

Year 7 Science at Devizes School

During Year 7, pupils are taught six themed units. Each of these units contains sequences of lessons that are designed to enhance the pupils' knowledge and help them to develop scientific skills. During the course of each unit they will complete one level assessed task designed to test their scientific skills and understanding of the unit content as well as five Webquest extended homework tasks over the whole year (further details below). In addition to this, they will also complete a formal test at the end of terms 2, 4 and 6. The units covered in Year 7 are;

1. A&E – In this unit the pupils take on the role of a trainee nurse, each sequence of lessons involving activities based on a hospital environment. This unit covers;
 - 1.1. Cells - The functions of different types of cells, organs and tissues, what makes people ill and how they can be cured. How cells stay alive, reproduce and specialise to do specific jobs.
 - 1.2. Implications of science – How medical imaging technology has changed our ability to diagnose and treat illnesses.
 - 1.3. Multicultural science – Developing a scientific approach by comparing different therapies including homeopathy, acupuncture, herbal medicine and medical drugs.
 - 1.4. New life – Learning the structure and function of the male and female reproductive systems, choosing the best course of treatment for a couple who cannot conceive and then monitoring the developing foetus.
2. Alien – In this unit the pupils take on the role of a trainee scientist working for SETI (Search for Extra Terrestrial Intelligence) which is danger of closing down to a lack of results. Each sequence of lessons involves activities aimed at analysing and communicating data with a view to helping the organisation remaining operational. This unit covers;
 - 2.1. Forces – Describing the interactions between objects and how it affects their motion. Describing the effects of gravity.
 - 2.2. Analyse data – Organising data in tables or graphs to make it easier to find patterns and then drawing conclusions from them. Using conclusions to support or refute scientific ideas.
 - 2.3. Solar System – Describe the nature, movements and positions of the Sun, Moon, planets and other bodies in our Solar System. Explain why the earth has seasons and why there is a 'dark' side of the moon
 - 2.4. Universe – How astronomy has helped us explore the universe. Using models and predictions to decide how likely it is that there is other life in the universe.
3. Forensics – The pupils take part in sequences of lessons playing the role of trainee forensic scientists in this unit. The unit content covers;
 - 3.1. Working safely – Learning the fundamental scientific skills needed to keep them safe in the lab, identifying hazards and the use of Bunsen burners.
 - 3.2. Particle model – Using ideas about particles to solve a crime in an art gallery. Investigating changes of state, solubility, chromatography and distillation.
 - 3.3. Chemical patterns – Learning how to identify substances from their chemical properties in order to help solve an abduction case. Metal / acid reactions, carbonate / acid reactions and thermal decomposition are investigated.

- 3.4. Patterns in chemical reactions – Evaluating evidence to help solve a cold case. Investigating old evidence by examining forensic techniques. Establishing the reliability of data, identifying anomalous data and the importance of precise measurements.
4. Electromancer – In this unit, the pupils take on the role of a new pupil at the ‘Galvan Academy’ (think Hogwarts with magnets and electricity instead of magic) who helps to investigate mysterious thefts and damage to school property. The content covered by this unit includes;
 - 4.1. Current and circuits – How to correctly use ammeters and voltmeters in simple series and parallel circuits. Making a pressure switch from basic materials to use in a burglar alarm.
 - 4.2. Magnetism and Electromagnetism – Investigating the fields around magnets, magnetising objects, constructing and controlling electromagnets.
 - 4.3. Planning an investigation – Learning how to; construct a scientific question, choose a method of investigation, take precise, reliable measurements, ensure that their test is fair.
 - 4.4. Voltage and Electrical Energy – Describing the movement of electrical charge, the generation of static electricity, the relationship between potential difference and energy. Constructing a battery from fruit and metal strips.
5. Cook – This unit sees the pupils working as a trainee chef in a restaurant run by a fiery chef named Gordo. The content covered in this unit includes;
 - 5.1. Energy transfer – Describing and explaining methods of heat transfer (conduction, convection and radiation) and linking them to the big idea of particles.
 - 5.2. Energy transfer and particle theory – Using what they have learned in the first sequence, the pupils investigate ways to make the perfect ice cream, investigating temperature and changes of state along the way.
 - 5.3. Chemical changes – Describing and explaining both physical and chemical changes in ingredients used during cooking in an attempt to find the perfect pancake and sauce.
 - 5.4. Modelling – Using scientific models to describe and explain processes that cannot be seen or to simplify very complex interactions. Using these models pupils predict changes in texture, taste and the appearance of food.
6. Extinction – In this unit the pupils take on the role of a trainee reporter for Planet TV, a TV channel that focusses on endangered species. The content covered includes;
 - 6.1. Changing atmosphere – After the discovery of the remains of a woolly mammoth, the pupils investigate possible causes for their extinction, looking primarily at evidence that tells us of the changes in the Earth’s atmosphere in the past.
 - 6.2. Adaptation – pupils focus on polar bears in this sequence to look at the adaptations that allow certain species to thrive in particular habitats. They then look at the changes that are taking place in the polar bears’ natural habitat and the effect of these changes.
 - 6.3. Communication – the pupils take part in an Apprentice style series of activities in order to choose a new Head of Communications for the channel. The pupils will learn how to gain the attention of the audience, keep them interested and get their message across.
 - 6.4. Behaviour and classification – The pupils will learn to explain the largely instinctive behaviour of turtles and how that is putting them at risk in a rapidly changing world. They will also learn how to use similarities and variation in order to identify different species.

The Webquest extended homework tasks are enquiry based activities which require the pupils to initially complete a research sheet (provided) by visiting a set of websites. Once they have completed the research sheet they should have sufficient information to complete the task itself. All of the required documents and links to the websites (along with the required passwords) are contained on pages within the school's Virtual Learning Environment or VLE. Teachers check on the progress of the pupils during the term, setting deadlines for the various stages of completion.

The year 7 Webquest tasks are;

1. **Cells - From Martians to Earthlings** – this task requires the pupils to investigate how our understanding of and the model of the cell has changed over time. This knowledge is then applied to the writing of a letter to NASA concerning the possible find of bacterial material in a meteorite from Mars. Pupils will suggest how likely it is that the evidence indicates alien life and what further investigations should be carried out.
2. **Generating Electricity – Decisions and Consequences** – this task requires the pupils to investigate the generation of electricity. Their findings are then used to write to the leaders of a small island, suggesting ways that they could generate their own electricity using the resources available and what benefits that would bring to them. They will also highlight any potential problems or dangers with their chosen methods.
3. **Born Criminals – Curious Bumps on the Head** – this task requires the pupils to investigate our understanding of the brain as well as the correct presentation of data. This research will then allow them to write a detailed letter to a school headmaster who is trying to prevent a model pupil joining a school by highlighting his poor use of scientific evidence and presentation of data.
4. **What a Laugh – Finding the Funniest Joke in School** – this task involves the pupils in researching the work of Professor Richard Wiseman and his attempts to find the funniest joke in the world. The pupils will learn about variables, fair tests and hazards and design and use a survey to help them identify the funniest joke in the school. The pupils will be expected to collaborate with each other and then canvas the views of their peers.
5. **Aliens – The Evidence for Visitors in UFOs** – this task will require the pupils to investigate the 'Rendlesham Forest Incident' of 1980. They will examine and evaluate conflicting evidence and possibly unreliable data to decide whether there is sufficient evidence to lobby for the creation of a 'Torchwood' style organisation in the UK. This work will be presented in a letter to the Prime Minister.

The websites used for the Webquests can be accessed at <http://www.appinscience.com>. You will need to log in using the username and password that your child can access on the school's VLE.

Every year 7 class will take a different route through the units and Webquests. Please check with your child to find what they are actually working on at any given time.