CREATE Federation

Taddington, Peak Dale and Dove Holes Primary School

Science Assessment Rationale

Integrating Academic Mastery with Attitudes to Learning (A2L)

Curriculum Philosophy: The "Distilled" Approach

Our Science curriculum is designed to develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry, and Physics. To ensure effective assessment, the vast National Curriculum is distilled into **Key Knowledge and Enquiry Endpoints**—the "crucial knowledge" required to understand the uses and implications of science today and for the future. These are underpinned by detailed Learning Overviews and Knowledge Organisers provided at the start of each block. Parents may wish to look at full curriculum overviews on the school website to understand the entirety of the disciplinary and substantive knowledge taught.

The A2L "Litmus Test"

We utilise the Attitude to Learning (A2L) criteria (Levels 1-10) as a "litmus test" for achievement. High A2L scores indicate a child is effectively acquiring and connecting significant scientific concepts. Conversely, an **A2L Barrier** identifies a high potential for gaps to form in scientific inquiry skills or the retention of substantive knowledge.

Integrated Science Progress & A2L Barrier Map

Level / Year	Assessment Endpoints	Behaviour Barrier	Active Voice Barrier	Ownership Barrier	Fixed Mindset Barrier	Safety Net Barrier
L1-4 (EYFS)	• Understand what plants/animals need to grow. • Observe/talk about seasonal changes. • Explore/identify properties of materials.	Impulsivity stops focus needed to observe slow changes in nature.	Lack of interactive talk prevents describing what they see or feel.	Lack of confidence stops exploration of new materials or textures.	Failure to ask "Why?" or "How?" limits curiosity.	Quitting when a plant doesn't grow stops discovery.
L5-6 (Y1-Y2)	• Classify materials (Uses/Properties). • Name trees (deciduous/evergreen). • Perform simple tests and use equipment safely.	Distractions lead to missing key safety or step-by-step test instructions.	Reminders needed to use terms like *opaque*, *habitat*, or *survive*.	Disorganised recording of results leads to fragmented narratives.	Inability to adapt when a simple test gives an unexpected result.	Waiting for adult scaffolds prevents independent exploration.
L7-8 (Y3-Y4)	• Explain plant parts and human digestion. • Track water cycle & classify rocks/soils. • Set up fair tests and record data in tables.	Group distractions disrupt the precision needed for measuring and recording.	Failing to initiate dialogue prevents the synthesising of abstract concepts.	Only "mostly equipped" prevents setting up complex investigation sets.	Ignoring anomalies in data prevents mastering the enquiry process.	Relying on peers to record data stops independent enquiry.
L9-10 (Y5-Y6)	• Detail Earth/Moon movement in Space. • Evaluate evolution, inheritance & circuits. • Use models to predict outcomes/variable impact.	Passive participation stops the critical analysis of variables in a fair test.	Failing to explain the *implications* of a result limits "Expert" status.	Lack of precision in complex diagrams leads to low-quality communication.	Avoiding difficult physics concepts (e.g. *refraction* or *gravity*).	Waiting for resources stops self-governing independent study.

Phase-Specific Support at Home

Phase 1: Pre-school & Reception (Foundations of Discovery)

- **Behaviour:** Practice "Stillness" while watching an insect or bird for 2 minutes.
- **Active Voice:** Use "I notice..." and "I wonder..." prompts while on a nature walk.
- **Ownership:** Let them be the "Equipment Manager" for simple home planting or baking.
- **Fixed Mindset:** If a project fails, ask: "What can we try differently next time?"
- **Safety Net:** Encourage them to tidy their own "lab" space to build physical independence.

Phase 2: Year 1 & Year 2 (The Young Explorer)

- **Behaviour:** Practice "Precision" when following a recipe or mixing items for play.
- **Active Voice:** Use the "Material Hunt": Find household items that are *transparent* or *waterproof*.
- **Ownership:** Help them maintain a simple weather or rainfall chart on the fridge for one week.
- **Fixed Mindset:** Play "Scientific Detective" to find answers in books if they get a fact wrong.
- **Safety Net:** Set a 5-minute independent hunt for three different types of leaves or rocks.

Phase 3: Year 3 & Year 4 (The Analytical Investigator)

- **Behaviour:** Discuss "Safety and Respect" for scientific equipment like magnets or battery packs.
- **Active Voice:** Debate at dinner: "Which is more useful: a magnet or a mirror? Give reasons."
- **Ownership:** Quiz them on "Key Words" from their Science Knowledge Organiser every week.
- **Fixed Mindset:** Celebrate "Failed Experiments"—discussing what the failure *proves* about the test.
- **Safety Net:** Have them find one fact on a website (e.g. BBC Bitesize) before you provide the answer.

Phase 4: Year 5 & Year 6 (The Critical Scientist)

- **Behaviour:** Model "Critical Listening" when discussing scientific news like space missions.
- **Active Voice:** Ask them to explain concepts like *orbit* or *friction* using three key terms.
- **Ownership:** Have them manage their own project deadlines and check they have all resources ready.
- **Fixed Mindset:** Challenge them to find a primary source (an observation) and a secondary source (a book).
- **Safety Net:** Encourage "Self-Governing" research for 1-minute talks on topics like Evolution.

Note: Identification of an A2L barrier suggests potential gaps in scientific knowledge or enquiry skills. Learning overviews are available for detailed coverage of the Biology, Chemistry, and Physics domains.