Science Adaptation Map

Universal Design for Learning (UDL)

Learning is presented in small, manageable steps following WRS sequence to reduce cognitive load.

Concepts are explained through **diagrams, models, videos, practical demonstrations, dual coding**, and child-friendly texts.

Flashback 4 and lesson-start retrieval quizzes revisit key learning from the current and previous units to activate prior knowledge and strengthen long-term memory.

Scaffolds such as sentence stems, vocabulary mats and structured enquiry templates support independence and clarity.

Enquiry-led science, hands-on investigations, outdoor learning and enrichment opportunities (e.g., Mad Science, competitions, fieldwork) promote curiosity and motivation.

Flexible Assessment

Pupils demonstrate understanding through **written explanations, discussions, diagrams, models, graphs, digital submissions**, and practical investigations.

Retrieval tasks (Flashback 4 and quizzes) allow pupils to show understanding in short, accessible formats. These also help to build confidence and reduce anxiety by giving frequent, achievable retrieval opportunities

Pupils who have not met the key learning are noted on weekly planning, ensuring responsive teaching and improved retention.

Learning Environment

Arrange seating to support **focus, collaboration and accessibility**, following HPL principles (e.g., mixed-attainment grouping when appropriate, strategic pairing, promoting independence and self-belief).

Use **Kagan cooperative structures** (e.g., Think-Pair-Share, Rally Robin, Numbered Heads Together) to promote active participation, discussion of scientific ideas, and shared problem-solving.

Minimise distractions through clear desk layouts, organised equipment trays, and seating arrangements that reduce noise and visual overstimulation.

Provide **quiet spaces** for independent tasks, reflection, or assessments where needed.

Ensure scientific materials are **clearly labelled and easily accessible**, supporting independence and reducing transition time during investigations.

Displays are **purposeful, uncluttered and supportive**, showing key vocabulary, enquiry steps, diagrams, and White Rose small-step visuals. They reinforce learning rather than distract from it.

Offer **brain breaks or movement opportunities**, particularly after intense cognitive tasks such as long investigations or extended recording.

Use non-reflective boards to reduce glare, ensure good sightlines, and provide visual clarity during modelled explanations.

Provide aids such as **ear defenders**, reading rulers, or task planners for pupils who need support regulating sensory input or maintaining concentration.

Maintain a calm, safe, and organised environment during practical science, with routines that support the HPL focus on self-regulation, risk awareness, and collaborative learning.

Resources

Provide access to a **wide range of scientific equipment** (e.g., models, practical kits, measuring tools, magnifiers, circuits, fossils, rocks) to enable hands-on learning for all pupils.

Offer **adapted or alternative resources** where needed — e.g., larger tools, simplified equipment, digital measuring tools, or ICT support for pupils with mobility or fine motor difficulties.

Use **visual aids and dual-coded materials** such as labelled diagrams, vocabulary cards, life cycle charts, circuit symbols, and step-by-step procedural guides.

Ensure pupils access learning through **multiple formats**, including Seesaw resources, printed scaffolds, videos, interactive simulations, and concrete scientific artefacts.

Make use of White Rose Science's **small-step slides, visuals and enquiry templates** to support clarity and consistency.

Provide additional structured resources (sentence stems, investigation templates, vocabulary mats) to reduce cognitive load and support independence.

Use outdoor spaces and real-world contexts (school grounds, fieldwork equipment, nature study resources) to enhance scientific enquiry and observation.

Unfamiliar Learning Environments

Pupils are prepared adequately for visits.
Social story for the trip or visit.
Images shared of venue or person.
Itinerary for the day shared with pupil and parents prior to visit.

Multi-Sensory Approaches/metacognition

Present new scientific ideas through **varied media**: diagrams, models, concept maps, science stories, simulations, role-play, and videos (with subtitles/audio description) to engage multiple senses.

Use **knowledge organisers** to help pupils organise key vocabulary, facts, diagrams, and concepts, supporting independent study, retrieval, and reflection.

Encourage pupils to **connect and structure knowledge** using science mind maps, labelled diagrams, and digital or audio recording tools.

Offer **alternatives to written recording**, including scribed notes, photographs of practical work, audio/video recordings, or voice explanations.

Support **observation and explanation** in investigations and fieldwork with audio recorders, structured templates, and tactile materials.

Provide **visual prompts, shared signals, and routines** for practical work to aid organisation, independence, and confidence.

Encourage pupils to reflect on their learning and understanding through guided discussion, retrieval tasks, self-assessment, and knowledge organiser reference, building metacognitive awareness.

Encouraging Self-Regulation and Metacognition

PACE model

Emotional Coaching

Teach students to plan, monitor, and evaluate their own communication.

Use self-assessment or peer feedback to build awareness of effective strategies.

Flexible Grouping and Peer Support

Use pair or small-group activities to encourage peer learning.

Rotate groups so students work with different classmates.

Encourage cooperative learning, mentoring, and peer feedback.

High Performer Learning Grids

Communication/Oracy

Teach and model **scientific vocabulary**, supported by dual-coded visuals and communication posters.

Model scientific responses and reasoning to demonstrate clear explanation, prediction, and justification.

Use structured talk opportunities to develop pupils' own explanations.

Embed **Kagan cooperative structures** to promote discussion and peer explanation.

Encourage effective **group communication** during investigations through clear roles and shared tasks.

Provide **sentence stems and question prompts** to support accurate scientific talk.

Use retrieval and enquiry questions to give pupils regular opportunities to articulate and connect ideas.

Cultural and Emotional Sensitivity

Respect diverse backgrounds and learning needs.

Build positive relationships and a supportive classroom climate positive regard

Recognise effort, celebrate success house points, and encourage resilience Commando Joes

Assistive Technology

SEESAW used to record in child's preferred way of learning

Text-to-speech, speech-to-text, and reading software.

Digital graphic organisers and mind-mapping tools.

Visual timers, calculators, and interactive learning apps.

Create compositions directly on screen e.g. using programs
Such as Cubase, Dance ejay and Sibelius Compass.

Digital image technologies, both still and moving, are useful
Tools for teaching English.

ICT can be used to offer alternatives to writing as a way of
responding to text, eg through creating an electronic
presentation, perhaps with images, as a response to text.

Subtitled or audio-described science videos

Interactive science apps with adjustable text size and contrast

Voice recorders for capturing observations during investigations

Tablets or phones for taking photos and videos of experiments

Data loggers for measuring temperature, light and sound.

Digital thermometers, light meters and timers.

3D models or augmented reality apps to explore structures (e.g. cells, planets).

Visual timetables showing steps of an investigation.

Digital checklists for experiment procedures.