Subject

Year 7: Working Scientifically

Assessment Opportunities	Literacy/Reading opportunities	CEIAG Links
• Regular low stakes quizzing of AO1- self marked. • Extended writing is teacher marked with personalised feedback provided. • End of unit assessment self & teacher marked with collective feedback provided.	• Write a method for 'Exploring the effect of different temperatures on the rate at which sugar dissolves in water' • Reciprocal reading **Key vocab is highlighted in the SOL**	**Spotlight on careers: Research Scientist** Other careers: • Forensic scientist • Science educator • Ecologist • Doctor

Curriculum vision:

"Our aim is to deliver a curriculum that is inclusive, relevant and progressive for all learners."

KS3 Working Scientifically

Big Picture:

This unit aims to develop students' understanding of scientific principles and methodologies. They will learn how to conduct experiments, analyse data, and draw conclusions based on evidence. The unit will emphasize scientific thinking, problem-solving, and the importance of scientific inquiry.

Lesson sequence	**Learning outcomes / Key knowledge (including NC KS3)** SEND scaffold	**Skills development:** Reading / writing / data / numeracy / graph work	**Spec / book reference**
1. **TBAT:** Identify Hazard symbols	• Students will be able to identify hazard in a laboratory setting • Students will be able to identify hazard symbols ○ Use visual aids like diagrams and videos. ○ Provide knowledge organisers / key vocab with definitions	• Identify hazard symbols	**Spec** **NC pos** **here** **Boost book 3**
2. **TBAT:** Plan an investigation	• Students will be able to plan and design a scientific investigation. • Students will be able to Identify variables and the importance of control variables. ○ Offer step-by-step guides for planning investigations. ○ Provide templates for writing hypotheses and plans.	• Formulating hypotheses and predictions. • Planning steps to conduct a fair test.	**Spec** **NC pos** **here** **pg7** **Boost book 3 pg 50**
3. **TBAT:** Conduct an experiment	• Students will be able to follow a scientific method to conduct experiments. • Students will be able to Use equipment and materials safely and accurately. ○ Ensure safety instructions are clear and understood. ○ Use buddy systems for practical work.	• Performing experiments according to plan. • Observing and recording data systematically.	**Spec** **NC pos** **here** **Boost book 3**
4. **TBAT:** Record data	• Students will be able to record data accurately using tables, charts, and graphs. • Students will be able to understand the importance of precise measurements. ○ Provide pre-made templates for data recording. ○ Use technology for creating graphs	• Creating tables and charts. • Using graphs to represent data visually.	**Spec** **NC pos** **here** **Boost book 3**

5. **TBAT:** Analyse data and make up conclusions	• Students will be able to analyse data to identify patterns and relationships. • Students will be able to distinguish between correlation and causation • Draw evidence-based conclusions from data. ○ Use visual aids to illustrate data analysis. ○ Simplify statistical concepts with concrete examples.	• Interpreting graphs and charts. • Using statistical methods to analyse data. • Writing conclusions that reflect data.	**Spec NC pos here** **Boost book 3**
6. **TBAT:** Write a method for 'Exploring the effect of different temperatures on the rate at which sugar dissolves in water'	• Students will be able to write a hypothesis, method, variables, hazards, conclusion for the investigation 'Exploring the effect of different temperatures on the rate at which sugar dissolves in water' ○ Use images & dual coding ○ Provide scaffolded method materials	• **ASTN Writing** • Writing hypothesis, method, variables, hazards and conclusions for the investigation	**Spec NC pos here pg7** **Boost book 3**
7. **TBAT:** Engage with a scientific article	• Students will be able to identify and summarize the main objectives and conclusions of a scientific article, demonstrating an understanding of the structure and content typical of scientific papers. • Identify any words not understood and write a glossary ○ Use images with dual coding ○ Read with reading rulers with class	• **Reciprocal reading** • Identify unusual words • Summarise the article in two sentences	**Spec NC pos here pg7** **Boost book 3**

Vocab	**Links to previous learning / interleaving**	**Assessment & homework**

L3 Vocab Method Observation Measurement Quantitative Data Qualitative Data Scale Axis Anomalous Trend Correlation Limitation	**L2 Vocab** Experiment Equipment Safety Data Table Graph Pattern Result Analyse Evidence Reliable Valid	**Command words focus** Label Plot Measure Predict Identify Estimate Observe Justify Evaluate Compare construct	**KS2 links for practical's** ○ Plants ○ Rocks ○ Light ○ Living things and their habitats ○ Materials	• Regular low stakes quizzing of AO1 • In class assessment of AO1, AO2, AO3 using past paper questions where appropriate • Written word is assessed with personalised feedback provided. • End of unit assessment marked with collective feedback provided. Homework is set weekly and is outlined in the half-termly homework booklet. Homework includes • online quizzes on Carousel • Learning of content for in-class quizzes • Completion of written questions.
Independent learning BBC Bitesize KS3 – Working Scientifically Working scientifically - KS3 Biology - BBC Bitesize				**Misconceptions / common errors** ○ Experiments always provide clear and straightforward results. ○ All variables can be controlled perfectly. ○ A hypothesis is a wild guess. ○ Results will always match predictions. ○ Experiments that don't work are failures.