the curriculum is positioned to ease the load on the working memory: new content is connected to prior learning. The effect of this cumulative model supports opportunities for children to associate and connect significant scientific concepts, over time, and with increasing expertise and knowledge.

CUSP Science deliberately pays attention and values the importance of subject content as well as the context it is taught in. Common scientific misconceptions are identified in all CUSP Science learning modules. These misconceptions are made explicit to pupils. Children draw upon substantive and disciplinary knowledge to reason and practise acquiring the conception, whilst repelling the misconceptions. Examples and non-examples are powerful ways of saying what something is and what something isn't.

CUSP Science values the study of scientists from the past as well as promoting diverse present-day role models in the field. These studies help us to learn how they used, at that time, their substantive and disciplinary knowledge to develop a conception. This illuminates how misconceptions can permeate substantive knowledge and appear to be a known truth. An example of this is the study of Maria Merion in Year 5, who was born in Germany in 1667. She observed and drew insects going through biochemical metamorphosis. She challenged the misconception that all insects were evil, born from mud and were the work of the devil. Further examples of contextual misconceptions and refinement of conceptions can be seen in the study of Galen's views about blood circulation in AD 157 and William Harvey's findings in 1602. CUSP fulfils and goes well beyond the expectations of the National Curriculum as we believe there is no ceiling to what pupils can learn if the architecture and practice is founded in evidence-led principles.

Thinking Like A Scientist

Pupils make more sense and deeper understanding of the substantive concepts and knowledge by using what they know through disciplinary knowledge.

The Disciplinary Science Map is used to identify the opportunities to think hard and use the substantive content in a disciplinary manner by thinking like a scientist.

The CUSP Thinking Hard Science Tasks give teachers the opportunity to consolidate or elaborate pupil thinking through disciplinary knowledge tasks.

Science in the EYFS

At Wardley, we recognise the importance of Science in every aspect of daily life. We give the teaching and learning of Science the prominence it requires. The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of inquiry.

Science at Foundation Stage is covered in the **'Understanding the World'** area of the EYFS Curriculum. It is introduced indirectly through activities that encourage every child to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.

During their first years at school, our children will explore creatures, people, plants and objects in their natural environments. They will observe and manipulate objects and materials to identify differences and similarities. They will also learn to use their senses, feeling dough or listening to sounds in the environment, such as sirens or farm animals. They will make observations of animals and plants and explain why some things occur and talk about changes. Children are encouraged to ask questions about why things happen and how things work. They will carry out activities such as increasing the incline of a slope to observe how fast a vehicle travels, or opening a mechanical toy to see how it works. Children will also be asked questions about what they think will happen to help them communicate, plan, investigate, record and evaluate findings.

In nursery and reception children will, within their Understanding the World work towards the following outcomes: Children will be able to make sense of their physical world

- Build important knowledge and sense of the world around them from stories, investigations and visits
- Begin to talk about why things happen and make simple predictions

By the end of Reception children should:

<u>The Natural World</u>

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand the effect of the changing seasons on the natural world around them.

At Wardley CE Primary School we use the CUSP Early Foundations offer to help structure the foundational knowledge, opportunities and experiences in our EYFS science curriculum. The CUSP Early Foundations offer is presented in three parts;

Foundational knowledge: sets out what the pupils should know and be able to do throughout the EYFS and how this will support their development and prepare them for success in key stage 1 and beyond.

Opportunities and experiences: how this foundational knowledge can be learnt through guided activities that will allow pupils to explore, experiment with and think hard about new and important concepts.

Structured storytime: core texts will introduce key language, ideas and themes that pupils will need to access the foundational knowledge, built into a framework that is based on research about effective literacy instruction.

The key science strands that are developed within the EYFS can be seen as:

- Plants
- Animals, including humans
- Everyday materials
- Seasonal change
- Environmental change
- Forces and how things work
- Working scientifically

The structured storytime texts and linked science strands that the pupils will encounter in the EYFS are shown below:

Nursery

Autumn	Spring	Summer
The Leaf Thief *-Seasonal change.* **The Snowy Day** *-Seasonal change.* *-Everyday materials.*	**Three Little Pigs** *-Everyday materials* **Goldilocks & The Three Bears** *-Everyday materials* **Seasons Come And Go** *-Seasonal change.* **Erol's Garden** *-Plants*	**Body Parts** *-Animals including humans.* **Funny Bones** *-Animals including humans.* **Oliver's Vegetables** *-Plants* **Hey Water** *-Everyday materials*

Reception

Autumn	Spring	Summer
Pumpkin Soup *-Seasonal change.* *-Everyday materials.* **The Squirrels Who Squabbled** *-Animals including humans.* **Tiddler** *-Animals including humans.*	**Mrs Noah's Garden** *-Plants* **Winnie The Pooh Helps Bees** *-Plants* *-Environmental change*	**Rosa Explores Life Cycles** *-Animals including humans.* *-Working scientifically.* **Tad** *-Animals including humans.* *-Working scientifically.* **William Bee's Things That Go** *-Everyday materials.*

Do Baby Elephants Suck Their Trunks? *-Animals including humans.* **Celebrations Around The World** *-Seasonal change.*		**Clean Up** *-Environmental change* **Bear Shaped** *-Forces*

Specific ideas for the provision to shape the opportunities and experiences that the pupils will encounter is set out in the CUSP Early Foundations document for science.

Science in KS1 & KS2

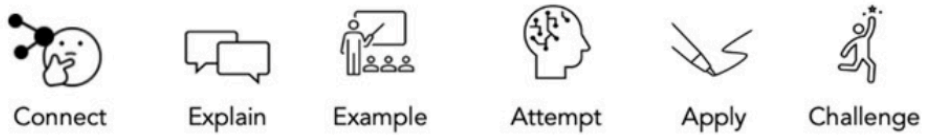
KS1 & 2 School Overview

	EYFS Understanding the world	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology (53% of Science content)	The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.		Living things and their habitats *(+ revisit modules)*		Living things and their habitats	Living things and their habitats	Living things and their habitats
		Plants (AT / ST)	Plants (ST)	Plants (ST)			
		Animals, including humans *(+ revisit modules)*	Animals, including humans *(+ revisit modules)*	Animals, including humans	Animals, including humans	Animals, including humans	Animals, including humans
							Evolution and inheritance
Physics (29% of Science content)		Seasonal changes *(+ revisit module)*		Light			Light
				Forces and magnets		Forces	
					Electricity		Electricity
					Sound		
						Earth and space	
Chemistry (18% of Science content)		Everyday materials	Use of everyday materials			Properties and change of materials	
				Rocks (AT) *(+ revisit module)*			
					States of matter		

How pupils learn

- Class timetables have been built to ensure a broad and balanced curriculum.
- Subjects have been blocked in a spaced retrieval model to support catch up and maximize learning time
- Art has been timetabled in an extended session to enable children to have time to develop depth.

An essential component to CUSP lessons is the systematic and coherent approach that we embed focusing on the six phases of a lesson.



Overview of Knowledge
The overview provides a list of the expected outcomes for the block provides details of the artistic knowledge and skills pupils will be expected to have acquired by the end of the block. It includes detailed explanations of the core knowledge covered in each block

Knowledge Organsiers
Dual coded knowledge organisers contain core information for children to easily access and use as a point of reference and as a means of retrieval practise.

Mapping of Knowledge
The sequence of learning makes clear essential and desirable knowledge, key questions and task suggestions for each lesson and suggested cumulative quizzing questions.

Knowledge Notes
Knowledge notes are an elaboration in the core knowledge found in knowledge organisers. Knowledge notes focus pupils' working memory to the key question that will be asked at the end of the lesson. It reduces cognitive load and avoids the split-attention effect.

Retrieval Practise
Retrieval practise is planned into the curriculum through spaced learning and interleaving and as part of considered task design by the class teacher. Teaching and learning resources and provided for class teachers so they can focus their time on subject knowledge and task design.

Vocabulary

The units are supported by vocabulary modules which provide both resources for teaching and learning vital vocabulary and provide teachers with Tier 2 and 3 vocabulary with the etymology and morphology needed for explicit instruction details relevant idioms and colloquialisms to make this learning explicit.

We aim to provide a high challenge with low threat culture and put no ceiling on any child's learning, instead providing the right scaffolding for each child for them to achieve.

Links to the Wider Curriculum

At Wardley CE Primary School science is taught through a blocked curriculum approach and we teach science discreetly. We try to link science to other subjects to help build on prior knowledge whilst ensuring no tenuous link is made.

Science capital at Wardley is secure and based around real-life experiences and supports curriculum learning retention. We utilise the school environment and local community to promote aspirational views of science in the world of work. Science at Wardley encourages our children to have the confidence to apply their scientific knowledge to other subjects and to know that science plays an important role in the world we live in. We believe children learn best through an interdisciplinary approach that explores the connections among different branches of science and other fields.

Wherever possible, the Wardley Science Curriculum is enhanced by interweaving content through other subjects. These links are mapped out in the CUSP Science Subject Leader's Handbook. Linking Science with the other STEM subjects (Science, Technology, Engineering and Maths) allows pupils to become the critical and creative thinkers that they need to be to thrive in future society. Children apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

At Wardley CE Primary School we use computing in science teaching where appropriate. Children use computing in science to enhance their skills in data handling and in presenting written work, and when researching information using the Internet. Children engage regularly in collaboration with their peers and the use of the internet in answering a 'key question'.

The Wardley curriculum for science reflects the importance of spoken and written language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. We believe that science promotes communication in a specific and precise language involving mathematical and logical thinking. It allows children to develop ways of finding out for themselves and gives them practice in problem solving. By having students write down each procedural step within an investigation, analysis and evaluate the outcome, our pupils are learning to communicate clearly in written form.

Linking with work in geography and RE in particular, our science curriculum seeks to nurture the awe and wonder found in the natural world, a sense of personal responsibility and an understanding of connections at personal, local and global level.

The history of science is a standard part of our science curriculum and as such, we can discuss the inventions, discoveries and scientists that influenced world events.

Science and history go hand-in-hand as history marks the time when scientific advances and discoveries were made e.g. Sir Isaac Newton and his recognition of the impact of gravity on our everyday life and how the solar system works.

Relating science to physical education brings science to the personal level of the learner. Thus, physical education can serve as a vehicle for teaching science and make student understanding of certain personal health-related science concepts meaningful. The practical use of experimentation vocabulary when learning about heart rate or burning calories is a great way to reinforce these important science concepts in physical education class. There are also many opportunities to highlight science related vocabulary that is used during PE classes (i.e. – speed, friction, angle of trajectory, fulcrum, lever, aerodynamics, etc.). There are other awesome activities that use student knowledge of science concepts (i.e. – Habitat Survivor (dodging and fleeing), Evaporation (tossing flying discs at a target), Rocket Launcher (striking and catching pool noodles), etc.).

CUSP Science Subject Leaders Handbook

This document sets out in detail the CUSP Science curriculum and the evidence-led practice and theory on which it is founded.

Impact

The impact of our Science curriculum will be seen in the strong progress our pupils make as they move through school. The pupils will show this through knowing more, remembering more and being able to do more. It is about the pupils developing their ability to think scientifically. It is about them connecting existing and new knowledge, developing competence and making links.

Children will therefore be expected to leave Wardley CE Primary School reaching at least age related expectations for science. Our science curriculum will also lead pupils to be enthusiastic learners, evidenced in a range of ways, including pupil voice and their work.

Assessment & Feedback

At Wardley CE Primary School assessment is in line with the school's assessment policy. Teachers are expected to assess at the end of each topic against the subject's substantive and disciplinary knowledge, which enables teachers to track each child's progress. These are based on the subject's National Curriculum programme of study,

Assessment is both formative and at the point of learning as well as summative to feed forward to the next point of contact pupils will have.

• On-going formative assessment- this includes the use of day to day assessment for learning classroom practice and feedback. It looks at the pupil's development of key knowledge and skills. It can include short tests and quizzes. The aim is to reactivate thinking, make links and connect ideas to better embed them in the long term memory.

• Long term summative assessment - this looks at the subject's substantive and disciplinary knowledge. The summative assessment information is collected on a termly basis as outlined in the school's assessment policy. It is based on a secure fit assessment of each pupil's performance by the class teacher. This data also provides an overview of whole school progress for the subject leader.
Recording of assessment is multi-faceted. We support whole class feedback and marking principles. Any notes made must be useful and insightful, not lengthy or cumbersome.

Recording of assessment is multi-faceted. We support whole class feedback and marking principles. Any notes made must be useful and insightful, not lengthy or cumbersome.

In short, assessment can be complex. William, Hattie, Didau, the EEF and many others have grappled with the purpose, structure and ultimate aim that teacher feedback impacts on pupil learning.

All the evidence points towards feedback being most impactful as near to the point of learning as possible. That is why the 6 phases of a lesson allows teachers the space to listen, watch and interact to intelligently give feedback at the point of learning.

In summary, feedback should pay attention to these three questions:

1. Does feedback provide CLARIFICATION?

Are pupils on the right track? If they are not, do they know how to improve?

2. Does feedback provide SOPHISTICATION?

Do pupils get the opportunity to elaborate and respond to challenges, regardless of starting points?

3. Does feedback MOTIVATE?

Do pupils recognise and act upon the feedback through verbal comments and marks that teachers and support staff make? Do they see themselves as part of the learning process, rather than just being done to?

Making notes of these iterations is never at the expense of quality teaching. Teachers and support staff can summarise notes about the lesson, who stood out, who needed support can be brief and simple.

Feedback, quizzes, thinking hard tasks and structured assessment tasks all contribute towards the bigger picture of how well pupils retain and remember the content.

The school's feedback and assessment forms are used as a tool to quickly summarise and capture the learning, lesson to lesson. They are not designed to be fully comprehensive, but as a formative tool to capture and record, so that information can be fed forward to provide insights into the next lesson or summarised at the end of a study.

Role of the subject leader.

The science subject leader at Wardley CE Primary School is Andrew Houston.

Their role as a subject leader is to act as a guardian of the standards in the subject.

This means that they know:

• How well pupils achieve.

• What the strengths of provision are

• What needs to be done to improve outcomes.

To achieve this subject leaders undertake the following monitoring activities on a termly basis:

• Lesson observations.

• Pupil book study

1. What impact is our CURRICULUM having?
   - *What effect is the curriculum architecture having?*
2. Does teaching support LONG-TERM LEARNING?
   - *Is the evidence-led practice really being deployed at a classroom level, or is it superficial?*

3. Do tasks enable pupils to THINK HARD and CREATE LONG-TERM MEMORY?

• Discussions with both adults and children.

• Looking at classroom displays.

In addition subject leaders will:

• Support staff in their development of planning and to monitor planning.

• Facilitate the sharing of good practice among staff.

• Work together with colleagues to raise standards.

• Ensure that the policy documents and curriculum resources remain useful and current.

Science and links to home.

Ideas about how parents and carers can help their child with science at home are sent out on the class curriculum leaflets each half-term. Science is often the focus of the half-term homework project. This allows the children to use their imagination to present their projects in a variety of ways such as in written, oral or pictorial form as well as using ICT. As a school, we celebrate British Science Week in a variety of ways. Families are encouraged to participate in the annual British Science Week poster competition.

Inclusion

At Wardley CE Primary School all children have access to science lessons and activities regardless of their characteristics or ability. Teaching approaches provide equality of opportunity by making sure the work is suitable for all, regardless of gender, considering religious and cultural beliefs and enabling those with disabilities to have full participation

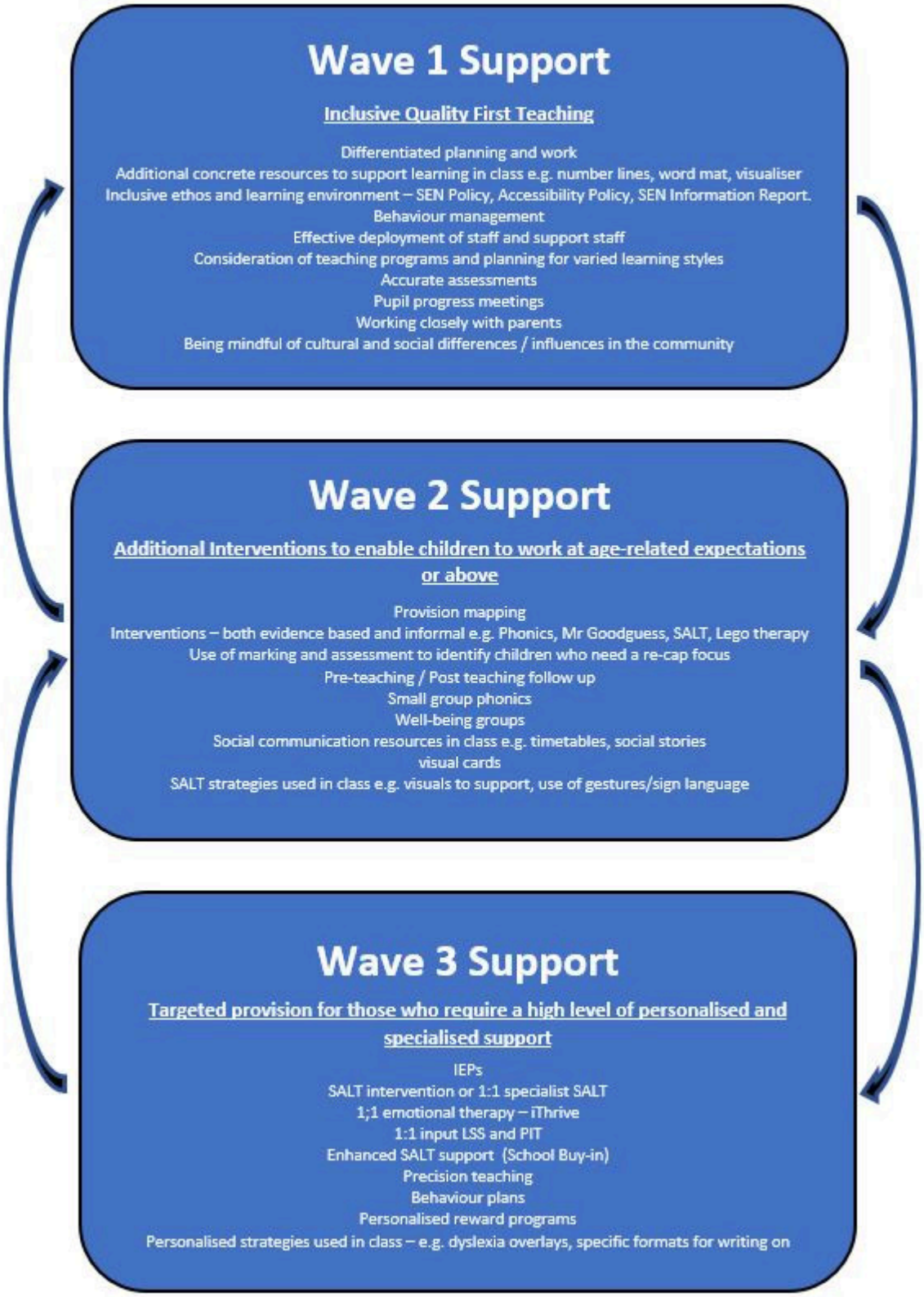
Through adaptive teaching and our CUSP curriculum model we provide all children with the tools and support to be involved and access every history lesson. This is the high quality teaching model that is set out in our teaching and learning policy.

"Central to this debate (what inclusive education looks like) should be the rights of the child as a learner. How do we design learning environments and learning activities that will ensure that each child is an active participant in the learning process and not a bystander, a peripheral participant, watching the activity of others? How can we support families, teachers and professionals to include those learners in all aspects of the curriculum to achieve this goal?" Barry Carpenter, Enabling Access

We believe that the CUSP curriculum architecture, that is built around retrieval practice and spaced retrieval practice, combined with evidence led teaching and generative learning tasks that are appropriately scaffolded are essential components in answering Barry's question.

Support staff play a vital role in universal quality first teaching. The principles of instruction, vocabulary teaching and generative learning tasks are universal in a school. All staff use and deploy these research-facing strategies.

To promote an inclusive environment in science we will use the following provision model:


Wave 1 Support
Inclusive Quality First Teaching
Differentiated planning and work
Additional concrete resources to support learning in class e.g. number lines, word mat, visualiser
Inclusive ethos and learning environment – SEN Policy, Accessibility Policy, SEN Information Report.
Behaviour management
Effective deployment of staff and support staff
Consideration of teaching programs and planning for varied learning styles
Accurate assessments
Pupil progress meetings
Working closely with parents
Being mindful of cultural and social differences / influences in the community
Wave 2 Support
Additional Interventions to enable children to work at age-related expectations or above
Provision mapping
Interventions – both evidence based and informal e.g. Phonics, Mr Goodguess, SALT, Lego therapy
Use of marking and assessment to identify children who need a re-cap focus
Pre-teaching / Post teaching follow up
Small group phonics
Well-being groups
Social communication resources in class e.g. timetables, social stories
visual cards
SALT strategies used in class e.g. visuals to support, use of gestures/sign language
Wave 3 Support
Targeted provision for those who require a high level of personalised and specialised support
IEPs
SALT intervention or 1:1 specialist SALT
1;1 emotional therapy – iThrive
1:1 input LSS and PIT
Enhanced SALT support (School Buy-in)
Precision teaching
Behaviour plans
Personalised reward programs
Personalised strategies used in class – e.g. dyslexia overlays, specific formats for writing on