



## **Blackpool Gateway Academy**

# **SCIENCE CURRICULUM GUIDANCE**

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**Blackpool Gateway Academy is part of Fylde Coast Academy Trust**  
*"Learning today for a brighter tomorrow"*

# CURRICULUM INTENT

At Blackpool Gateway Academy, we believe in the importance of science in nurturing curiosity and creativity. Through a combination of investigative skills and knowledge based inquiry, children will develop an understanding of the world in which we live and become equipped with the knowledge required to understand the uses and implications of science, today and for the future. At Gateway, our expectations are high for all our children and they are challenged to complete tasks which enable them to apply their science knowledge and skills.

By the end of KS2, it is our intention that pupils are able to:

- Complete investigations with an understanding of key scientific vocabulary and terminology - this is crucial for their transition, providing students with solid science foundations, thus making them secondary ready.
- Ask relevant questions about science and technology and think of varied ways to answer them.
- Feel confident to express their opinions and thoughts about science.
- Transition into high school with knowledge of numerous science topics.

Oracy plays an important role in our science curriculum and involves fostering students' speaking and listening skills to enhance their understanding of scientific concepts. Here at Gateway, we have implemented Concept Maps across all year groups to harness these skills. Here are some key components:

- **Develop Communication Skills:** Improve students' ability to articulate scientific ideas, ask questions, and engage in discussions.
- **Enhance Understanding:** The use of concept maps facilitate deeper comprehension of scientific concepts through verbal explanations and peer interactions and retrieval of key ideas.
- **Promote Confidence:** Build students' confidence in speaking about science in various contexts.

## Securing Cultural Capital

As part of giving children a broad and rich approach to science, we provide the children with real life experiences that will give them knowledge of how to succeed in life, giving them opportunities they may not otherwise be exposed to. In some ways, this can address social disadvantage. Some of these opportunities include:

- Visits from other outside companies throughout the year.
- Various out of school visits where children focus on building and experiencing science knowledge.
- Working with high school students to give children an insight into continued development of the science curriculum.
- Local competitions and incentives that focus on STEM and environmental topics.

## Inclusion

(including SEND, EAL, Disadvantaged)

We aim to provide opportunities for all pupils to reach their potential in science, no matter what their starting points. All children are provided with equal access to our science curriculum.

We aim to provide suitable learning opportunities regardless of gender, ethnicity or home background. The science curriculum is designed to enable all pupils to access it, including disadvantaged pupils, pupils with SEND and those who do not speak English as their primary language.

Pupils who are underachieving will be identified and strategies put in place in order to help them improve their attainment. Work is scaffolded and facilitated so these pupils can take part in lessons alongside their peers building up their skills and knowledge at an appropriate level and speed. Where necessary, teachers will use interventions to help pupils improve their attainment. , Interventions usually consist of:

- Support from staff within class.
- Differentiation - different levels of work provided to meet their individual needs.
- Group work with peers to build confidence and knowledge.
- Visual prompts

We also ensure sufficient stretch and challenge for our children who are exceeding age related expectations within Science.

### **Nurture**

The ongoing work and Ethos of Nurture that supports all children's learning and behaviour at Gateway threads into our Science Curriculum Guidance. All teaching staff will skillfully offer nurture and support where needed to remove barriers to learning.

To offer social and emotional support within the school environment for every child is the most effective way to address any unmet social, emotional and behavioural and mental health needs of children and young people. Through a nurturing experience children become more socially adept, emotionally resilient and self- confident. Encouraging children through nurture also allows them to learn how to engage with their peers and to take pride in their achievements. Consequently, pupils' learning outcomes are more successfully met.

All staff will refer to the Nurture Principles and the **features of effective practice** to support teaching and learning in science.

## **CURRICULUM IMPLEMENTATION**

Children at Blackpool Gateway Academy begin their learning journey in EYFS, where they start to explore science through continuous provision. Science is important to our staff and children in EYFS and children are taught science explicitly where they can solely focus on a scientific skill or knowledge based objective that links to their early years learning goals.

As the children move into Year 1 & 2, science is taught explicitly on a weekly basis for a minimum of 1 hour. Children in KS1 cover 4 subjects throughout the year. In KS2, science is taught for a minimum of 1.5 hours and children cover 5 subjects over the year.

### **Planning for Science**

#### **EYFS**

Children begin their science journey in EYFS. At Blackpool Gateway Academy, we take science seriously in EYFS and the children love investigating and exploring. Science is split into three main categories; Health & Self-Care, Understanding the World and Exploring and Using Media and Materials. All of the science planning undertaken in early years at Gateway link to these categories that have been taken from the Early Years Framework. As a school we have developed a coverage science curriculum for EYFS where staff can monitor and track what they are teaching and how it links into the schools wider science curriculum.

#### **FCAT Science Scheme of Work**

All members of BGA staff have access to the FCAT Science team drive. The team drive has various planning documents, including a scheme of work for years 2 to 6. FCAT are currently working on the development of the Year 1 & EYFS scheme of work. Follow link: [Drive](#)

When complete, the scheme will flow through the whole school allowing for clear progression, teaching and learning throughout. During each term, a required practical is to be completed by each year group in KS2. Instructions and plans for each required practical can be found on the team drive.

### Science Assessment

Years 1 - 6 use the Rising Stars topic tests at the end of each topic taught to assess the children's factual learning throughout the term. The scores are recorded onto an assessment tracker to determine progression and gaps in the children's learning.

### Science in the National Curriculum

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena.

The programmes of study are set out for science on a year-by-year basis, with expectations for pupils in each year group to achieve. "Working scientifically" gives the key skills required for the particular key stage, with an emphasis on the knowledge being taught through practical tasks and investigations. Progression documents for each topic in science can also be found in the Subject leader drive.

### Cross-curricular

Reading - Science comes through reading tasks in KS2. Teachers use science based texts that link to their current topic throughout the term. Children gain a deeper understanding of the topic they are learning about and the vocabulary that links to it.

PE - Children learn about the importance of exercise and how it affects the body in KS1 & KS2.

Geography - Children learn about the water cycle with regards to different states of matter. Key vocabulary is very much relevant to both science and geography.

### Adaptive teaching in Science

Adaptive teaching in primary science involves tailoring instructional strategies to meet the diverse needs of all students, ensuring each child can access and engage with the curriculum. Regularly assess students' prior knowledge, learning styles, and specific needs through formative assessments, observations, and summative tests. Flexible grouping for certain tasks or experiments to ensure all children are able to access the learning. Scaffolding through the use of visual aids including diagrams, charts and pictures to accompany vocabulary. Guided practice is also utilised to provide adult support before and occasionally during independent tasks.

### Medium-Term

The medium-term plans that are done by Y1-6 teachers, identify a programme of study, learning objectives, activities and expected learning outcomes. This will also include the disciplinary knowledge (working scientifically) and skills that will be explored during that objective. Retrieval from previous topics and lessons is a part of each new lesson. Children practise a working scientifically skill each lesson which links to their main learning objective.

### Short-Term

Weekly planning will take into account definitive learning objectives for science, which will, in turn, provide assessment opportunities. This is the responsibility of the class teacher.

### Teaching Science

Science is taught largely through interactive, experiential learning. Investigative activities are used to develop an understanding of the world through specific disciplines of biology, physics and chemistry.

### EYFS

Children in our early years environment explore science through a range of interactive, discovery

based activities. Teachers in EYFS have had specific training on practical lessons that link with the early years objectives. EYFS take part in a science related activity each week and document their learning into 'learning journey books'.

### Assessment and feedback in EYFS

Ongoing assessment done by the teachers is done throughout the year where they observe and document the skills being learnt by the children. EYFS have learning journey books and a whole class 'floor book' where children's explanations and thoughts are displayed.

### KS1

Children in KS1 practice simple working scientifically skills that include; observing closely, performing tests, identifying & classifying and recording findings. In KS1, we build on the discoveries from EYFS and develop ideas into theories which inspire new questions about learning. A practical session where the children get to perform a simple test is carried out at least once during their new topic. Children in KS1 will be gathering results and beginning to use simple recording and reporting devices such as bar graphs and tally charts to display results.

### KS2

Children in KS2 start practising more specific scientific skills that include; planning, obtaining & presenting evidence and considering evidence & evaluating. The practical lessons are led more independently by the children so they can start asking their own questions and deciding how best to explore and answer them. Children are encouraged to use scientific language which is modelled by the teacher. More advanced forms of recording results are used such as line and time graphs, bar charts and detailed diagrams. Children explain their results and evaluate in more detailed explanations which often leads to further questions about the investigation.

### Assessment and feedback across the whole school

- On-going assessment of the scientific skills that the children are covering each lesson.
- Marking done by teachers in books which includes further, meaningful questions about their learning. Children action any further learning in purple pen.
- Peer and self-assessment is evident in books.
- Retrieval practice is consistently completed from Year 1 - Year 6 which offers children the opportunity to reflect on their earlier work in science. This maximises their potential for learning more and remembering more over time.
- Floor books and displays show progress of topical understanding and skills based science throughout the topic.

## **CURRICULUM IMPACT**

Our measures of impact in science include:

- that the curriculum for Science is well-constructed and well-taught
- all pupils, including those deemed disadvantaged and those with SEND acquire the knowledge and cultural capital they need to succeed in life
- pupils are making progress in that they know more, remember more and are able to do more - they are learning what is intended in the curriculum - so that learning in Science is building to the end points outlined earlier and that pupils are being prepared for their next stage of education
- As scientists, children will develop skills and attributes they can use beyond school and into adulthood.

In order to assess that the implementation of the science curriculum is having a positive impact on learning, a range of assessment tools are to be used. In Year 2, science objectives are assessed against the framework. This incorporates topics from Year 1 & 2. Teachers complete this by the end of the year.

At the end of year 6, children are assessed using the teacher assessment framework for the end of KS2. This compiles learning from all topics and scientific skills from key stage 2.

- lesson observations (carried out by SLT and subject lead)
- exercise book and floor book scrutiny
- pupil and teacher voice
- classroom environment monitoring and learning walks, with an emphasis on high expectations
- Half-termly moderation with the FCAT science team during QIG meetings

In addition to first-hand evidence, impact will also be tracked through the internal assessment data. This data is collected for the purpose of assessing pupil progress as the pupils move towards their end goals. It will allow teachers to inform their planning and plan effectively to teach any gaps so that children who are falling behind are identified quickly and receive intervention. It will ensure children are on track for the next stage in their education and those that are not can be identified (through regular pupil progress meetings) and steps put in place to ensure sufficient progress is made.