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Scheme of Work		
Years: **3&4**	**Title:** Rock Detectives – Unearthing the Story Beneath Our Feet	**Weeks:** **6 weeks**

Rationale

This unit builds on KS1 learning about materials, environments and observation and develops understanding of rocks, soils and fossils through scientific enquiry and geographical investigation. Learning develops classification, observation, evidence use and disciplinary thinking.

Reading experiences, scientific enquiry and cross-curricular application are carefully sequenced to ensure National Curriculum expectations are fully covered while developing fluency, vocabulary and long-term knowledge retention.

Pupils learn to:

- identify and compare different rocks and soil
- compare and group materials according to whether they are solids, liquids or gases
- observe how materials change state when heated or cooled
- investigate evaporation and condensation
- describe the water cycle
- investigate how rocks are formed
- explain how fossils are created
- use increasingly ambitious scientific vocabulary accurately
- ask questions and carry out simple investigations
- identify patterns and relationships within findings
- communicate understanding through practical, spoken and written outcomes
- work collaboratively and increasingly independently
- reflect on learning and make connections across subjects
- group living things using classification keys
- recognise how environments can change and affect living things

Adaptive Teaching

Examples of adaptation within this unit include:

- visual timetables and now/next supports
- vocabulary pre-teaching and rehearsal
- sentence stems and modelling
- chunked instructions and reduced cognitive load
- oral rehearsal before recording ideas
- alternative recording methods (drawing, practical outcomes, verbal responses)
- sensory and movement opportunities where needed
- emotional check-ins and regulation support

Challenge and Greater Depth Opportunities

Pupils demonstrating secure understanding may be challenged through:

- increasingly independent application of learning
- deeper questioning and higher-order thinking
- interpretation and evaluation of evidence
- more sophisticated use of disciplinary and subject-specific vocabulary

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- extended reasoning and justification of ideas
- leadership, collaboration and peer-support opportunities
- greater complexity within written, practical and presentation outcomes
- opportunities to make connections across subjects and contexts
- independently classify and compare materials using increasingly sophisticated criteria
- justify conclusions using observations and scientific evidence
- identify relationships between properties and uses of materials

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Hook

Children discover mysterious rock samples, fossils and excavation clues hidden around the classroom and become **Rock Detectives** investigating evidence from beneath the Earth's surface.

Opening challenge

Can you become a Rock Detective and create something that teaches others how rocks tell the story of Earth?

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Writing outcomes

By the end of the unit pupils will:

- orally rehearse ideas before writing
- write descriptive sentences using scientific vocabulary
- create explanation texts describing rock formation
- write a diary entry from the perspective of a paleontologist or explorer
- compare different rocks and their properties
- create information texts, labels and investigation reports
- communicate findings using ambitious vocabulary
- edit and improve work

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Outcomes

By the end of the unit pupils produce:

- Rock Detectives Museum Exhibition
- labelled investigation journals
- classification guides
- fossil artwork and models
- scientific investigation reports
- presentations explaining findings

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Success Criteria:

By the end of the unit most pupils will be able to:

- use topic vocabulary accurately within discussion and learning activities
- identify and describe different types of rocks and their properties
- compare similarities and differences between rocks, fossils and soils
- explain how fossils are formed using scientific vocabulary
- ask questions and carry out simple investigations linked to rocks and soils
- identify patterns and relationships within findings and observations
- use evidence from observations and investigations to explain ideas
- communicate scientific understanding through spoken, practical and written outcomes
- participate confidently in discussion, collaborative learning and final presentations
- apply learning independently with increasing confidence and accuracy

Year 4 extension

- explain how the properties of rocks affect their uses
- interpret investigation findings and identify patterns independently

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	• justify conclusions using evidence from investigations and texts • communicate explanations using increasingly precise scientific vocabulary • compare and evaluate information from multiple sources

Secure End Point

Pupils can:

- classify and compare rocks and materials
- explain observations using evidence
- identify patterns within investigations
- communicate findings using scientific vocabulary

Common Misconceptions	**Sticky Knowledge (Non-negotiable Learning)**
• all rocks are the same • fossils are bones • rocks never change • soil and rocks are identical • fossils formed recently • all rocks are hard	• rocks have different properties • some rocks are formed naturally over time • fossils are evidence of living things from the past • soils are made from rocks and organic materials • scientists use evidence and observation to answer questions • rocks can be grouped and classified

Science Core Learning and Wider Application

Core taught content within this unit:

- identify and compare different rock types
- describe how fossils are formed
- identify and compare soils and their properties

Wider application and retrieval opportunities:

- classify and group materials
- use observation and comparison skills
- apply scientific vocabulary through practical investigation

Retrieval Opportunities

- Recall observation and enquiry skills from KS1 science
- Revisit scientific vocabulary linked to materials

Week 1 – prior knowledge discussion about materials and environments

Week 2 – recall scientific vocabulary and identify properties

Week 3 – compare rock types

Week 4 – explain fossil formation

Week 5 – investigate soils and environments

Week 6 – explain findings using scientific vocabulary

Prior Learning

Reading

- retrieve information from stories and non-fiction texts
- discuss similarities and differences
- identify key information

Retrieval Opportunities

- retrieval of scientific vocabulary linked to rocks and materials
- flashback questions linked to previous investigations
- recall of sticky knowledge through classification activities
- retrieval through scientific discussion and investigations

Writing

- write explanations
- sequence ideas logically
- record observations

Science

- identify materials and their properties
- observe seasonal change
- identify living things and habitats

Spoken Language

- ask questions
- explain observations
- communicate findings

Spelling

Pupils apply:

- spelling patterns and rules taught through the school spelling programme and English curriculum
- common exception words appropriate to Years 3–4

Grammar and Punctuation Focus

Pupils develop:

- capital letters and full stops *(retrieval and application)*
- expanded noun phrases to describe rocks, fossils, landscapes and scientific observations

- topic vocabulary linked to rocks, fossils, soils and geological processes
- prefixes and suffixes introduced within Year 3 and Year 4 learning *(e.g. re-, sub-, inter-, auto-, -ation, -ous)*
- syllabification, morphology and word-family investigation strategies
- proofreading and editing strategies to improve spelling accuracy independently
- oral rehearsal, repeated reading and retrieval opportunities to support spelling retention
- accurate application of ambitious scientific vocabulary within spoken and written outcomes

Year 4 extension opportunities

- investigate word origins and morphology within scientific vocabulary *(e.g. fossilisation, sedimentary, metamorphic)*
- apply increasingly complex prefixes and suffixes accurately within writing
- use dictionaries and word banks independently to support accuracy
- identify spelling patterns across related scientific vocabulary

Spelling Progression Links – unit specific

- apply suffixes including **-ation** and **-ly** within scientific vocabulary and explanation writing
- practise Year 3–4 statutory spelling words through investigations and reports
- apply spelling knowledge within scientific explanations and comparative writing

- conjunctions including **because, when, if, although, so and since** to extend ideas and explain scientific reasoning
- fronted adverbials linked to time, process and investigation *(e.g. Millions of years ago…, During our investigation…, After observing the samples…)*
- accurate use of commas after fronted adverbials
- paragraphs to organise ideas around different themes, investigations or rock types
- oral sentence rehearsal before recording ideas
- proofreading and editing to improve clarity and accuracy
- scientific explanation language including: **therefore, because, as a result**

Year 4 extension

- use a wider range of conjunctions to explain cause and effect *(therefore, however, although, despite)*
- use apostrophes accurately for possession and contraction
- vary sentence openings to improve cohesion and fluency
- organise writing into coherent sections linked to investigations and findings
- use precise scientific vocabulary within increasingly complex sentence structures
- improve cohesion across paragraphs through pronouns and linking language

Computing Integration

Pupils learn to:

- collect and organise data from investigations
- record findings using simple tables and charts
- identify patterns within data

NC coverage:

- data handling

Independence

Pupils move from:

- adult-guided exploration and heavily modelled scientific enquiry
- supported use of scientific vocabulary through repetition and discussion

Thinking

This unit develops:

- scientific enquiry and investigation
- observation and noticing
- classification and identifying patterns

- needing support to organise ideas, resources and investigation equipment
- using observations and evidence with adult prompting
- supported participation during collaborative learning and investigations

To:

- increasingly independent investigation and participation in practical learning
- using scientific vocabulary with greater confidence and accuracy
- selecting appropriate resources and recording findings with reduced prompting
- making observations and identifying patterns independently
- communicating findings confidently through spoken, practical and written outcomes
- participating positively within collaborative enquiry and problem-solving activities

By the end of the unit pupils can:

- recall and apply key vocabulary and sticky knowledge accurately
- identify, compare and classify rocks and soils using scientific language
- explain how fossils are formed and communicate understanding clearly
- record and present findings using practical, spoken and written outcomes
- use evidence from observations and investigations to explain ideas
- participate confidently within a purposeful final outcome
- show increased confidence, independence and reflection in learning

- comparison and explanation
- communication and reasoning
- evidence gathering and interpretation
- reflective and analytical thinking
- collaboration and independence
- curiosity and questioning

Cognitive progression

Week 1: Knowledge Launch – Pupils focus on introducing rocks, fossils and soils, establishing prior knowledge, teaching key vocabulary and engaging through artefacts, mystery objects and practical exploration.

Week 2: Knowledge Building – Pupils focus on developing understanding of different rock types and properties through explicit teaching, modelling and structured discussion.

Week 3: Application – Pupils focus on applying understanding through investigations, observation and classification activities.

Week 4: Deepening – Pupils focus on exploring fossil formation and identifying patterns through comparison, questioning and collaborative enquiry.

Week 5: Knowledge Extension – Pupils focus on investigating soils and explaining relationships between rocks, environments and land use using evidence and scientific reasoning.

Week 6: Outcome Preparation – Pupils focus on preparing final outcomes through rehearsal, refinement, explanation and presentation of learning.

3 Lead Subjects National Curriculum Links

Subject 1: Science

Core Knowledge

Pupils develop understanding of rocks, fossils and soils.

Science

Year 3

- compare and group different rocks according to appearance and physical properties
- describe how fossils are formed when things that have lived become trapped within rock
- recognise that soils are made from rocks and organic matter
- ask questions and carry out simple practical enquiries linked to rocks, fossils and soils

Year 4 extension

- compare and group materials according to whether they are solids, liquids or gases within geological contexts
- observe and explain examples of changes of state and natural processes within the environment
- interpret findings and identify patterns using increasingly independent scientific reasoning

Working Scientifically links:
Pupils classify, compare and investigate materials using observations and evidence.

Disciplinary progression

- question → predict → investigate → observe → analyse → conclude → justify → evaluate

Secure End Point

Pupils independently explain how rocks, fossils and soils provide evidence and communicate understanding using scientific vocabulary.

Subject 2: English

Year 3

- retrieve information from fiction and non-fiction texts
- communicate understanding through writing and discussion

Year 4 extension

- justify interpretations using evidence
- adapt writing for audience and purpose

Disciplinary progression

retrieve → infer → interpret → explain → justify

Area	Coverage within this unit
Reading	scientific enquiry; retrieval from fiction and non-fiction texts; evidence and interpretation; understanding scientific processes; inference; comparison of rocks, fossils and environments; shared reading of anchor texts
Writing	oral rehearsal; sentence composition; diary writing from the perspective of a scientist or explorer; explanation texts; scientific comparison writing; information texts; investigation reports; captions and labels; shared and independent writing
Spelling	application of Year 3–4 spelling rules and patterns; common exception words; topic vocabulary; prefixes and suffixes; morphology and word investigation; proofreading and editing strategies
Grammar and Punctuation	expanded noun phrases; conjunctions including **because, when, if, although, so and since**; fronted adverbials; commas after fronted adverbials; paragraphs; scientific explanation language; accurate punctuation and sentence construction
Spoken Language / Oracy	discussion; questioning; scientific enquiry; storytelling; presentation; collaborative talk; explanation and justification using evidence

Genre Coverage

Genre	Coverage
Narrative	scientist/explorer diary entries; stories linked to discovery and investigation
Explanation	how rocks are formed; how fossils develop; scientific process explanations
Information texts	rocks, fossils, soils and geological reference texts
Investigation reports	recording observations, evidence and findings
Persuasion	museum invitations, posters or campaigns encouraging visitors to explore discoveries
Discussion	debating ideas and explaining conclusions from investigations
Spoken presentation	Rock Detectives museum exhibition and presentation of findings

Subject 3: Geography

Year 3

- identify physical features and landscapes
- explore how environments differ

Year 4 extension

- explain relationships between geology and landscapes
- justify ideas using evidence

Application Subjects

Art

- explore texture, pattern, shape and natural form through observational drawing and rock-inspired artwork
- create fossils, rock prints and artwork inspired by natural materials and geological patterns
- connect learning to scientific observation and visual communication

DT

- design and create fossil models, excavation tools or geological displays through practical making activities
- practise planning, construction, testing and evaluation through purposeful design tasks
- connect learning to investigation, problem solving and scientific enquiry

Design

- design a protective container or structure linked to rocks/materials

Make

- create using materials selected for properties

Evaluate

- explain how material choices affected effectiveness

DT coverage

- structures
- material properties

Maths

- apply measuring, sorting, tallying and data handling through investigations of rocks and soils
- practise reasoning, comparison and interpreting findings logically
- connect mathematical understanding to scientific investigations and classification

Computing

- use digital tools to research rocks, fossils and geological processes and present findings clearly
- recognise that technology can support scientific enquiry and communication
- practise safe and responsible use of digital devices and online resources

RE

- explore curiosity, wonder and questions about the natural world and how people understand creation and the Earth
- practise respectful discussion, comparison and interpretation of beliefs and ideas
- connect learning to identity, values and understanding different perspectives

PDL

- reinforce emotional literacy, resilience and positive participation through collaborative investigations and problem solving
- practise communication, teamwork and reflection through practical enquiry activities
- develop resilience, confidence and independence through challenge-based learning and scientific discovery
- explore how curiosity, perseverance and collaboration support successful learning
- connect learning to self-awareness, relationships and responsible participation within communities

Music

- explore sounds, rhythm and musical patterns inspired by rocks, landscapes and natural environments
- practise pulse, beat and rhythmic patterns through percussion, body percussion and collaborative sound-making
- create and perform compositions and soundscapes representing geological processes such as earthquakes, erosion or fossil discovery
- listen and respond to music and environmental sounds to discuss mood, pattern and meaning
- connect learning to scientific enquiry, creativity and communicating ideas about the natural world

Music element	Integration
Listening and appraising	listen to sounds created by natural materials
Singing	songs linked to rocks and natural processes
Composition	create sound patterns using stones/materials
Performance	group soundscape performances
Musical vocabulary	texture, pitch, sound, rhythm

English Progression and National Curriculum Links

This curriculum follows a spiral progression model. Knowledge and skills are revisited and developed with increasing complexity. Pupils build upon prior learning through greater independence, increasingly ambitious vocabulary and more sophisticated reading and writing outcomes.

Reading

- retrieve information from scientific fiction and non-fiction texts
- identify key information and sequence scientific processes logically
- discuss vocabulary, themes and scientific concepts within texts
- make predictions and draw inferences using evidence from texts and investigations
- compare texts and identify similarities and differences between rocks, fossils and environments
- use evidence from reading to support understanding and discussion

Writing

- orally rehearse ideas before writing
- write descriptive sentences linked to rocks, fossils and investigations
- create explanation texts linked to rock formation and fossil creation
- write diary entries from the perspective of a scientist, explorer or palaeontologist
- compare different rocks and their properties through structured writing
- create information texts, investigation reports, captions and presentation outcomes

Grammar and Punctuation

- use expanded noun phrases to add detail and description
- extend ideas using conjunctions including **because, when, if, although, so and since**
- use fronted adverbials linked to time and scientific process
- organise ideas into paragraphs
- use punctuation accurately within increasingly detailed writing

Spoken Language / Oracy

- participate in discussion and collaborative investigation activities
- ask and answer questions using scientific vocabulary
- explain ideas and findings using evidence and reasoning
- present information clearly to others
- communicate understanding confidently through presentations and discussion

Mixed-age Challenge (Year 4 depth)

Reading

- identify themes and patterns across texts and investigations
- justify ideas and interpretations using evidence
- compare different viewpoints and sources of information

Writing

- write increasingly detailed explanations and investigation reports independently
- organise writing into coherent sections and paragraphs
- adapt writing for different audiences and purposes

Grammar

- use a wider range of conjunctions and sentence structures independently
- vary sentence openings and improve cohesion across writing

- apply increasingly ambitious scientific vocabulary accurately

Future Learning (English)

Pupils are preparing for future science, geography and wider curriculum units where they will:

Reading

- retrieve, infer and interpret information from increasingly complex texts
- compare viewpoints and identify themes and patterns

Writing

- write increasingly detailed explanations, reports and information texts
- justify ideas and opinions using evidence

Grammar and Punctuation

- organise writing effectively for different purposes
- apply increasingly complex sentence structures accurately

Spoken Language / Oracy

- communicate ideas confidently through discussion, debate and presentation

Curriculum Progression and National Curriculum Links

This curriculum follows a spiral progression model. Knowledge and skills are revisited and developed with increasing complexity. Pupils build upon prior learning through greater independence, increasingly ambitious vocabulary and increasingly sophisticated disciplinary understanding.

Science

Year 3

- compare and group different rocks according to appearance and physical properties
- describe how fossils are formed when things that have lived become trapped within rock
- recognise that soils are made from rocks and organic matter
- ask questions and carry out simple practical enquiries linked to rocks, fossils and soils

Year 4 extension

- compare and group materials according to whether they are solids, liquids or gases within geological contexts
- observe and explain examples of changes of state and natural processes within the environment
- interpret findings and identify patterns using increasingly independent scientific reasoning

Disciplinary progression

- observe → classify → investigate → identify patterns → explain → conclude

Geography

Pupils develop understanding of landscapes, environments and physical processes that shape the world.

Year 3

- identify physical features and landscapes
- compare different environments and locations
- use maps and visual information to identify features and patterns

Year 4 extension

- explain relationships between landscapes, geology and natural resources
- compare environmental features and explain patterns
- justify conclusions using maps and geographical evidence

Mixed-age Challenge (Year 4 depth)

- independently identify patterns across investigations
- explain relationships between scientific concepts
- justify conclusions using evidence from observations and text
- evaluate findings and communicate ideas with increasing precision
- use ambitious scientific vocabulary accurately within discussion and written outcomes

Future Learning

Pupils will apply classification, investigation and evidence skills within future science and geography units.

Application Subject Progression and National Curriculum Links

Art

Year 3

- explore texture, pattern and natural form through observational drawing and geological artwork
- use sketching, printing and natural materials to create artwork inspired by rocks and fossils
- develop understanding of shape, texture and artistic techniques

Year 4 extension

- explain how artists use texture, colour and pattern to represent natural environments
- evaluate artistic choices and techniques in greater depth
- refine artwork using increasingly controlled techniques

Disciplinary progression

explore → create → refine → evaluate

DT

Year 3

- investigate fossils, excavation tools and geological models
- generate ideas through drawing, discussion and modelling

- create and evaluate purposeful products

Year 4 extension

- explain how designs meet particular purposes and solve problems
- evaluate and improve products using specific criteria
- justify choices of materials and construction methods

Disciplinary progression

design → make → test → improve

Computing

Year 3

- use digital tools to research rocks, fossils and geological processes
- organise and communicate findings clearly
- use technology safely and responsibly

Year 4 extension

- select and justify appropriate digital tools independently
- combine and evaluate information from multiple sources
- present findings for a specific audience and purpose

Disciplinary progression

create → organise → communicate → evaluate

Maths

Year 3

- use measuring, sorting and data handling within investigations
- apply reasoning and comparison skills within practical contexts
- interpret information linked to rocks, fossils and classification

Year 4 extension

- interpret tables, charts and investigation results to identify patterns
- justify mathematical conclusions using evidence
- solve multi-step reasoning problems linked to investigations

Disciplinary progression

measure → compare → interpret → justify

RE / PDL

Year 3

- explore curiosity, wonder and questions about the natural world
- discuss cooperation, teamwork and belonging during collaborative learning

- reflect on how perseverance supports learning and discovery

Year 4 extension

- compare beliefs, ideas and perspectives about the world around us
- explain how values and choices influence actions and behaviour
- reflect on responsibility and the impact of decisions on people and environments

Disciplinary progression

recognise → discuss → reflect → explain

Music

Year 3

- explore rhythm, pulse and sound patterns linked to rocks, landscapes and Earth processes
- use voices, percussion and instruments to create and perform simple musical ideas
- listen and respond to environmental sounds and musical pieces inspired by nature

Year 4 extension

- explain how rhythm, tempo and dynamics create mood and represent geological ideas
- refine and improve compositions using increasingly structured musical patterns
- evaluate and justify musical choices using appropriate vocabulary

Disciplinary progression

explore → create → perform → refine → evaluate

Cross-curricular links

Subject	Application
English	explanation texts, investigation reports, diary writing, vocabulary development and presentation outcomes
Science	classification, investigation, observation, fossils, soils and scientific enquiry
Geography	landscapes, physical features, environments and fieldwork investigations
Art	fossil prints, observational drawing, texture work and geological artwork
DT	designing and creating fossil models, excavation tools and geological displays
Maths	measuring, sorting, tally charts, data handling and reasoning linked to investigations
PDL	resilience, teamwork, curiosity, communication and reflection through collaborative investigations
ICT	researching, presenting and communicating findings digitally
RE	curiosity, wonder, beliefs about the natural world and respectful discussion

Substantive Knowledge Sequence

Week	Substantive knowledge
Week 1	What is a rock? Introduction to rocks, fossils and soils; identifying prior knowledge and key vocabulary
Week 2	Types of rocks and their properties; comparing and grouping rocks based on appearance and characteristics
Week 3	How are rocks formed? Understanding igneous, sedimentary and metamorphic rocks

Week 4	Fossils and evidence from the past; how fossils form and what they tell us
Week 5	Soils, environments and patterns; understanding soils and how rocks influence landscapes and environments
Week 6	Rock Detectives Museum Outcome – communicating findings and explaining how rocks tell the story of Earth

National Curriculum Coverage Audit

Subject	National Curriculum Coverage within this Unit
Science	compare and group rocks according to appearance and physical properties; describe how fossils are formed; recognise that soils are made from rocks and organic matter; ask relevant questions and use observations to answer questions
Geography	describe and understand key aspects of physical geography including landscapes and environments; use maps, atlases and fieldwork skills where appropriate; interpret geographical information
English Reading	retrieval; inference; discussion; vocabulary development; scientific fiction and non-fiction texts
English Writing	explanation texts; information writing; investigation reports; diary writing; speaking and listening
Spoken Language	discussion, questioning, presentation, explanation and justification
Art	exploring texture, pattern, sketching and evaluation techniques
DT	design, make, evaluate and improve
Computing	research, communication and presentation
Maths	measurement, sorting, classification, reasoning and interpretation of data

Anchor texts

- Stone Girl, Bone Girl
- The Pebble in My Pocket

Supporting texts / recommended reads

- Rocks and Fossils
- See Inside Planet Earth
- DK geology and fossil reference texts
- poetry linked to landscapes and Earth

Reading Focus:

- scientific enquiry
- evidence and interpretation
- understanding scientific processes
- ambitious scientific vocabulary
- comparison and classification
- retrieval and inference
- identifying patterns and relationships
- questioning and investigation

Disciplinary Reading Opportunities

Pupils engage in discussion, retrieval, vocabulary exploration, prediction, sequencing and inference activities linked directly to the wider curriculum topic.

Genre Coverage

Genre	Coverage
Scientific fiction / narrative	scientist and explorer stories; discovery and investigation narratives
Information texts	rocks, fossils, soils and Earth science reference texts
Explanation texts	how rocks form; fossil formation; geological processes
Visual texts	diagrams, maps, photographs, labelled illustrations and classification charts
Poetry	poetry linked to nature, landscapes and the Earth

Non-fiction	scientific enquiry, geology and fossil texts
Investigation texts	observation records, field notes and scientific reports

Reading Progression Audit

Reading Domain	Coverage
Fluency	echo reading, repeated reading, oral storytelling
Vocabulary	explicit Tier 1–3 instruction
Retrieval	information gathering from texts and investigations
Inference	interpreting evidence
Prediction	scientific questioning
Explanation	explaining findings
Comparison	comparing rock types
Oracy	discussion and presentation

Reading Spine Links

Reading Spine Unit: Rock Detectives *(LKS2 Cycle 1)*

Reading focus areas:

- scientific enquiry
- evidence and interpretation
- understanding scientific processes
- ambitious scientific vocabulary
- comparison and classification
- questioning and investigation

Fluency approaches:

- echo reading
- paired reading
- oral storytelling
- repeated reading
- performance reading
- partner explanation and discussion

Retrieval focus:

- recalling key scientific vocabulary and concepts
- identifying and comparing rock types and properties
- recalling stages of fossil formation
- identifying patterns and relationships within investigations
- using evidence from texts and observations to justify ideas

Reading Spine Impact

The Reading Spine is intentionally designed to ensure pupils experience:

- scientific fiction, information texts and disciplinary reading

- increasingly ambitious vocabulary and scientific language structures
- retrieval, inference and evidence interpretation
- repeated reading opportunities to develop fluency
- discussion and oracy opportunities to strengthen comprehension
- diverse texts which promote curiosity, engagement and scientific thinking

Pupils move from:

reading to retrieve → reading to interpret → reading to explain → reading to justify

Pupils revisit and apply reading behaviours across the curriculum to strengthen fluency, comprehension and long-term knowledge retention.

Vocabulary Development

Key vocabulary is revisited through oral rehearsal, discussion, retrieval practice and repeated shared reading experiences.

Tiered Vocabulary:

Tier 1: rock, stone, fossil, soil, hard

Tier 2: compare, investigate, observe, classify, evidence

Tier 3: sedimentary, igneous, metamorphic, erosion, palaeontologist, fossilisation

Oracy & Fluency

- echo reading
- paired reading
- oral storytelling
- performance reading
- discussion circles
- reader's theatre
- scientific questioning and enquiry talk
- partner explanation and evidence discussion
- vocabulary rehearsal through sentence stems and structured talk
- collaborative discussion linked to observations and investigations
- presentation of findings and conclusions to an audience
- justification of ideas using evidence from texts and investigations

SEMH Reading Approach

Texts are selected to provide emotional safety, opportunities for curiosity, strong relational themes and meaningful discussion to support regulation, belonging and confidence. Scientific learning is carefully scaffolded through visual supports, explicit vocabulary teaching, repeated reading opportunities and practical investigation experiences to reduce cognitive load and support access to ambitious learning.

Reading experiences are designed to:

- build curiosity and encourage questioning through meaningful scientific enquiry
- provide opportunities for repeated reading and vocabulary rehearsal to strengthen fluency and confidence
- use visual texts, diagrams and practical experiences to support understanding
- encourage collaborative discussion and oral rehearsal before recording ideas
- strengthen comprehension through retrieval, prediction, explanation and evidence-based discussion
- provide structured opportunities for success and positive participation

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- develop confidence in communicating ideas without reducing curriculum expectations

Pupils are supported to move from:

reading to identify
→ reading to understand
→ reading to explain
→ reading to justify

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Visits and Visitors:

- museum geology workshop
- fossil hunter/palaeontologist visit
- local fieldwork investigating rocks and soils
- Forest School investigation activities

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Home Learning:

- Family discussion prompt linked to topic vocabulary, discoveries or questions about rocks, fossils and the natural world
- Simple creative or practical activity to reinforce retrieval *(e.g. rock hunt, fossil drawing, classification activity, labelled diagram or model making)*
- Optional object, photograph, sketch or spoken contribution to bring back into class and share with others
- Short reading, research, talk or observation task to support curiosity, confidence and home-school connection
- Observation challenge linked to local environments *(e.g. identifying rocks, surfaces, patterns or natural materials in everyday places)*
- Vocabulary retrieval activity using key scientific language from the unit

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Home Reading Opportunities

Families are encouraged to revisit key texts together, practise repeated reading and discuss scientific themes, vocabulary and ideas. Opportunities for discussion should support curiosity, questioning and understanding of how rocks, fossils and the Earth help us understand the world around us.

Suggested opportunities include:

- revisiting anchor texts and discussing key scientific ideas and discoveries
- practising repeated reading to develop fluency, confidence and understanding
- discussing ambitious vocabulary linked to rocks, fossils and scientific enquiry
- identifying and talking about rocks, natural materials and landscapes in everyday environments
- asking and answering questions linked to investigations and observations
- encouraging prediction, explanation and reasoning during shared reading experiences
- discussing how evidence helps scientists understand the world

Discussion prompts:

- *What do you notice about this rock or fossil?*
- *How do you think this formed?*
- *What evidence helps us know this?*
- *How are these rocks similar or different?*
- *What surprised you during your learning this week?*

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Assessment opportunities:

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Assessment information is used to identify barriers, inform adaptive teaching and ensure pupils receive timely support and challenge.

Week	Assessment focus	Evidence
Week 1	prior knowledge and scientific vocabulary	discussion and observation
Week 2	understanding of rock types and properties; accurate use of new vocabulary	oral responses, sorting activities and practical investigation
Week 3	understanding of rock formation and ability to classify findings	written work, practical activities and discussion
Week 4	understanding of fossil formation and use of scientific explanations	written outcomes, questioning and practical evidence
Week 5	identifying patterns and relationships between rocks, soils and environments	discussion, investigation outcomes and recorded findings
Week 6	final outcome and communication of scientific understanding	presentation, Rock Detectives exhibition and completed work

Assessment Checkpoints

Teachers monitor whether pupils can:

Knowledge

- identify key features of Stone Age, Bronze Age and Iron Age Britain
- recall key vocabulary linked to chronology, settlements and civilisation
- explain how life changed over time

Disciplinary Thinking

- use evidence and artefacts to answer historical questions
- compare similarities and differences between periods
- identify cause and consequence within historical change

Application

- communicate understanding through spoken, practical and written outcomes
- justify ideas using historical evidence and vocabulary
- apply learning independently within the final outcome

Leaders Monitor Impact Through

- pupil voice discussions
- work scrutiny
- retrieval quizzes
- scientific vocabulary use
- observation of enquiry skills
- assessment information
- final presentations
- Reading Spine progression reviews

Links to Whole-School Policies

This unit should be delivered in line with:

- Curriculum Policy
- Teaching and Learning Policy
- Reading Policy / Reading Spine
- Behaviour and Relationships Policy
- SEND Policy
- Assessment Policy
- Equality and Accessibility Policy
- PSHE Policy
- Safeguarding Policy
- Handwriting and Recording Development Policy

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Appendix 1: Year 3-4 Spelling Progression Map

Term	Focus	Example patterns	Linked units
Autumn 1	Prefixes	dis-, mis-, in-, il-, im-, ir-, re-	Stone Age
Autumn 2	Suffixes	-ation, -ly	Rock Detectives
Autumn 2	Statutory words	accident, actual, address, answer	Winter Wishes
Spring 1	Possessive apostrophes	plural possession	Ancient Egypt
Spring 1	Prefixes and root words	sub-, inter-, anti-, super-	Light and Shadows
Spring 2	Homophones	scene/seen, weather/whether	Easter Journeys
Summer 1	Suffix rules	-ous	Tremors
Summer 2	Statutory word review	favourite, grammar, guide, interest, knowledge	Passport to Europe

Appendix 2: Year 3-4 Grammar Progression Map

Unit	Main grammar focus
Stone Age	expanded noun phrases; chronological language
Rock Detectives	conjunctions; explanation language
Winter Wishes	descriptive language; figurative language
Ancient Egypt	fronted adverbials; paragraph organisation
Light and Shadows	subordinate clauses; scientific explanation
Easter Journeys	comparative language; reflection
Tremors	explanation and reasoning language
Healthy Me	persuasive and evaluative language
Passport to Europe	paragraph cohesion; comparative language

Appendix 3: Appendix: English Coverage and Progression Overview

Area	Coverage	Where evidenced
Year 3–4 statutory spelling words	✓	Spelling Appendix + unit retrieval
Prefixes/suffixes	✓	Unit spelling sections
Homophones	✓	Spelling Appendix
Word families/morphology	✓	Unit spelling progression
Expanded noun phrases	✓	Grammar Appendix + unit application
Fronted adverbials	✓	Unit grammar sections
Direct speech	✓	Narrative units
Present perfect tense	✓	Unit progression
Paragraphs	✓	Writing outcomes
Editing/proofreading	✓	Writing process sections
Handwriting	✓	Handwriting curriculum

storyybrook

Appendix 4: Storyybrook Implementation Notes

Adults say

Retrieval

- "What do you already remember?"
- "Can you tell me something from last lesson?"

Vocabulary

- "Can you use that word in a sentence?"
- "What does that word mean?"

Reasoning

- "What evidence supports your thinking?"
- "What makes you think that?"

Reflection

- "Has your thinking changed?"

Adults do

□ regulate and prepare for learning
□ explicitly model new learning
□ pre-teach vocabulary
□ use visuals and scaffolds
□ chunk instructions
□ provide oral rehearsal opportunities
□ revisit prior learning through retrieval
□ gradually remove support to build independence

Adults look for

Knowledge

□ recall of sticky knowledge
□ accurate vocabulary use
□ application of prior learning

SEMH

□ engagement
□ regulation
□ confidence
□ participation

Independence

□ reduced adult support
□ ownership of learning
□ increasing resilience