Biology Rational

Our ultimate aim is to produce Biologists of the future who are going to influence the community around them in their later lives. They must be curious and know how their work is applicable to the wider world. Our students will enjoy challenge and will show thought and resilience when faced with biological questions. A good biologist has a clear understanding of the core concepts and is able to use this knowledge to apply it to a wide range of situations both practically and written.

Our curriculum promotes resilience, independence, and organisation. Our learners are scientifically literate and can articulate their knowledge and thinking in many different ways. We are keen to make outstanding scientists who are able to complete an experiment from beginning to end. They will be able to plan valid experiments and make adjustments where necessary. They will be skilled with a wide range of apparatus and will be able to select the correct apparatus for the relevant task. Results obtained will be recorded within scientific convention and will be analysed and evaluated in a wide range of ways using mathematical tools and reasoned written justifications. Our curriculum encourages and facilitates further studies or potential careers in the subject, whilst empowering students to have a greater appreciation and awareness of Biology related issues in the world around them

At key stage 4 students get the opportunity to develop their working scientifically skills, this includes.

- The development of scientific thinking – this will help them to understand how now readily accepted theories developed over time and should help them to explain everyday and technological applications of science.
- Experimental skills and strategies – which can develop their problem-solving skills, for example student might be asked to develop a scientific method to test a theory in class.
- Analysis and Evaluation – this is a key part of science and biological learning, to look over any results gained by themselves or other and ask themselves are these appropriate for the test, are they what was expected if not why, how could I do this better?

All of these working scientifically skills have a place in wider society and will be put to good use as the student matures.

The subject content that is covered in ks4 biology fits into these 7 categories.

- Cell biology – This is normally introduced first as cells are known as “the building blocks of life”. The understanding that everything living is made up of these tiny structures can sometimes be an abstract concept for the students, but we also introduce microscope in this topic where we can look at different types of cells. The understanding that these tiny highly specialised units can join up to for organs help the students to build a picture of how organisms’ function one cell upwards.
- Organisation – why larger organisms need transport systems to move substances around the body – linking to respiratory system, circulatory system, digestive system etc
- Infection and response – This topic is arguably one of the most important biology topics relating to wider life. This topic will give students the ability to understand certain medical conditions and why they develop including risk factors for diseases such as diabetes and heart disease. The development of medicines topic my help to build trust in the medicines that they may be provided with in the future.
- Homeostasis and response– This may be of interest to those students with an affinity for sport. The co-ordination of the nervous system and reflex action can play a big part in sporting performance e.g. reacting to a start gun in a 100m sprint.
- Bioenergetics – This is the study of respiration and how it is important to both animals and plants.
- Inheritance, variation, and evolution – In this topic we look at how environmental factors and genetics have shaped the world we live in today. From understanding that we humans and chimpanzees evolved from a common ancestor to make the creatures that we know today. This also covers the genetics of what makes you, you. So how are we similar and different from the other people in our lives.
- Ecosystems – This helps use to build and affinity and understanding of the world around use and how the actions of humans can affect the wider environment. This links into global warming and food supplies and education is said to be the key factor in reducing global warming.