Year 2

Paul Shanks & Peter Howard

Knowledge Curriculum Outline

Year 2



EMAT Science Knowledge Based Curriculum

**Introduction**

Current events and technology are constantly changing, but there remains a significant body of enduring knowledge and skills that form the foundation of a strong curriculum. The EMAT Knowledge Based Curriculum is based on these foundations and has its values of ***Empower***, ***Motivate***, ***Aspire*** and ***Transform*** running throughout its spine.

As Leesa Wheelahan states within her book, Why Knowledge Matters in Curriculum: A Social Realist Argument. New Studies in Critical Realism and Education, “…providing students with access to knowledge should be the *raison d'etre* of education. Its premise is that access to knowledge is an issue of social justice because society uses it to conduct its debates and controversies.”

The Core Knowledge Partnership further adds, “All children should be able to unlock the library of the world's literature; to comprehend the world around them; to understand where they stand (literally) on the globe, and to realise the heritage that the history of their country has bestowed on them. In order to achieve this, it is important for every child to learn the fundamentals of mathematics; basic principles of science; theories and structures of government; significant events and themes from history; masterpieces of art, music and literature from around the world; and stories and poems that have been passed down through the generations.”

The core material within the EMAT curriculum is based upon the materials available from the Core Knowledge Partnership.

By explicitly identifying what children should learn in each academic year, it is possible to ensure a coherent approach to developing cumulative knowledge across all school years, making the most efficient and effective use of teaching time.”

The EMAT curriculum is deliberately focused on the development of language and vocabulary. Vocabulary is essential to understanding the content taught in our academies and being able to articulate the knowledge that lies within. As Iman (2009) states, “An abundance of research supports the connections between vocabulary, particularly academic vocabulary and reading comprehension”.

Iman’s statement should come as no surprise to those working within an EMAT academy and as such an overarching aim of the Knowledge curriculum is to be able to empower and motivate children to become lifelong learners and aspire to be the very best that they can be and transform their life chances through an enriched experience every day at school.

**Information on this document**

Within the following pages you will find the knowledge overview for the Year 2 Curriculum. This document outlines the knowledge that should be taught in Science across the year. Academies are free to design their topic and themes as long as these have the EMAT knowledge embedded within it.

The document provides some core vocabulary that must be taught alongside the knowledge but academies are free to add their own to this. This is not an exhaustive list but the minimum required.

**Knowledge Organisers**

What are Knowledge Organisers? Knowledge Organisers are sets of key facts or information that pupils must know and be able to recall in order to master any given unit of work. Typically, a Knowledge Organiser will fit on a single sheet of A4 or A3 and will be provided to the pupils to support their learning but can also support home learning.

Knowledge Organisers should contain the core vocabulary and knowledge that the children are expected to learn as part of their topic or unit. Across the academy it is important that each Knowledge Organiser is laid out in the same fashion to support the visualising of the information and memory retention.

There are a multitude of Knowledge Organisers available online, as well as templates for academies to formulate their own.

|  |  |  |
| --- | --- | --- |
| **YEAR 2** | | |
| **Science** | **Vocabulary** | **Cultural Capital** |
| **I. LIVING THINGS AND THEIR ENVIRONMENTS**  **Teachers:** Introduce the idea of interdependence between living things and their environment.   1. **HABITATS**      * Living things live in environments to which they are particularly suited. * Specific habitats and what lives there, for example: * Forest (for example: oak trees, squirrels, foxes, badgers, snails, mice) * Meadow and plains (for example: wildflowers, grasses, prairie dogs) * Underground (for example: fungi, moles, worms) * Desert (for example: cacti, lizards, scorpions) * Water (for example: fish, oysters, starfish) * The food chain: a way of picturing the relationships between living things * Animals: big animals can be eaten by little ones, big animals die and are eaten by little ones. * Plants: nutrients, water, soil, air, sunlight  1. **OCEANS AND UNDERSEA LIFE**      * Most of the Earth is covered with water. * Locate oceans: Pacific, Atlantic, Indian, Arctic * Oceans are salt water (unlike fresh water rivers and lakes) * Coast, shore, waves, tides (high and low) * Currents, the Gulf Stream * Landscape of the ocean floor: mountain peaks and deep valleys (trenches) * Diversity of ocean life: from organisms too small for the eye to see (plankton), to giant whales * Dangers to ocean life (for example, overfishing, pollution, oil spills)  1. **ENVIRONMENTAL CHANGE AND HABITAT DESTRUCTION**  * Environments are constantly changing, and this can sometimes pose dangers to specific habitats, for example: * Effects of population and development * Rainforest clearing, pollution, litter | **Habitat**  **Food Chain**  Woodland, water, desert, underground, omnivore, herbivore, carnivore, extinct  **oceans, tides, currents** |  |
| **II. THE HUMAN BODY: SYSTEMS AND PREVENTING ILLNESS**  **A. BODY SYSTEMS**  **Teachers:** Introduce the idea of body systems, and have children identify basic parts of the following body systems:   * Skeletal system: skeleton, bones, skull * Muscular system: muscles * Digestive system: mouth, stomach * Circulatory system: heart and blood * Nervous system: brain and nerves   **B. GERMS, DISEASES, AND PREVENTING ILLNESS**   * Taking care of your body: exercise, cleanliness, healthy foods, rest * Vaccinations | **Skeletal**  **Muscular**  **Circulatory**  **Digestive**  **Nervous**  Skeleton, bone, knuckles, x-ray, muscle, heart, blood, food, digestion, saliva, stomach, brain, nerves, senses, illness, health, germ, vaccination |  |
| **III. MATTER**    **Teachers:** Introduce children to the idea that everything is made of matter, and that all matter is made up of parts too small to see.   * Basic concept of atoms * Names and common examples of three states of matter: * Solid (for example, wood, rocks) * Liquid (for example, water) * Gas (for example, steam) * Water as an example of changing states of matter of a single substance | **Matter**  **Changing State**  Atom  Solid  Liquid  Gas  Water  Ice  Vapour  Air  Atoms  Molecules |  |
| **IV. PROPERTIES OF MATTER: MEASUREMENT**  **Teachers:** Have children describe and classify objects according to what they are made of, and according to their physical properties (colour, shape, size, weight, texture, etc.)   * Units of measurement: * Length: centimetre, metre * Volume: millilitre, litre * Temperature: degrees Celsius | **Measurement**  **Units**  Centimetre (cm), metre (m)  Length  Inch, feet  Ruler  Volume  Pint  Litre  Temperature  Hot, cold  thermometer |  |
| **V. INTRODUCTION TO ELECTRICITY**    Teachers: Through reading aloud, observation and experiment, explore with children the basic principles of electricity and safety rules.   * Static electricity * Basic parts of simple electric circuits (for example, batteries, wire, bulb or buzzer, switch) * Conductive and nonconductive materials * Safety rules for electricity (for example, never put your finger or anything metallic in an electrical outlet, never touch a switch or electrical appliance when your hands are wet or when you’re in the bathtub, never put your finger in a lamp socket, etc.) | Circuit  Electricity  Light bulb  Power station  Battery  Cell  Wire  Switch  Conductor  Copper  Crocodile clip  Safety  Experiment |  |
| **VI. INTRODUCTION TO ASTRONOMY**     * Sun: source of energy, light, heat * Moon: phases of the moon (full, half, crescent, new) * The eight planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune) * Note that, in 2006, Pluto was classified as a dwarf planet. * Stars * Constellations: The Plough * The sun is a star. * Earth and its place in the solar system * The Earth moves around the Sun; the sun does not move * The Earth revolves (spins); one revolution takes one day (24 hours) * Sunrise and sunset * When it is day where you are, it is night for people on the opposite side of the Earth | **Astronomy**  **Earth**  Solar system  Sun  Mercury  Venus  Earth  Mars  Jupiter  Saturn  Uranus  Neptune  Pluto  Moon  Constellation  Capernicus |  |
| **VII. THE EARTH**  **A. GEOGRAPHICAL FEATURES OF THE EARTH’S SURFACE**   * The shape of the Earth, the horizon * Oceans and continents * North Pole and South Pole, Equator   **B. WHAT’S INSIDE THE EARTH**   * Inside the Earth * Layers: crust, mantle, core * High temperatures * Volcanoes and geysers * Rocks and minerals * Formation and characteristics of different kinds of rocks: metamorphic, igneous, sedimentary * Important minerals in the Earth (such as quartz, gold, sulphur, coal, diamond, iron ore) | Crust  Mantle  Core  Pole  Equator  Volcano  Lava  Geyser  Mineral  Continent  Country  County  City  Town  Village |  |
| **VIII. SCIENCE BIOGRAPHIES**   * Rosalind Franklin (often-overlooked woman scientist) * Thomas Edison (invented an electric light bulb) * Edward Jenner (found a way to stop smallpox) * Louis Pasteur (made milk safe to drink) |  |  |