CITY ACADEMY WHITEHAWK

Rationale for shared teacher guidance in Science
This a guide to how we teach Science at CAW, in this document you will find the process, strategies, documents and links to curriculum.

The Leadership of Science	
Headteacher	Subject Leader
Thomas McMorrin	Danielle Delaney

When Medium Term Planning for science consider		
Stimuli/Resources	Websites/Staff Server	Dates/Events
Science skills progression (new AAT documents) for the term and the end point documents for skill and knowledge. Science resources are stored in the Science cupboard. The door will always be locked. You can get a key from Danielle or Thomas. Allow yourself enough time to resource the lesson and order anything new you may need. Science books from last year – see Danielle or Thomas if you would like to look at science books from the previous year to support with presentation or feedback. Blooms Taxonomy questions will support with questioning for: assessing, prompting discussions and FBM. Pixl and Hamilton resources.	Most of these resources can be found in: This PC › Staff Shared (T:) › Curriculum 2023-24 › Science › In the above location you will find: • Previous CPD sessions including examples of pupils' work, displays and feedback. • Printable knowledge organisers that link to each of your topics.  Science Knowledge Organiser Everyday materials (Term 1) Year 1 Our learning In our science lessons this term we will be learning about everyday materials. This is part of our chemistry work in science. We will learn about how materials are similar and different. We will group similar materials together. Information There are lots of different materials that we use every day. These include wood, plastic, glass, metal, water and rock. Materials have different properties. For example they can be hard or soft, rough or smooth. Some materials can be similar and some materials can be different. Materials can be grouped in different ways. Vocabulary Hard - Materials that are harder to scratch or break. Soft - A material that is easier to bend or shape. Bendy - something soft that is flexible Stiff - Something firm that does not bend easily. Opaque - A material you cannot see through. Transparent - A material you can see through. As a scientist I will ... • Use observations (look carefully) to answer questions. • Compare and group everyday materials. • Answer questions in different ways. wooden planks and metal coins are stiff A window is made of glass. Glass is transparent elastic bands are stretchy A table made from wood • Pixl and Hamilton resources Useful websites: https://www.stem.org.uk/primary-science It has a selection of resources for each unit/year. https://www.hamilton-trust.org.uk/science/ . Has planned units to support with your teaching and some great resources. https://auth.pixl.org.uk/login/?ReturnTo=%2Fmembers%2F1 Pixl has lots of resources to support with your planning including knowledge mats and key vocabulary cards.	Monitoring of books/planning half termly. Refresh Science displays throughout the year in line with the display policy.

SEND support

When medium term planning for Science, teachers consider how to best support all children regardless of attainment. This is done through carefully thought-out task design and appropriate scaffolds in challenges.

When looking through a SEND child's book in science, the additional scaffold and support should be clearly seen.

In line with our teaching and learning policy, our most effective way to support children with SEND will be through an effective first wave of teaching. For lower attaining SEND learners, we support them by ensuring tasks are pitched at an appropriate level and resources are readily available to provide the most appropriate entry point to work. In books, when SEND support is appropriate, this may be seen as:

- Scribing
- Transcribing
- Sentence starters
- Use of word banks and visual aids
- Increased level of adult support (indicated as M- medium level support/ H- high level of support)

The statutory inclusion statement of the national curriculum requires schools to modify the programmes of study to give all pupils relevant and appropriately challenging work at each key stage. If a pupil is identified as working below the standard of national curriculum and not engaged in subject-specific study, the engagement model will be used to set attainment targets. The attainment targets will specify the achievements and progress of that pupil in the 5 areas of engagement.

The engagement model has 5 areas of engagement, these are:

- exploration
- realisation
- anticipation
- persistence
- initiation

Engagement will be assessed using the following criteria:

I – Initial reaction or response to activity e.g., looking, listening or acknowledging.

S- Sustained reaction or response to activity

D- developing knowledge. This would be demonstrated through participation in activity/ conversations.

A- Absent

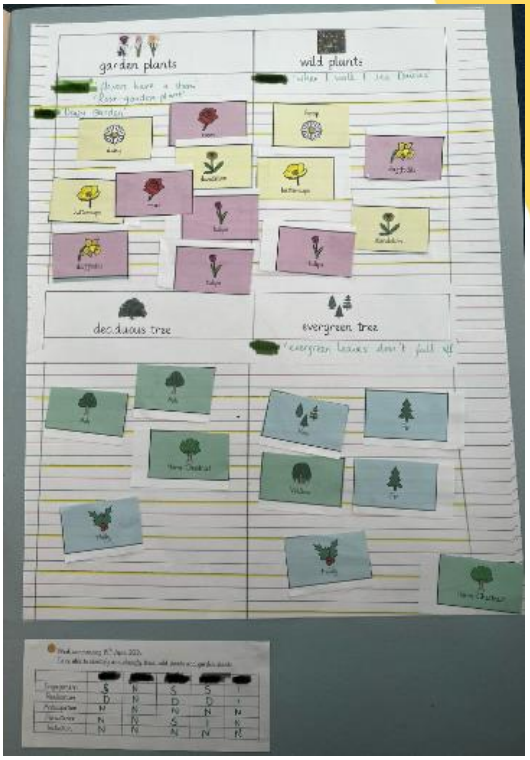
N- No engagement

This will be facilitated in small groups and focused on the current learning topics within the year group. This will be recorded in a floor book (examples below):

CITY ACADEMY WHITEHAWK

- Week commencing 8th April 2024
  To be able to label the basic structure of flowering plants and trees.

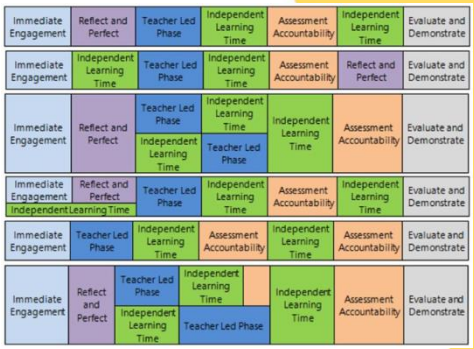
	Name 1	Name 2	Name 3	Name 4	Name 5
Engagement					
Realisation					
Anticipation					
Persistence					
Initiation					



CITY ACADEMY WHITEHAWK

Most effective lessons look like…

Lesson Structure

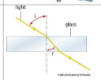


Science lessons should be varied and engaging. Each lesson should give the opportunity to build on prior learning while having a real emphasis on scientific vocabulary and questioning.

Every lesson should provide a chance to introduce or revise key scientific vocabulary. This should be in the form of the vocabulary builder.

Every lesson should provide an opportunity for discussion, using questions at the start of the lesson is a great way of creating a dialog with your class about the topic.

Planning must cover the learning objectives stated in the AAT progression and lessons must also include the relevant knowledge end points, vocabulary and concepts covered in the thinking square and concept questions. Planning should be clear and indicate when and where this will be covered, in line with the school planning policy. Using the subject medium plan format is recommended to ensure all aspects of the AAT curriculum are covered.

Word	Definition	Related Words	In a sentence	Image
light source	any device serving as a source of illumination	Illumination Lighting up	he stopped the car and turned off the lights	
refraction	Refraction is the change in direction of a wave, caused by the change in the wave's speed.	Turning, twisting, detour	Stepping back, the student could see the refraction of light as it moved through the beaker.	
Reflection	When light from an object is reflected by a surface, it changes direction. It bounces off the surface at the same angle as it hits it.	Changing direction,	The man stared at the reflection in the water of the mountain that was in front of him.	
spectrum	Colours of the rainbow arranged in the order of their wavelengths and seen when white light passes through a prism and falls on a surface	Range, rainbow, colour, breadth	t was a clear night, the stars shone brightly over the river, and the city lights were reflected in a spectrum of coloured points in the water.	

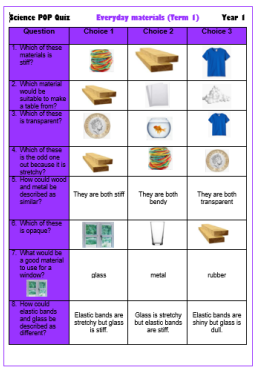
Year 1 – Summer 2 - Science – Biology – How can you help a plant to grow?

	Learning Objective *(Direct from Progression Doc)*	Recap/Recall *What's previously taught?*	Linked skill *(Dir. Reference to Skills End Point & Progression Doc)*	Knowledge *(Dir. Reference to End Points)*	Practice *(what's the tangible outcome for the lesson?)*	Pop Quiz Question focus	Thinking Square Question focus
Week 1	LO: Observe cause and consequence over time in a basic scientific process.	Name of garden plants and wild plants Structures of a plant			Cold task. Thinking square Introduction		
Week 2	LO: Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	That a plant is a living thing that grows in the earth with leaves and roots		That plants need water and light	What plants need	3. What does a seed contain? 4. What is the process by which seeds begin to grow into plants called?	2. How are seeds and bulbs similar
Week 3	LO: Performing simple tests Using their observations and ideas to suggest answers to questions.	Working scientifically	Say what might happen in a simple test. Follow instructions to complete a simple test.	That plants can grow from seeds and bulbs	Prediction, plant seeds	7. What does temperature measure?	1. Why do scientists make predictions?
Week 4	LO: Observe and describe how seeds and bulbs grow into mature plants	What plants need and why do we need plants +OCOW slide – plants take in 'bad air' CO2 and give out 'good air' oxygen	Make observations during a simple test	The terms: growth, germinate, light, temperature, life cycle, seed and bulb That plants grow and get bigger over time	Seed diary Label Plant life cycle	1. Which of these pictures shows a bulb 2. What are the stages of a plant's life known as? 8. Where does a bulb rest during winter?	3. What are the stages in the life cycle of a plant?

Cold tasks and hot tasks

Children will complete a blue 'cold' task at the start of the unit and a yellow 'hot' task at the end of the unit.

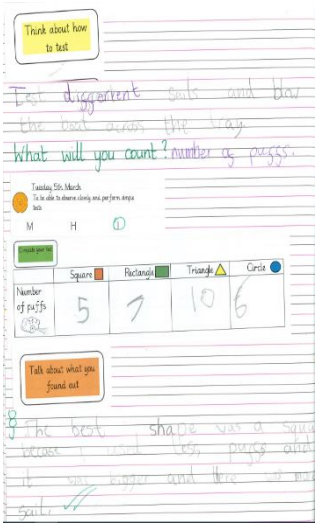
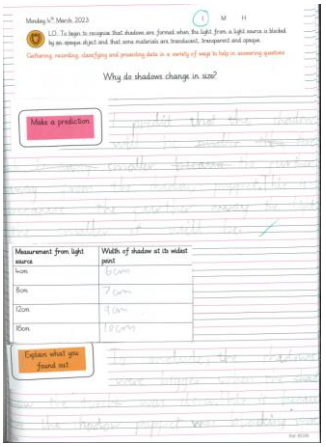
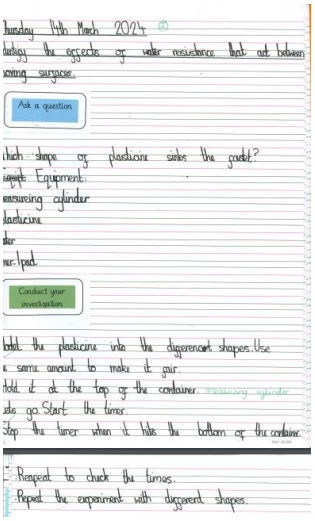
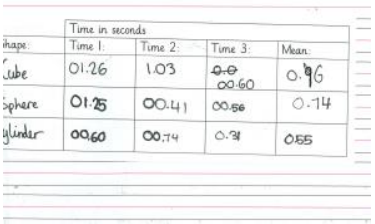
- Teachers should consider what areas the children have done well in and what areas children have been unsuccessful. Areas where children have been unsuccessful should be revisited in recap slides at the start of the following lessons.
- If children are successful within the Cold Task, teachers should explore different ways to extend and challenge the children throughout the unit.
- Cold Tasks should be printed on blue paper and Hot Tasks should be printed on yellow paper; both should be stuck into exercise books, so a clear sequence is evident (cold task, sequence of learning, hot task). If children are absent, stick the sheet in and write absent at the top. Encourage children to complete the Yellow pop quiz once they return to school.

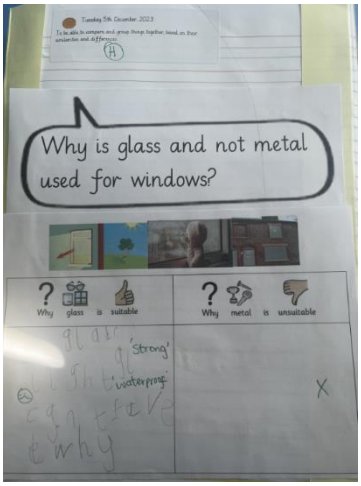


Science POP Quiz — Everyday materials (Term 1) — Year 4

Question	Choice 1	Choice 2	Choice 3
1. Which of these materials is soft?			
2. Which material would be suitable to make a table from?			
3. Which of these is transparent?			
4. Which of these is the odd one out because it is stretchy?			
5. How could wood and metal be described as similar?	They are both stiff	They are both bendy	They are both transparent
6. Which of these is opaque?			
7. What would be a good material to use for a window?	glass	metal	rubber
8. How could elastic bands and glass be described as different?	Elastic bands are stretchy but glass is stiff.	Glass is stretchy but elastic bands are stiff.	Elastic bands are shiny but glass is dull.

CITY ACADEMY WHITEHAWK

Pupil outcomes	
Intended Learning	Exercise Books/Demonstrable Outcomes
Take Learning Objectives straight from the AAT skills progression. Each objective should be altered to specify the learning outcome and be understood by the learner. Not all science units have objectives that match the number of weeks in a term. It is still expected that you teach science weekly so think carefully about how you can develop and reinforce key skills or knowledge across the topic and merge knowledge and skills to ensure content is covered in shorter terms. Working scientifically objectives must be taught discretely while linking them to the current topic. Working scientifically will be dispersed among topics while a constant approach to vocabulary will be expected. Working scientifically will also be taught as a focused topic in every year group. Pupils are expected to have multiple opportunities across the year to develop Working Scientifically skills.	The AAT curriculum progression includes working scientifically language relevant to each year group and key stage. This complexity of this language increases throughout the key stages. The working scientifically language should be used and the correct headings used when completing observations and investigations. Examples of working scientifically: Year 1   Year 3  Year 6  

	A piece of work will be evident for each Science lesson taught. For example, if there are six weeks in a term, there should be six pieces of work in each child's book at the end of the term. If children are absent for any reason, make this clear in the book by making a note. Evidence can be in the form of written work (independent/paired) or photos of lesson/outcome and an explanation of what they learnt in the lesson/planned exploratory lessons indicated on medium term p. Every piece of work needs the LO, date and HMI clearly displayed. Examples:  

CITY ACADEMY WHITEHAWK

Feedback
Please refer to our Feedback and Marking Policy in line with this guidance

All pre and post assessments will be marked and scored. Pre assessments will be used to inform planning of the associated unit and allow teachers to plan for existing misconceptions.

Pupils' success and areas for development against their Learning Objective will be acknowledged by school staff. This will take the form of written or verbal feedback as per the general principles of the feedback and marking policy.

Pupils will be afforded the opportunity to respond to their feedback using their 'purple pen', in line with the Handwriting and Presentation Policy. Next steps may require editing of previous learning, additional work to be completed or responding to questions designed to extend. Children must be given adequate time and opportunity to respond to the feedback.

Spelling mistakes need to be addressed as they would be in an English book for lessons with written outcomes.

Good practice with feedback in Science should fulfil one of the following situations:

- Clarifying & challenging misconceptions.
- Scaffolding responses to misconceptions.
- Extending learning where the pupil has shown clear understanding.
- Opportunities to reason scientifically.
- Opportunities to explain scientific concepts.

Use Blooms Taxonomy to support in giving differentiated FBM: