2021-2022

A Guide to Science at Carlinghow Academy

This document outlines the expectations of how we teach Science at Carlinghow Academy. It includes the key strategies we use and what Science looks like in the school.

This guide includes information about the following:
- ▶ Science intent statement
- ▶ Using Developing Experts
- ▶ Unit Knowledge Organisers
- ▶ Year Group Overview Sheets
- ▶ Displays/Working Walls and Rocket Words
- ▶ Celebrating Science
- ▶ Assessment
- ▶ Target Tracker and Interventions
- ▶ Objectives
- ▶ Presentation
- ▶ Photographs in practical activities
- ▶ Topics in books
- ▶ Cross curricular work
- ▶ Marking
- ▶ Resources
- ▶ Home learning and Homework
- ▶ CPD

Science Intent Statement

Why our Science curriculum looks like this:
At Carlinghow Adademy we want our children to be naturally curious about the world around them. Our curriculum follows Developing Experts to ensure full coverage of the National Curriculum and to foster a sense of wonder about natural phenomena. We are committed to providing a stimulating, engaging and challenging learning environment. Throughout our school, children are encouraged to develop and use a range of scientific skills including; questioning, researching and observing for ourselves. We promote and celebrate these skills. We want our children to have a broad vocabulary. Scientific language is to be taught and built upon as topics are revisited in different year groups and across key stages. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability with a broad and balanced science curriculum.

Developing Experts

Available https://developingexperts.com/ you will have an individual login for this. There is also a supply login using the supply@carlinghowacademy.org.uk email. Please contact the science co-ordinator for password details. Teachers should use Developing Experts to plan and teach Science in school. Adapting lessons and outcomes where necessary. For example if your topic is space you may wish to link the solar system in with your science lessons. Lessons should also be adapted and differentiated for SEND children and suitable learning challenges should be set that respond to a pupils' diverse learning needs. You may choose objectives for pupils with SEN and/or disabilities that are different from those of the rest of the group, or " modify the curriculum to remove barriers so all pupils can meet their given objectives.
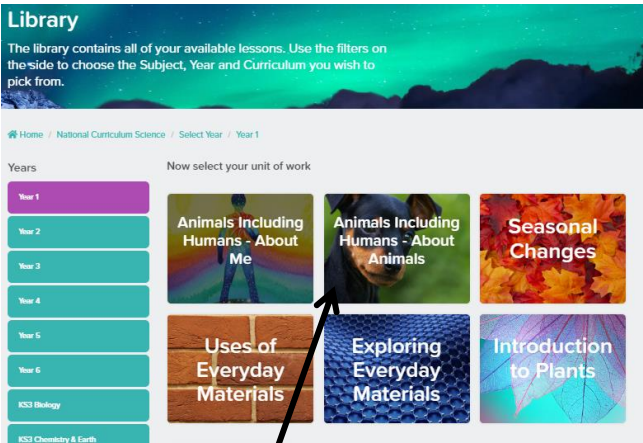
Dashboard

Lesson library

Units & Lessons

Classes

Courses

Scheduled lessons

Pupils

Reports

Teachers

Videos

Step 1 – Select Units and courses
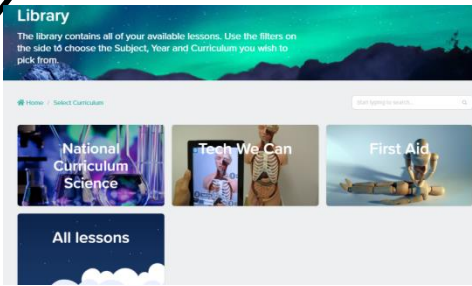
Step 2 – Select National Curriculum Science
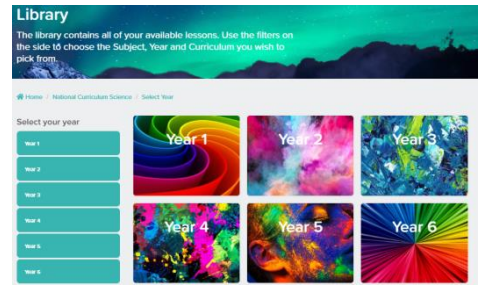
Step 3 – Select your year group

Step 4 – Select your topic

Step 5 – This will give you an overview of the topic and the lessons in it. Please be sure to look at the Curriculum overview for your year group as some start from the top and others from the bottom

Unit documents

Download the documents and resources for this unit below

- Knowledge Organiser
- Unit Knowledge Test Year 1: About Me
- Year 1 National Curriculum Map
- Editable Knowledge Organiser

In the unit overview you will find a Test about the topic and a word mat which is called the knowledge organiser. This includes the vocabulary that will be used in that unit of work. There may be some additional vocabulary on the year group's overviews, however you can use the edit the mat if you wish. These can also be found on the server: Curriculum Folders 2020-2021 – Science – Developing Experts Curriculum Maps. Here you can then just pick the year group and topic you require.

Children using Developing Experts at Home

All pupils from Reception to year 6 have a unique login to Developing Experts which can be used in school and at home. This allows children to see the lessons and have access to the quizzes by using their own dashboard. This maybe be helpful to reinforce the lesson you have done at school and allow the children time to do the quizzes that they may not have time to do in school. Please encourage pupils to access Developing Experts at home as part of their weekly science homework, differentiating where necessary.

To provide the children with their login codes, please click on **Classes,** then select the class. Choose the **Pupils** tab and from there, you can **Print class letters,** which have instructions for pupils of how to log in.

To add lessons to their dashboard, visit the **Courses** tab. Click **Build a course** and then filter the lessons by Year group to show lessons for that age group. You can select entire units by clicking on the unit banner or select individual lessons by clicking on the lesson tile. Once you have selected your chosen lessons, click **Organise units.** From here, you can drag and drop the units into whichever order you choose and click **Organise lessons** to do the same with the lessons. Click **Finalise course.**

Give your course a name. Start date: If you would like the lessons to be released one per week into the pupil dashboard, give you course today's start date and one new lesson per week, in the order that you set, will appear. If you wish for all the lessons to be accessed at once, choose a date a long time in the past and all the lessons you have selected will then appear.

Classes - you must assign the course to your class otherwise the lessons will not appear in the class or pupil dashboard. Select the day you teach science and click **Create course.** You are still able to edit your course once it has been created by clicking on the **Courses** tab again.

Unit Knowledge Organisers

Unit Knowledge Organisers should be in books at the start of each new unit. These can be found on the Developing Experts Website and on the server > Curriculum 2021-22 > Knowledge organisers > Science. Please make sure you print out the correct unit knowledge organiser from each half term and stick it in the children's books before they start the next unit of work. Some of the unit knowledge organisers also have pre and post assessments that you may find useful to inform you of what the children already know or don't know so that you can teach accordingly. They are also useful to inform your assessments after a unit has been taught.

Please also remind students to fill in their assessment of each lesson in the grid as well as your teacher assessment.

Year Group Overview Sheets

To support planning and be able to see a clear curriculum map of what is being taught, each year group has a curriculum overview sheet. These can also be found on the server. Curriculum 2020-21>science>Developing Experts curriculum mats.

Please display a copy of this in your classroom in case your class is being covered by someone else.

Displays/Working Walls and Rocket Words

Each class should have a science working wall displayed which should be updated with the unit of work that is being taught with the relevant unit title and images/scientific vocabulary and ideas that you are working on. There are many scientific words that children may come across in a unit, however to allow the children to learn key words for each lesson there are 5-6 rocket/key words for each lesson that is being taught. The rocket words and explanations are found at the beginning of each Developing Experts lesson. These words should be used to assess children's learning and understanding throughout the lesson to encourage children to use them in their explanations and work. They should then be displayed on the science Working Walls at the start of each lesson so that the children can refer to them throughout the lesson. These need be updated weekly and match the science lesson that is being taught. Rocket words from previous lessons should be stored in a folder near the science working wall so that they are still accessible by pupils.

Children's work should also be displayed and in line with other subjects. It would also be good to have table top resources for the children to be able to explore and use that relate to the topic including some information books.

Celebrating Science

At the end of each science lesson, teachers will choose a 'Scientist Of The Week'. This child will become the teacher's assistant for the next Science lesson, win house points and the will get to wear the science lab coat in the next science lesson. You can also display their achievement on your working wall.

Assessment
Pre/Post Assessments

At the beginning of a topic the children should be guided to remember what they have previously learned about the topic by looking what they have already learnt on the subject. There are assessment tests on Developing Experts which you may wish to use to inform your planning and assessments at the start and end of a unit.

Termly Assessments

At the end of each term, there is an expectation that teachers will use their knowledge and assessments made during the teaching of science. This is done at the end of each half-term as soon as the topic has been taught so that you have the information fresh in your head.

Using Target Tracker

When assessing children on Target Tracker, assess the units you have taught within that half term. Please ensure you look through children's books to find the evidence of children achieving each objective so that assessments are accurate. If you use the test as a pre and/ or a post assessments this could also be used to inform your judgement.

Target Tracker can be used in a range of ways to support the effective teaching of science.

Examples include:

Statement Overview – This outlines the objectives to be taught in each unit. It shows whether each individual is working towards, has achieved or is working at greater depth for each objective within the unit.
<u>**How to access Statement Overview**</u>
Steps reports > statements > statement overview > subjects > show names
Interventions and Gap Analysis – This shows the amount of children who are working towards, have achieved or are working at greater depth for each objective within a unit. This supports the teacher in understanding which objectives still need to be covered and could form part of a starter activity or intervention within the next lesson.
<u>**How to access Gap Analysis**</u>
Steps reports > statements > gap analysis > subjects > I can statements

<u>**Objectives**</u>
Please ensure that all lessons have an objective at the top of the children's work which corresponds with the Medium Term Plan and the children have an opportunity to be able to self-assess this. If the children write the objective then they still need to use green, yellow or red to mark on how they assessed their understanding.

<u>**Presentation**</u>
Children should be taught to work there highest standard of presentation in their books as with all other subjects.

<u>**Topics**</u>
There should be a clear sequence of work being followed so there shouldn't be any other work in between. Please aim to keep all topic work together and not separate it with random pieces of other work that you may be catching up on. This could be added to your previous unit or done at the back of the book with a small note added to the topic that it is for.

<u>**Cross-Curricular Work**</u>
There are many links that science can have with different subjects, these links should be recognised and pointed out to the children. These should also be mapped out on MTPs prior to the teaching of the topic.

If you are doing science work in other subjects that relates to your science topic please do the work in your science book and make a note in the other subjects book – See science book (date). There should be at least one piece of cross curricular science/writing each half term and at least one piece of cross curricular science/maths each half term. These links should be previously planned and should be marked on MTP's, with the work produced being evidenced in science books.
English – Writing reports, letters etc, instructions, science reading comprehensions
Maths – Data handling, Measuring
Computing – processing and analysing data, use of special equipment like data loggers etc.
Art, Design Technology, Music, PE, History, Geography.

There must be clear English and Maths links noted on MTPs and evidenced on either Seesaw or in books each half term.

Photographs
Opportunities for outdoor learning should be provided. When lesson activities are practical please add photographs to the children's books to evidence the journey and outcome of that lesson. When photographs are used, children should write their own comment giving context to what

Marking
This should be done as per the school marking policy. Please remember when providing written feedback the next steps should relate to the achievement of the objective, and where appropriate move the learning forward with the use of 'Think Pink' tasks.

When writing green comments please be specific about what element of the pupils work is good.

Think Pinks/ Next Steps

Should be
  ‣ Be related to the work that they have been doing.
  ‣ Move children on to their next step of learning.
  ‣ Challenge the children further and allow opportunities for chn to extend their understanding and apply the new knowledge to different scientific areas/concepts
  ‣ Use the knowledge they have acquired in the lesson to make further predictions.
  ‣ Develop their understanding of the meaning of science vocabulary.
  ‣ Address misconceptions.
  ‣ Ask them to improve a diagram or the presentation of data. E.g. add labels, add captions, ask them how the data could be seen in a clearer way.
  ‣ Allow them to think about other variables that they could change in an experiment and the impact of this.
  ‣ Challenge them to think of another situation they could apply that knowledge to.

Should Not
  ‣ Be more of the same.
  ‣ Move them on too quickly or slowly.
  ‣ Give them the answer.
  ‣ Be too basic.
  ‣ Tell children to do corrections.
  ‣ Just be about handwriting and sentence structure (unless you are asking them to check the spelling of a scientific word using dictionary or working walls.)
  ‣ Tell children to complete think pinks.
  ‣ Have spelling mistakes.

Stretch and Challenge questions

Developing experts provides a 'Stretch' and 'Challenge' question with every mission assignment. These are a great tool to use once a child has finished their work to develop

their scientific enquiry further. These also allow you to link their thinking, learning and also inform your teacher assessment.

Science Resources
Science resources are stored in the storage cupboard across from the staff toilets called the Resource Room. There are labelled resources in boxes to the left hand side of the cupboard. **Please ensure resources are returned after each use/lesson.**
Please check Developing Experts prior the half term to see if there are any further resources that you may need and let the **science co-ordinator know so that they can be purchased.** If you feel that you know of a better experiment/ activity that you can do that is not on Developing Experts as long as it is related to the lesson that you are teaching from Developing Experts then it is fine to do change activities. However, if you still need resources then please let the Science Co-ordinator know.

Home Learning
Science work should be provided via Seesaw that follows the same unit of learning as would have been taught in school. Links to Developing Experts should be used and work should be set that both challenges and progresses the children's learning. These lessons can be adapted where necessary as children may not have the correct resources at home, however the LO should still be reached. Paper copies should be given out if a child does not have access to Seesaw.

Homework
Weekly science homework should be purposeful with view to extending the learning of that week's objective. Examples include: application of the concept to a real-life situation, prepare students for an upcoming lesson, or to move children's learning forward. Seesaw should be used to set homework on a Friday or a paper copy given out if a child does not have access to Seesaw.

CPD
Staff are advised to ensure that they have a good understanding of the science topic that they are teaching.

Developing Experts
Developing Experts has CPD on their lesson plans and website.

Out Reach CPD
This is an excellent free online resource and takes you through topics in different key stages.

- https://www.reachoutcpd.com/
- Takes you through each unit has 4 sections per unit including science needed and suggests misconceptions that the children may have.
- Gives you a certificate at the end
- Provides links and resources that can be used in lessons

Stem Learning
This is a free resource that offers CPD, lesson resources and ideas for all STEM subjects. It will also keep you up to date with the latest technologies and news.

https://www.stem.org.uk
https://www.futurelearn.com/courses/planning-forlearning