C7 Horizontal Curriculum

Visual and Graphic Arts

Indicative Content

Class 7 is the year when Goethean observation becomes a distinct thread, weaving through and across the Main Lessons of Physics, Chemistry and Geography. The experience of clear-sighted observation of phenomena and the engagement in an activity will inform the content and practice of the drawing and painting lessons also.

Drawing and Painting:

The rules of one and two point perspective (see also Maths ARLOs for Shape Space and Measure). Practice the laws of linear perspective through a series of exercises involving geometrical shapes, equally spaced receding verticals and horizontals, squares inside circles and imaginary city spaces. Drawing of objects with their shadows, using soft graphite pencil and/or charcoal, paying precise attention to the direction of shadows and the degree of graduations in tone in both object and shadow. Coloured landscapes with oil pastels and watercolour veils, showing colour perspective and atmospheric effects.

Clay Modelling:

In connection with projection and shadow drawings and geometry, solids such as the cone, cube, pentagon, dodecahedron etc can be modelled. In figurative forms, explore gesture and movement, starting from figures turning, bending, pointing, reaching etc, again with minimal facial expressions and fine detail.

Pedagogical Reasoning

Through observation the pupils have rich experiences of the world around them, and they meet those with an inner drive to give their experiences shape and form. At this age pupils can bring forth their own drive to give expression to these experiences. Art teaching offers techniques to give expression to what they have taken in. The pedagogical response to puberty is to assist pupils to make sense of their experiences by offering different techniques, different media, and different categories for seeing. The discipline of Goethean observation can become a skill which feeds positively into all life skills, including social interactions.

Consideration for Decolonisation/Contextualisation

Art techniques from a range of cultural styles, e.g. Chinese brush work

Songs, stories and images should be inclusive of a range of people, taking into consideration: gender and family stereotypes, skin and hair colour/type, disability and age. Stories and songs should be taken from a range of cultures around the world.

Suggested ARLOs

Visual and Graphic Arts, Science - Living things and their habitats

Handwork: hand-made footwear

Indicative Content

In Class 7 & 8 the content of the handwork curriculum will depend on whether the school offers handwork (with fabric) into the Upper School. As part of the handwork curriculum, pupils should have experience in using commercial patterns and measuring the body, plus technical information about

different types of fabric and how it is used. If this is not incorporated into the upper school curriculum, it should be integrated in some way into Class 7 & 8.

Projects:

The indication for Class 7 is to make shoes by hand, using traditional shoemaking methods.

Hand Sewing:

Activities/projects can include (depending on upper school curriculum – see above):

Mend and repair clothes

Machine Sewing:

Introducing the treadle sewing machine to sew a simple lined kit bag or backpack followed by making a bag of their own design (with additional pockets and various fastening to extend the learning challenge where appropriate)

Supplementary Activities:

Making a hand-loom – weaving (include information about the main weaving techniques and the types of cloth they produce

Leatherwork – belts, pouches (include with information about where and how leather is produced)

Pedagogical Reasoning

The attention of the growing child is focused on the feet. Working out of their "internal balance" they also learn about the mechanics of the foot. Pupils are inspired by their emerging potential to make the things they need.

Consideration for Decolonisation/Contextualisation

Mrs Lincoln's Dressmaker: *The Unlikely Friendship of Elizabeth Keckley and Mary Todd Lincoln,* Jennifer Chaiverini (Plume, 2013) (written in honor of the author's ancestors who could not tell their stories)

If making garments, ensure a choice of options includes non-gendered or unisex pattern

Suggested ARLOs

Handwork

Media Education

Indicative Content

Having brought many strands of their education into the digital context in Class 6, from Class 7 digital media begins to become part of the way in which pupils find and express information and ideas. Alongside their analogue research skills, pupils learn more about digital search engines, the responsible handling of personal and external data and images, and objective debate. To support their writing, they learn to touch type. Radio projects and dramas and some recorded music can be explored. In drawing, the principles of perspective are applied to demonstrate how three dimensional objects can be represented in a two dimensional plane. The study of mirrors and lenses in physics informs the exploration of simple photographic technology and images. Previous work with flip-books could be developed into the making of stop-motion animation with drawings or models. Practical book binding follows on from book printing in the Middle Ages in Class 6, using high levels of practical skills, and preparing pupils for later digital layout and graphics, the organisation and building of websites etc. As pupils begin to navigate the internet independently, it is vital to develop their sense of responsibility for their own actions online and their ability to live knowledgeably, responsibly and safely in a digital world. See also Physics: Information Technology.

Pedagogical Reasoning

Children and adolescents need age-appropriate challenges where they can develop their problem-solving skills and experience a sense of achievement. The world of media is man-made, it can and must be created by people. Thus, it is very empowering for children and young people to experience their own effectiveness in the media by creatively designing media: producing podcasts or writing school newspapers and blogs. They experience the power – and also the responsibility – to help shape "the media" and use it as an expression of their feelings and ideas. This requires knowing and mastering the tools of communication.
Consideration for Decolonisation/Contextualisation
Awareness of the veracity of sources, and different perspectives. Explore digital work by a range of people, including young people, women, disabled people, LGBTQIA+ people, and people of colour.
Suggested ARLOs
Technology, RSE, PSHE, Physics - Information Technology

MFL Drama and History
Indicative Content
Lessons have a blend of activities that could include: free speaking, conversation, role play, drama, grammar and vocabulary work, practice, reading, creative writing and group work. Themes should be cultural, geographical, historical and topical. Biographies and extracts from literary work, including modern poetry. Idioms, and colloquial language, modern music.
Pedagogical Reasoning
As self-consciousness emerges students are sometimes less willing to speak before the whole class therefore group and pair work is particularly important, as is letter and diary writing. Particular attention should be paid to pronounciation.
Consideration for Decolonisation/Contextualisation
Texts and pictures should represent a wide range of people, skin colours, hair types etc, and should not reinforce stereotypes. Cultural themes should include text and music by a wide range of people, e.g. women, people of colour, LGBTQIA+ people, etc.
Suggested ARLOs
Modern Foreign Languages

Spiritual, Religious, Ethical and Moral Education
Indicative Content
History in Main Lesson explores the rise of Christianity from the period of the crusades through the Middle Ages to the Renaissance and the effect of that power on people's lives. The challenges and changes that came with the Reformation. Differences and similarities between Protestant and Catholic traditions and worship. Study of Islam historically and today through Muslim festivals (Eid-Ul-Adha, Dhu Al-Hijjah, Al Hijra, Ashura, Milad Al-Nabi, Ramadhan), human experience, traditions and beliefs. Inspiring biographies linked to themes and content of the year – see below. Debate and class discussion – linked to current affairs, PSHCE (e.g. the history and issues of drugs, alcohol), conflict resolution etc.

Questions: How do Muslim and Christian festivals affect believers' connection to God? Is anything ever eternal? What do Christianity and Islam share significantly?
Pedagogical Reasoning
Two gestures for this stage: an appetite for knowledge of and about the world, and a budding capacity for reflection. Themes of exploration, of challenging assumptions that were formally accepted on authority (Galileo as an example). Pupils are shown how to formulate their own opinions as well as accepting those of others. Increase in social responsibility and sense of self as a world citizen and as an individual.
Consideration for Decolonisation/Contextualisation
Research content widely and across multiple sources. Develop pupil's criticality and encourage searching for prejudice or bias in content and engage in open discussions about representation and diversity. Use content that is diverse in its point of view and in its representation of people, gender, sex, sexuality, religion and ethnicity.
Suggested ARLOs
SMSC

Sustainable Living: Woodwork and Garden Planning

Indicative Content
The Class 8 curriculum is an extension of Class 7, with skills being refined and content covered in a broad way across the two years. As previously, one or more additional crafts can be added to the curriculum. The craft chosen and the level at which it is engaged with will be dependent on the practical skills of the teacher, and the prior learning of the children. Some suggested themes might be ceramics or basic leather work. Woodwork becomes more complex and refined, continuing to have the two streams: workshop based carving and making of artefacts, and green woodwork outdoors. It can involve a certain amount of recycling and upcycling, e.g. making new handles for broken tools from ash. Following the astronomy main lesson, extended garden planning can be explored, with an introduction to organic and biodynamic agriculture and the real-life issues of certification and yield. No-dig permaculture techniques can be brought as a contrast. Raising plants in greenhouses allows the pupils to follow a similar seasonal approach to Class 6, but to achieve more professional outcomes with an understanding of how to improve results. It is important for children to explore positive stories of recovering ecology to balance a contemporary focus on the climate crisis. Topics such as the contrast between the small range of varieties of apples available in UK supermarkets and the 2500 UK varieties (7000 worldwide) can be explored. Potatoes are another excellent example. Pupils should encounter world issues in a practical way: what happens to human waste? How is water made fit for drinking? Looking at breeding particular types of fungi to metabolise plastics. How much of the earth's surface can grow food? What are the implications of becoming vegetarian/vegan? Forestry would ideally involve the thinning of young trees, using directional felling methods. Coppicing as a sustainable forestry practice is also very good, especially if the garden needs hazel poles, fence panels etc. Growing basket willows is a good option if space is limited.
Pedagogical Reasoning
The importance of international trade along the silk roads and sea routes in later Middle Ages and the impact of European colonisation of trade (e.g. spice trade) and local industries, introduction of plantation crops and slavery. Ecological destruction caused by colonisation. Economics of modern

subsidised industrial farming, disadvantaging of regional producers and effects of protectionism on agriculture in the developing world, the loss of varieties of apples, potatoes etc.
Consideration for Decolonisation/Contextualisation
The importance of international trade along the silk roads and sea routes in later Middle Ages and the impact of European colonisation of trade (e.g. spice trade) and local industries, introduction of plantation crops and slavery. Ecological destruction caused by colonisation. Economics of modern subsidised industrial farming, disadvantaging of regional producers and effects of protectionism on agriculture in the developing world, the loss of varieties of apples, potatoes etc. Themes of sustainability in farming, gardening, raw materials, re-cycling, clothing, electronic equipment and the raw materials they depend on. Up-cycling projects. Cheap seasonal labour with minimal rights and security from economically poorer countries. Consumerism and supermarkets driving down prices for producers. Learning from indigenous people's ways of life and relationship to the world. Fair trade. Renewable energy should be a practical and not only theoretical topic in schools. Harvesting rain water. Composting.
Suggested ARLOs
Chemistry, physics, biology, Design and Technology, Geography, Social Science, PSHE, SMSC

Narrative and Reading Material

Indicative Content
Encourage book use rather than screen time. Reading for pleasure: • Youth literature: any youth fiction with literary merit • Historical fiction based in any period from the Middle Ages to the early 19th Century • Historical biographies based in any period from the Middle Ages to the early 19th Century • Non-fiction history books from the Middle Ages to the early 19th Century • Books on the history and science of astronomy; biographies of early astronomers; books on navigation • Gardening books: organic gardening (e.g. John and Sally Seymour), books by the Soil Association, Gardeners' Question Time books • Non-fiction on other curriculum themes: health and hygiene, historical technology, chemistry etc Taught reading skills: Writing book reports and recommendations: summarising, explaining why they have enjoyed what they have read.
Pedagogical Reasoning
Further development of historical consciousness, with an explicit multi-cultural and global perspective. Independent research into topics which support the classroom work. Reading for pleasure: the priority should be to inspire extensive and prolific reading, so any literature that pupils enjoy, that has some literary merit, should be encouraged.
Consideration for Decolonisation/Contextualisation
Literature from around the world. Books written from a wide range of viewpoints and perspectives.
Suggested ARLOs
Literacy, Social Science

French: drama and History

Indicative Content

Lessons have a blend of activities that could include: free speaking, conversation, role play, drama, grammar and vocabulary work, practice, reading, creative writing and group work. Themes should be cultural, geographical, historical and topical. Biographies and extracts from literary work, including modern poetry. Idioms, and colloquial language, modern music.

Pedagogical Reasoning

As self-consciousness emerges students are sometimes less willing to speak before the whole class therefore group and pair work is particularly important, as is letter and diary writing. Particular attention should be paid to pronounciation.

Consideration for Decolonisation/Contextualisation

Texts and pictures should represent a wide range of people, skin colours, hair types etc, and should not reinforce stereotypes. Cultural themes should include text and music by a wide range of people, e.g. women, people of colour, LGBTQIA+ people, etc.

Suggested ARLOs

Modern Foreign Languages

Games and Movement

Indicative Content

Games. Inner and Outer Limits - inventors and explorers.

Increased height calls for new ways to move - requiring a lot of practice and stamina. Lessons should remain very enjoyable as the additional effort required is not easy. Themes of exploring and overcoming the contrast between wide and narrow - whilst experiencing performance through beauty, order, strength and agility.

Floor gymnastics - rolls, handstand, wheels, headstand, forward somersault, cartwheel, jumping (incl. rotation), rhythmical step sequences. Gym apparatus (as available): uneven bars (swinging up, push-up, swinging off lower bar); parallel bars (push up exercises, swinging, straddling front and behind, turning); beam (mounting with run-up / jump / springboard, jumping and balancing, easy combinations, dismounting); horizontal bar (repetition of mounting and swinging round, leaving bar using a roll / one-legged rotation / one-legged start); rings (repetition of swing with half-turn and turn, swing to hanging bent at waist, rolls from standing start); box (vault on into squat, vault over with knees up, vault on in straddle, vault feet first, rolling on, over, across lengthwise). Performing short routines of combinations of the above to class. Athletics: 80m sprint, rounders and slingball, long jump, standing jump, long-distance running. Games: volleyball (basic skills), basketball (preliminary exercises), rounders, baseball, games with vortex and frisbee. Artistry with clubs and ropes. Acrobatics - in pairs, figurehead, chair, superman, plank, pyramids in small groups. Swimming where possible: front crawl technique, underwater, against the clock, 1m and 3m diving, forwards and backwards dives, somersault, cartwheel. Dancing: in pairs, square dancing and line dancing - maybe waltz. Bothmer exercises: Jump to Middle Point, The Rhythm, Strong Triangle, Sideways Circling.

Pedagogical Reasoning

At this age, children's physical education, games and movement act as a counterweight to a hypercritical

view of the world around them. More complex games and overcoming previous limitations through practice serve as a distraction from problems and doubts. Triggered by emotional impulses, enthusiasm and pride, their being demands to be in a state of inner tension. Children need to be given the opportunity to perform and share with an emphasis on aspiration and aesthetics (linked to art, golden ratio, search for ideals and beauty in inventors and explorer main lessons).
Consideration for Decolonisation/Contextualisation
Ensure that 'strong' characters in stories and pictures are both girls and boys. Ensure that character descriptions include a range of skin colours and hair types. Take care with games where children choose each other, that no child is repeatedly unchosen or left until last.
Suggested ARLOs
Physical

Maths: al jabr - restoring broken parts; Pythagoras and Perspective; dealing with data
Indicative Content
Continue to develop fluency in mental and written arithmetic. Curriculum content should be connected to practical things like business, art, navigation, remaining as concrete and imaginative as possible. Algebra should grow out of numerical calculations, and not be brought as a strictly separate area of mathematics. At this age the amount of differentiation required can be large. Negative numbers are introduced through business maths through looking at profit/loss, debit and deficit. Work on arithmetic and algebra will include negative numbers, equations and formulae and their practical applications, and ratio and proportion. In geometry, algebraic knowledge and understanding can be applied to finding the area of shapes, e.g. through the application of π and Pythagoras' Theorem. Pupils will explore the collection, collation and presentation of data through statistics and graphical representation.
Pedagogical Reasoning
Class Seven is often seen as the point at which the students enters more fully into the world of abstract thought. The objectivity and methodology required in Class 7 provides a counterbalance to the internal emotional experiences being experienced by students. Algebra clarifies the general rules of calculation, and the stages of abstraction are expanded. This prepare the ground for higher mathematics, developing logic, structure and clarity of thinking.
Consideration for Decolonisation/Contextualisation
Highlight the arabic origins of the word and practice of al-jabr. Arab, middle-Eastern and Indian cultures with advanced mathematics (Baghdad, Grenada etc).
Suggested ARLOs
Maths, Visual and Graphic Art

Chemistry: Transformation in matter
Indicative Content

A phenomenological investigation of combustion: careful observation of the safe burning of different materials (e.g. bread, pine needles, cotton, wood, straw, alcohol, paraffin, sulphur, phosphorus, magnesium). Describe the residue of burning, e.g. ash, clinker, carbon dioxide, lamp black. Test the pH of the residue. What supports/ does not support combustion. Observe the movements of air around a flame. The fire triangle and the impact of increasing or decreasing the oxygen supply, e.g. through increasing CO2. The impact of fire in the natural and built environments, e.g. lightning, forest fires, chimney fires, peat fires, risks of using candles, fire safety, etc. The chemistry of the candle.
The Lime Cycle. Burning lime, making a lime kiln, creating slaked lime. Identify that the products/byproducts of the cycle are acids and bases. Creation of cement and water. Limestone and chalk in nature.
How acids and bases are formed: Indicators and (very simple) pH changes: making an Indicator, demonstrating acid/base properties. Salts. Hydrochloric acid and sodium hydroxide to show the power of acids or bases in forming salts, and their practical applications (e.g. toothpaste).
Metals. The chemistry and cultural, historical, technical background of metals. What is a metal? Focus on metals found in their native state (Gold, Silver, Copper), or those extracted using carbon, (Iron, Tin, Lead and Copper). How has the use of these metals advanced human cultures? What are their properties, and how are their properties related to how they are used?; How are they found, and how can we extract them from their ores: smelting, using charcoal, using furnaces. Why does iron rust? Production and uses of steel.
The benefits and risks of mining and the petro-chemical industry, including (for example) the invention of NyLon.

Pedagogical Reasoning

The phenomenological approach emphasises accurate observation and exact description, which takes into account the emotional impact on the witness. It requires strong forms of imagination to transfer the experiment in the classroom to large scale industrial and natural processes (e.g. a furnace, a volcano) and the forces and quantities involved. It involves the pupils conceptualising things that they cannot see, but can only deduce, e.g. oxygen, carbon dioxide, heat etc. These are culturally contextualised, e.g. through the history of alchemy – the meaning of transforming substances has lent itself to spiritual as well as practical understandings and technological application.
At this age, pupils are beginning to differentiate between opinion and observation, and are building a relationship to objectivity.

Consideration for Decolonisation/Contextualisation

Referencing earlier cultures. Egypt is the source of the word Chemistry and the origin of the first alchemists; the Chinese used gunpowder in the Tang Dynasty (C850 C.E.) and it was used in India during the second half of the 13th Century. Records of scientific advancements made in the Ancient Civilisations of India and the Easts, have been lost, in part due to the persecution of alchemists by the Christian church.
How smelting of metals developed from India, to the East to China and to the West to Europe, and (as far as we know) independently in Sub-Saharan Africa. The importance of this skill is referenced in the pantheons of various cultures, for millennia, embedded in myth, and, until very recently, an extremely important economic process in the industrial world.

Suggested ARLOs

Chemistry Class 7-8

Human nutrition and health.

Indicative Content

Digestive organs and processes from eyes/nose, into the mouth and following the whole process of digestion through the body and into the sewage works. Different types of food, starting with milk for babies, then in relation to carbohydrates, fats, protein and their sources; different diets (e.g. vegan, vegetarian, gut health, organics etc and the impact on the human body); social aspects of food cultures around the world;
An introduction to respiration, circulation and the heart (to be continued in the upper school).
The skin as the body's largest organ: structure and function (including melanin and skin colour); skin and hair care.
Anatomy/biology of sexual organs and reproduction; social and cultural context of sex and sexuality (including homosexuality). Contraception and consent.
Introduction to the nerve-sense system and the brain. Sense of balance, sight, hearing, taste, temperature.
Health and Lifestyles: Exercise and sleep; time outside; healthy diets. Eating disorders, issues with the Western diet, food addictions, the obesity crisis etc. Substance abuse and addition (smoking, alcohol, drug misuse). Sexual health and sexually transmitted infections. Mental health and wellbeing, mindfulness, dealing with stress, staying safe online, bullying etc.
Introduction to medicine: health and disease, the role of science, childhood illnesses, vaccinations, traditional medicine, homeopathy, naturopathy; elementary first aid.

Pedagogical Reasoning

Pupils of this age are increasingly aware of the growth of their bodies, making a study of bodily organs, systems and health an appropriate theme. Re-establishing, using the intellect, good health habits for adulthood. Supporting informed autonomy, behaviour and choices.

Consideration for Decolonisation/Contextualisation

Tolerance and understanding of different lifestyle choices. Learning to make decisions about your own body. Owning your own body. Valorising diversity of bodies, including body size and shape. Understanding that there is no one 'healthy' shape or size, that difference is beautiful. Care of different hair and skin types (e.g. braiding, oiling, dreadlocks, etc). Biology of and cultural attitudes towards the clitoris as a primary sexual organ, including female genital mutilation.

Suggested ARLOs

Biology Classes 6-8, PSHE, RSE, Media Education

Physics: Electricity and Magnetism

Indicative Content

The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme.
Building on elements established in Class 6, this block shows how the electrical process can be combined into a circuit. The aim is to understand electricity as a relationship between electrical potential and current, not as a flow of substance.
Exploring the sensations of touching copper and zinc plates to the tongue. Using these to create a battery of copper and zinc plates, beakers with warm saline solution, and wires, and creating an

electrical circuit to light a bulb. Use various calibres of steel wire with a 12v battery to modify the voltage. Use various lengths and calibre of wire to examine resistance. Observe the filament of a light bulb and infer the conditions inside the bulb. Magnetism: Building on Class 6: Magnetic fields. Declination and inclination of the earth's magnetic field. Electro-dynamcs: sources of current, cells and dynamos and their use in electrical appliances. Electro-magnets and their applications in motors, fuses, heaters etc. The dangers of electric current. The history of the generation of electricity to the present day: coal-fired, atomic, renewables.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women and people of colour. Understanding the impact of electronics on globalisation and innovation (e.g. the production of electronic goods in Japan, China and South Korea). New industries require new and often rare raw materials (e.g. copper, coltan, uranium etc) and the impact of this on developing economies. Coal and oil fired energies and the petro-chemical industries. Green energy and technologies.
Suggested ARLOs
Physics Class 6-8

Physics: Sound

Indicative Content
The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme. Acoustics: Beginning with everyday experiences of sound in relation to distance, volume and pitch, explore the boundaries of what we can hear. Building on work from Class 6, examine the acoustic properties of different materials. Using, for example, a tuning fork and Chlandni plates, measure and record different frequencies. How gramophones reproduce sound. Nature and usage of ultrasonic sound waves. The nature and usage of echoes in the animal kingdom and as used by humans, e.g. bats, dolphins, radar. speed of sound in air and other media. Acoustics in buildings and musical instruments. Wavelengths.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women and people of colour. New industries require new and often rare raw materials (e.g. copper, coltan, uranium etc) and the impact of this on developing economies.
Suggested ARLOs

Physics Class 6-8

Physics: Information Technology

Indicative Content
The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme. From semaphore to the smart phone: signalling; morse code; binary numbers and their relationship to switches; Alexander Graham Bell and the telephone; Heinrich Rudolf Hertz; Alexander Stepanovich Popov, Guglielmo Marconi; radio and television, Logie Baird; radar; Microphones and sound recording devices, e.g. gramophones, tapes, cds and digital formats. Telephones to mobiles to smartphones. History of the computer from early calculators through punched cards, valves and transistors, microprocessors and beyond, to the internet and the world wide web. Biographies including Ada Lovelace, Charles Babbage, Alan Turing.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women and people of colour. Understanding the impact of electronics on globalisation and innovation (e.g. the production of electronic goods in Japan, China and South Korea). New industries require new and often rare raw materials (e.g. copper, coltan, uranium etc) and the impact of this on developing economies.
Suggested ARLOs
Physics Class 6-8, Media Education

Physics: Mechanics

Indicative Content
The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme. The relationship between inclined planes, shape, friction and velocity. An introduction to the phenomenon of gravity. Using the body to explore principles of levers by lifting different weights, and then using mechanical levers. Winches and pulleys. Block and tackle and their uses. Wedges, screws, and gears. Combinations of these to make machines. The bending properties and resistance of different materials, the implications of this and the usage.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for

the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women, disabled people, LGBTQIA+ people, and people of colour.
Suggested ARLOs
Physics Class 6-8

Physics: Light

Indicative Content
The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme. Observation of shadows and images. Images on planes and reflections in flat and curved surfaces. Degrees of reflectivity of surfaces. The camera obscura and/or the pinhole camera. See also Media Education, where cameras, stop motion animation etc are included.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women, disabled people, LGBTQIA+ people, and people of colour.
Suggested ARLOs
Physics Class 6-8, Media Education

Physics: Thermo-dynamics

Indicative Content
The length and sequencing of many of the physics blocks for Class 7&8 can be determined by the teacher. Each theme can be taught separately in one class, spread across both, and/or combined with another physics theme. Differential conduction; insulation and its uses. The expansion of gases, liquids and solids, and the principle of the thermometer. Changes of state of liquids, solids and gases. Evaporation. Convection and radiation. Conduction and insulation. Engines, from weaving to the combustion engine. Richard Arkwright and the spinning jenny; Newcomen and the first mine pump; James Watt and the steam engine; Richard Trevithick and the locomotive; Abraham Darvey and Andrew Carnegie and the production of steel; Rockefeller and oil – the production of oil into tar, petroleum, paraffin, benzol and petroleum; the development of the combustion engine and the petro-chemical industries.

Biographies, e.g. Edison, Tesla, Siemens, Verena Holmes.
Pedagogical Reasoning
An introduction to the principles informing the phenomena of energy sources and applications: the physics of modern industrial life. One of the developmental tasks of adolescence is to be qualified for the society that they are a part of, which includes an understanding of how technology works and how fundamental technology has become to modern life.
Consideration for Decolonisation/Contextualisation
Biographies of a range of people, including women, disabled people, LGBTQIA+ people, and people of colour. New industries require new and often rare raw materials (e.g. copper, coltan, uranium etc) and the impact of this on developing economies. Coal and oil fired energies and the petro-chemical industries. Green energy and technologies.
Suggested ARLOs
Physics Class 6-8

Above and Beyond (Astronomy)
Indicative Content
Astronomy: Students have already learned about the compass directions and the relationship of the sun to weather and climate in the different regions of the earth, and have experienced a wide range of mythological understandings of the sun, moon and stars and their constellations and their use in navigation. They have also learned in history about the shift between geocentric and solar systems. Now they learn to conduct accurate observation by eye and using telescopes. They learn in as concrete way as possible about the cycles of the moon and the earth's transit around the sun and the effects of the tilt in the earth's axis and the seasons. Lunar and solar eclipses help to show this. the other planets in our solar system can be described and the possibilities and risk (costs, military use) of space travel should be discussed. Astronomy is complex, particularly phenomena such as light years, time-space, black holes, Big Bang theory etc., which the students have frequently heard about, though there are limits what most students (and teachers) can comprehend. It is advisable to spread astronomy over class 7 and 8 and stay within the limits of what is observable.
Pedagogical Reasoning
The exploration of geographical space reaches beyond the earth to space and with it the perspective that our planet is a body in space, among others. At this age the students intellect can begin to actually grasp the dislocation of terra firma into a turning sphere in space bound by gravity to the sun yet also locked into an intricate dance with the moon and other bodies in our solar system. They may know this fact beforehand but being able to visualise and bodily sense the enormity of it all can only really begin now. Though complex and remote the astronomical has a profound impact on our lives as the source of rhythms that shape our lives.
Consideration for Decolonisation/Contextualisation
A decolonizing aspect is to realise that all human cultures at all times have considered astronomical phenomena, often with great accuracy and using complex models and exact observations of long periods of time. Our western materialistic view has lost the mythical meaning of our inner connection to the sun, moon and planets. In a materialistic and nationalistic world the conquest of space becomes a matter of national prestige and commercial exploitation. It is important to enable students to share the grandeur of the earth as blue planet turning in space with its unique (as far as we know) atmosphere that permits life- seen from the perspective that astronauts experience.

Suggested ARLOs
Geography, Social Science, Literacy, Visual and Graphic Art

Regional/continental geography

Indicative Content
In Classes 7 & 8, a case study type approach is taken, whereby the four remaining inhabited continents are explored in relation to: Major geographical features, climate, land use, variety of cultures and transport systems and trade links within the continent and between continents. In class 8 there should be greater emphasis on modern and industrial aspects (coal, oil, minerals , environmental destruction, climate change, conflicts related to access to water, e.g. damming the Nile) Human geography: cultures and places. Exploration of indigenous cultures in relation to their environment (e.g. people of the Asia steppes, Tuaregs in North Africa, Inuit in the Arctic, Aborigines). Different types of traditional societies and their economies, artefacts and dwellings (nomads, pastoralists, farmers, forest dwellers, oasis dwellers, specialist such as metal workers, potters, fisherfolk, miners, navigators and traders). Pre-European empires, cities, trading centres, technologies. Changes to these lifestyles through colonialism, modernisation and urbanisation. The impact of major religions such as Islam, Buddhism, Hinduism, Confucianism. Relationships today between East and West, North and South.
Pedagogical Reasoning
The focus returns to the human being and human relationships to the natural world and the impact of technology, agriculture, mining, exploitation of resources to show how human beings on the one hand can live in balance and harmony with their environment and on the other the disastrous effects of human egotism. In a particular self-orientated stage of puberty this focus can offer an 'objective' perspective on the human being and her powers. Experiencing the earth as a precious, fragile and beautiful place is an important experience at the age.
Consideration for Decolonisation/Contextualisation
The traditional curriculum indication of 'exotic/strange peoples in strange lands' was frankly racist and reflected a Euro-centric view of ethnography. The main risk in this theme is transporting naïve, patronizing (e.g. child-like) and sentimental images of indigenous people. People have always been wise and foolish, brutal and kind, caring and destructive (hence the importance of understanding the impact of technology and the major thresholds these bring). Modern indigenous people are learning in ways which combine science, technology with traditional knowledge to find ecological and cultural solutions. Explore map representations by Early European explorers which interpreted the world in a European centric way as a means for denoting power, dominance and cognitive superiority. Care is needed to use imagery that illustrates the sophistication of indigenous peoples and not the traditional misrepresentations used over the decades/century.
Suggested ARLOs
Geography, Social Science, Literacy, Visual and Graphic Art

Journeys and meetings: Africa and the East; The Atlantic to America. Early modern history - from the late middle ages to the early 19th Century.

Indicative Content

Cultural contacts between Asia, Africa and Europe; pre-conquest Americas; The European Renaissance, Reformation and colonial expansion. The different colonial powers (Spain, Portugal, Holland, England, France), the effect of colonialism, the destruction of indigenous cultures and economies. The Atlantic and global slave trade. The emergence of industrialisation and the Agrarian revolution. Absolutism and revolution: the American and French revolutions. The emergence of nations and nationalism.

Pedagogical Reasoning

To understand the multiple processes, perspectives and effects of colonialism and slavery on global trade and emerging modern societies. To understand the emergence of the bourgeoisie, bourgeois culture.

Consideration for Decolonisation/Contextualisation

Understanding of, for example, the rich variety of African cultures that pre-dated the European slave trade, the sophisticated nature of American First Peoples' societies etc.
Consider the impact of colonialism on indigenous economies, cultures, societies and languages.
Inclusion of stories and voices of women, including the changing roles of women through enclosure and industrialisation.
Inclusion of Ireland, Scotland and Wales as the first colonies - enclosures, forced emigration etc.

Suggested ARLOs

Literacy, Social Science, Geography, Visual and Graphic Art

Wish, Wonder and Surprise: the art of writing

Indicative Content

The grammar of reported speech using a range of verbs and synthesis.
The conditional tense and 'if' clauses in varying degrees of probability.
Literary and language devices: figures of speech, rhetorical devices, metaphors, similes, comparisons, proverbs, aphorisms, euphemisms.
Analysis of text and the effects of literary devices (both intended and unintended).
Analysis of text for tone and purpose.
Composition and creative writing.
The history and changing meanings of words as social awareness changes (e.g. awful and awesome, cheating, girl, meat, naughty, nice, pretty, sly, silly, spinster, bachelor, flirt, guy, senile, merry), as well as homonyms, homophones, homographs etc.

Pedagogical Reasoning

As the pupils move through puberty they are interested in giving expression to subtle, ambivalent and nuanced experiences. They experience the power of language to express mood, feelings, relationships, distance and position, but also to entertain, to emote, to manipulate, to suggest, etc.

Consideration for Decolonisation/Contextualisation

Valuing text and speech from a range of cultures, including modern popular culture
Looking at the origins, meaning and impact of derogatory expressions, terms of endearment, euphemisms.

Suggested ARLOs

Literacy

Age-related Learning Opportunities for Visual and Graphic Arts C7	**Relevant Learning Descriptors**
Children should have the opportunity **Drawing** • To explore the rules of one and two point perspective • To explore the drawing of shadows **Painting** • To explore creating coloured landscape pictures with both watercolour paints and oil pastels • To explore art techniques from a range of cultural styles **Clay Modelling** • To explore creating solid three dimensional shapes with flat faces • To explore modelling human forms of gesture and movement	**Proficient Drawing** Pupils understand the rules of one and two point perspective, and can demonstrate this in their work. They can achieve subtleties of light and shade in their drawings. **Proficient Painting** Pupils can use the veiling technique with watercolour paint and oil pastels to create a varied range of atmospheric effects. **Proficient Clay Modelling** Pupils can model a range of precise three-dimensional forms with flat faces. They can create a simple human figure which implies movement or gesture, e.g. someone in the process of turning, bending, pointing, reaching etc.

Age-related Learning Opportunities for Handwork C7	**Relevant Learning Descriptors**
Children should have the opportunity • To explore the mechanics of foot movement, and the implication for properly fitting shoes • To draft own shoe/slipper pattern • To make own shoes/slippers with a sole, using traditional shoe-making methods	**Proficient Handwork** Pupils can talk about the structure of the foot and the way in which it moves during walking and running. They can measure their own feet accurately, and use the measurements to draft a shoe or slipper pattern, adding the seams. Pupils can make up their shoes/slippers using traditional shoe-making techniques. They can cut out accurately, tack and sew the shoe/slipper top, and finish them with cork soles, linings and precise stitching.

Age-related Learning Opportunities for Literacy C7	**Relevant Learning Descriptors**

Children should have the opportunity • To practise presenting, reciting and performing to their class • To practice listening to information presented both by the teacher and by their peers, taking notes, asking questions and discussing ideas and opinions • To take part in the writing, rehearsal, production and performance of drama on a small scale • To experience a rich and ambitious vocabulary: exploring new words in a range of contexts and investigating etymology and morphology • To practice reading and writing across the curriculum at length, in depth and across multiple texts, for different purposes and in different structures and genres • To practice drafting, redrafting, editing, proofing and 'publishing' their work • To practice different reading styles for different purposes: e.g. skimming and scanning, editing and proofreading • To read a wide range of texts for pleasure: different text-types and genres, literature from their own and other literary heritages, and that ranges from historical to modern. • To have time to read, both self-selected and directed material, in school and at home, independently and with others, and to discuss and write about what they have read • To explore the detailed analysis of text using a range of technical language to describe literary and linguistic devices	**Proficient Literacy** Students can give a presentation on a prepared assigned topic, using notes and answering questions. They can record important information about what they have read or heard in a more organised and systematic fashion. Students perform dialogue, skits and short plays, including those that they have written themselves, often based on books or other material they have studied across the curriculum. They recite a wide range of poetry, including poems and poets of their own preference. Students can write at length, shaping and developing writing across a wide range of genres, choosing language and features that are appropriate for the purpose and audience of their writing, and developing their own style. They write on a wide range of topics, resourcing and utilising information and ideas from different external sources. Students' writing is grammatically correct, their punctuation is more sophisticated, they spell most words used in everyday language correctly, and they draw on their wider knowledge of language and spelling to work out more complex words. They can follow a process of drafting, re-drafting, editing and responding to their own writing. Students are self-motivated, confident and experienced readers, who pursue their own interests through their reading. They can tackle challenging texts across the curriculum, reading thoughtfully, using a wide range of comprehension strategies and making inferences from complex layers of meaning. Students use reference resources to assist independent study and research, including using multiple texts on a specific subject to locate, analyse and synthesise information. They use dictionaries, thesauruses and etymological dictionaries to support precise and accurate writing. Students have an understanding of the concept of meter in poetry, and are able to use some technical language to talk about the patterns they can hear. They have a wide range of technical vocabulary for both oral and written literary analysis, including literary terms and linguistic analysis.

Age-related Learning Opportunities for Social Science C7	**Relevant Learning Descriptors**
Children should have the opportunity • To explore history from the late Middle Ages (including the cultural contacts between Asia, Africa and Europe; pre-conquest Americas; the European Renaissance and Reformation; European colonial expansion) to the early 19th Century. • To explore the multiple processes, perspectives and effects of colonialism and slavery on indigenous populations, global trade and emerging modern societies. • To explore the emergence of industrialisation and its impact. • To explore the emergence of nations and nationalism, particularly through revolution. • To explore historical sources, such as pictures, archaeological artefacts, historical buildings and secondary historical sources. • To encounter disciplinary vocabulary, exploring the etymology and morphology of new and challenging words.	**Proficient Social Science** Pupils have a chronologically secure understanding of a number of significant people, places, events and artistic and technological innovations over the period from the late Middle Ages to the early 19th Century. They can describe and discuss the impact of colonialism, slavery, global trade, revolution and nationalism over this time from various perspectives using historical terms and concepts. Pupils compare and contrast different accounts, perspectives and interpretations of the past. They consider the significance of events, people and developments and make connections between them. Pupils can interpret historical images and recognise that artefacts (e.g. tools, costumes, transport etc) and buildings belong to an earlier culture and can talk about how and when they may have been used. They can access recommended secondary historical texts (e.g. suitable history books)

Age-related Learning Opportunities for Media Education C7	**Relevant Learning Descriptors**
Children should have the opportunity **Media Content** • Use research, including digital search engines to inform independent work, and give presentations • Explore how to refine the results of a digital search **Media Form: Writing** • Practice touch typing with all fingers **Media Form: Sound and Language** • Sing a range of songs in a range of keys, time signatures and rhythms, in simple polyphony; practice their solo instrument of choice	**Proficient Media Awareness** Pupils can carry out independent research using books and other print media, and can use digital search engines, refining their results and making judgements about the probably accuracy of the information they find. They can use a keyboard efficiently and effectively to demonstrate their literacy skills. Pupils sing more complex polyphonic music, and practice any instrument they have chosen to play. They are familiar with a range of audio media, including, for example, radio plays and recorded music. Pupils can use their knowledge of the principles of perspective to represent three dimensional images in a two dimensional plane. They can explain how an analogue camera creates and image, and

• Explore music as an academic subject, including recorded music **Media Form: Image** • Use the principles of perspective to explore the representation of three dimensional objects in a two dimensional media • Explore how analogue cameras use lenses and mirrors to create images • Explore the creation of moving or sequenced images through, for example, stop motion animation with drawings or models. **Media Carrier** • Explore practical book binding, including balancing text, pictures and graphics to lay out pages, typeface, captions and aesthetics, page numbering etc **Online Safety** • To explore the impact of commercial sponsorship on search engine results and how rankings can be influenced. • To explore the reliability of online content, including the credibility and defensibility of some opinions, deliberately misleading information, and the discrediting of accurate reporting (fake news) • To explore the ways in which a person's online identity and digital personality can be monitored, managed and protected • To explore giving, gaining and denying consent online, including around the sharing of images and personal details • To explore the laws governing acceptable online behaviour, including, for example, sexting, trolling, harassment and stalking • To explore the importance of self-regulating technology use, the strategies that can be used to identify when someone may need support, and the pressures that technology can place on users. • To explore privacy and security, including viruses and malware, the security of devices connected to the internet (e.g. webcams, phones) and how to back up data • To explore the illegal access of content (e.g.	demonstrate their understanding in practice. Pupils can create a sequence of images that tells a story or creates movement through animation. In an analogue format, they can lay out the pages of a book in an aesthetically pleasing and effective way, demonstrating their understanding of how to balance text and graphics, use captions, and number pages for printing. Pupils can select appropriate results from digital searches, talking about the reliability of the information they find, how some information may be deliberately misleading, and how accurate reporting may be discredited. They can talk about their own and others' online identity and digital personality, how these are formed, and how they can be monitored, managed and protected. Pupils can explain some of the rules, conventions and complexities of giving, gaining and denying consent. They can discuss what online behaviour is unacceptable and what is illegal, including the possible consequences of behaviours like sexting, trolling, harassment and stalking. Pupils know the importance of self-regulation in terms of their technology use, and can talk about strategies that they can use. They know some of the things that can put pressure on someone (e.g. the expectation of immediate response on social media apps, invasive notifications etc) and how to identify when someone might be experiencing difficulties in managing their technology use. Pupils know about a range of threats to their digital security, and can explain how they might encounter viruses and other types of malware. They can explain some of the actions they can take to minimise the risks of connectivity, e.g. covering webcams and checking app permissions. Pupils know the importance of backing up data, and how this can be done. They know that commercial online content can accessed illegally, and can identify the potential consequences of this and how it might impact the creators of online content.

pirate sites, peer-to-peer sharing) and its potential consequences.	

Age-related Learning Opportunities for Maths C7	Relevant Learning Descriptors
Children should have the opportunity **Number** • To consolidate knowledge and understanding of the number system: ordering whole numbers, common fractions and decimals; converting between decimals, fractions and percentages; expressing relationships through ratios; identifying prime numbers and squares. • To explore the powers and roots of numbers • To consolidate fluency in mental and written calculations with all four operations, applied to integers, fractions, decimals, proper and improper fractions and mixed numbers • To encounter recurring decimals and their conventions. • To encounter negative numbers, introduced through business maths (see below), and then to explore the rules of calculating with negative numbers • To explore the vocabulary used to describe elements of the number system (e.g. negative, natural and positive rational numbers, integers etc) • To practice translating multi-step problems from words and pictures into mathematical equations and vice versa, abstracting key information and using decomposition to break down complex problems into more manageable parts, and including problems involving time, length, weight, capacity and volume. • To explore negative numbers through profit/loss, debits and deficits • To discuss their thinking and methods with the teacher and their peers. **Algebra** • To explore simple and linear equations, including the rules and conventions of using	**Proficient Number** Pupils have a sound understanding of the number system, including place value. They can order any whole numbers, decimals and fractions, convert between decimals, fractions and percentages, express the relationship between two numbers as a ratio, identify prime numbers, calculate the square and estimate the square root of a number. Pupils can use a range of strategies to perform both mental and written calculations with integers, decimals, proper and improper fractions and mixed numbers, using all four operations and applying the rules for the correct order of operations. They can round numbers, including recurring decimals, to a given number of decimal places or significant figures. Pupils can calculate with negative numbers, and can describe numbers using mathematical vocabulary. They can apply all of their arithmetic skills to multi-step word problems, including those involving time, length, weight, capacity and volume, abstracting the key information and breaking the problem down into logical, solvable steps, and explaining the calculation in their own words.They can apply their knowledge and understanding of negative numbers to a simple balance sheet. **Proficient Algebra** Pupils can use and interpret algebraic notation, simplifying and manipulating algebraic expressions to maintain equivalence, and solving simple and linear equations. **Proficient Shape, Space and Measure** Pupils can calculate the perimeter and area of any shape. They can plot points and shapes onto coordinate axes, accurately rotating, translating and reflecting given figures. Pupils can use Pythagoras' theorem to solve problems involving right-angled triangles, and use known results to obtain simple proofs. They understand that a tangent forms a right angle with the radius at the

brackets, fractions and negative numbers, the correct order of operations, and associative/distributive properties • To explore the making and transforming of formulae • To explore simple set theory (e.g. through types of quadrilateral and their symmetries) **Shape, Space and Measure** • To explore the area of a circle and the value of π • To explore the accurate calculation of the area of geometrical shapes, and any shape bounded by straight lines and circular arcs • To explore translations and movement properties of given figures • To explore Pythagoras' theorem • To explore tangents to circles • To explore perspective drawing **Data Handling** • To further explore statistics • To explore probability through simple fractions and probability lines • To explore the accurate collection and presentation of data using block graphs, line graphs and pictograms • To use tables, graphs and diagrams to identify patterns and trends in data sets • To explore negative numbers through profit/loss, debits and deficits	point of intersection. Pupils can use the principles of perspective drawing to realistically depict three-dimensional objects in a two-dimensional plane. **Proficient Data Handling** Pupils can design useful questions and effective collection methods to generate, gather and record both qualitative and quantitative data. They can represent and display collected information in a range of appropriate ways, demonstrating their understanding of the conventions of tables, graphs and diagrams, e.g. axis, row and column labels, legends etc. Pupils can read, interpret and draw line graphs, extracting information to solve problems or draw conclusions. They can find the mean, median and mode of a set of numbers. Pupils can identify and talk about relationships and patterns within sets of data, using tables, graphs and/or diagrams.

Age-related Learning Opportunities for Modern Foreign Languages (All) C7	**Relevant Learning Descriptors**
Children should have the opportunity • To build vocabulary in a systematic and structured way, alongside learning idiomatic and colloquial vocabulary in oral work • To take part in conversations, role plays, dialogues, plays and group work. • To read extensively from a wide selection of material.	**Proficient Fluency** Pupils can speak freely about a range of familiar topics, and are beginning to adapt their language to the audience, for example using colloquialisms and idioms. They can take part in conversations, improvised dialogues, and short dramatic pieces. Pupils can independently read text at an appropriate level, responding to questions about what they have read. They can apply what they know about grammar (including

• To explore more complex use of language, e.g. conditional tenses, indirect speech, reflexive verbs, irregular verbs • To write creatively. • To explore biographies of speakers of the target language, particularly related to main lessons, e.g. scientists, explorers etc • To explore the geography and culture of a country where the target language is spoken, looking in particular at historical and cultural topics, and modern life in the country (e.g. popular music, contemporary fiction and poetry, etc.	conditional tenses, indirect speech, reflexive and irregular verbs etc) in their own writing, in a number of different genres, demonstrating the breadth of their vocabulary through their choices. Pupils can talk about the lives several significant people who speak the target language. They are also familiar with the modern culture of a number of regions where the target language is spoken, including contemporary music and literature.

Age-related Learning Opportunities for Chemistry Class 7-8 C7	**Relevant Learning Descriptors**
Children should have the opportunity **Chemistry** • To safely explore the combustion of a wide range of familiar materials • To safely explore the combustion of unfamiliar materials in laboratory conditions, e.g. magnesium underwater etc • To observe the factors which enhance and inhibit combustion • To record their observations in writing, diagrams and pictures • To experiment with indicators (e.g. beetroot juice, litmus paper, universal indicator solution etc) • To burn lime in a kiln and slake the resulting residue • To deduce that acid +base -> salt + water • To explore the qualities of different common metals, their origins, forms of production, their cultural history and their technological applications • To explore the benefits, risks and impact of the mining and petro-chemical industries. **Tool and Equipment Use** • To use a range of equipment appropriate to the activity	**Proficient Chemistry Tool Use and Equipment** Pupils can follow instructions with thought and care, and talk about the risks associated with equipment and activities. They can name and use a range of equipment appropriate to the activity. **Proficient Chemistry** Pupils can describe and explain the processes of combustion of familiar and unfamiliar materials, and talk about the implications this has for practical life and fire safety. They can observe carefully and accurately describe the experiments that they have done or observed, and record their understanding in text, diagrams and illustrations. Pupils can experimentally test for acids and bases, using simple indicators and scales. They understand and can apply the formula of acid + base -> salt + water, and give examples of practical application of this in everyday life. Pupils can talk and/or write about common metals, their properties, their origins and their uses. They can describe a range of positive benefits and possible environmental consequences of the mining and petro-chemical industries.

Age-related Learning Opportunities for Physics Class 6-8 C7	**Relevant Learning Descriptors**
Children should have the opportunity **Electricity and Magnetism** • To experiment with copper and zinc plates to generate charge and create circuits. To experiment with voltage and resistance. • To discuss the nature of electrical charge and potential. • To explore the properties of magnets, including magnetic fields, and the application of this in technology. **Sound** • To explore the limits of human hearing. • To explore acoustic properties of different materials and their applications. • To explore the measurement of sound frequencies. • To explore the nature and use of echoes both in the natural world and by humans. **Information Technology** • To explore different recording technologies. • To explore the history of communications technologies and computing to the present day. **Mechanics** • To explore the impact of inclined planes and shapes on velocity • To explore the nature and principles of levers, wedges, winches, pulleys and screws. • To explore the bending and resilience of different materials. **Light** • To explore the reflection and projection of light. • To discuss the nature and characteristics of light. **Thermo-dynamics**	**Mature, Independent Physics Tool Use and Equipment** Pupils can follow instructions with thought and care, and talk about the risks associated with equipment and activities. They can name and use a range of equipment appropriate to the activity. **Mature, Independent Electricity and Magnetism** Electricity Pupils can describe and illustrate diagrammatically the nature of electrical current in a closed circuit. They can explain that using different metals results in different voltages. Pupils can describe electrical resistance, and its effects on voltage. They can describe how a light bulb works. Pupils can infer the nature of electricity as a dynamic relationship, rather than the flow of a substance. Magnetism Pupils can describe and illustrate the main properties of magnets, magnetic fields and their application. **Mature, Independent Acoustics** Pupils can describe the impact of distance, volume and pitch on what they are able to hear. They can describe and illustrate the nature of sound as vibration, and how this can be measured, recorded and applied in technology and in the natural world. **Mature, Independent Information Technology** Pupils can describe and write about the history of communication technologies from semaphore to smartphone, including the recording and transmission of sound and data. **Mature, Independent Mechanics** Pupils can explain why different shapes travel at different rates down an incline. Pupils can deduce and describe simple principles of leverage, and use formulae to calculate leverage. They can describe different classes of levers. Pupils can explain the principles of pulleys and gears, and describe their practical uses. They can calculate the velocity ratio. Pupils can describe the flexibility of different materials and how this can be used in practice.

• To explore the phenomenon of warmth in the expansion and contraction of different substances; the experience of this and its uses. • To explore the history of the petrochemical industry, the combustion engine, and the applications and environmental consequences of these. **Tool and Equipment Use** • To use a range of equipment appropriate to the activity	**Mature, Independent Light** Pupils can describe and illustrate how light makes things visible, and has an impact on our perception of them, e.g. colour and shadow. They can explain that light travels in straight lines and describe how it is reflected from smooth, irregular and curved surfaces. **Mature, Independent Thermodynamics** Pupils can describe the effects of heating and cooling on different substances, and how these properties can be used. They can describe the insulating and conductive properties of different materials, and how this can be used. Pupils can describe the history and relationship of the petrochemical industry and the combustion engine, and the impact of these on the environment.

Age-related Learning Opportunities for Geography C7	**Relevant Learning Descriptors**
Children should have the opportunity • To explore astronomical features in the outdoors, which are observable with basic equipment, from a phenomenological perspective of the observer on earth. • To explore the deductible science of the relationship between the earth, moon and sun, the tilt of the earth's axis, and its consequences for us • To encounter historical approaches to understanding astronomy • To discuss the risks and benefits of space travel • To explore in detail the major physical geographical features of two continents and their impact on land use, cultures, transport systems and trade links • To hear, read about and see examples of indigenous communities, their relationships to the environment, and how this has shaped their cultures, economies and world view. • To explore how these traditional cultures have	**Mature/Independent Geography** Pupils can observe, record and account for visible astronomical phenomena involving earth, moon, sun and stars. They can talk and/or write about how people at different times around the world have understood and explained these relationships. Pupils can describe the major physical geographical features of two particular continents, and explain the relationship of these to human activities in the area using a range of techniques and media. Using specific examples, they can show how traditional human societies are shaped in their culture and activities by the environments they are situated in, and how this has changed over time. Pupils can interpret data in different forms, e.g. narrative, numerical, topographical etc.

been affected by colonisation, modernisation, urbanisation and globalisation, including the spread of world religions. • To work in groups, researching different aspects of continents and presenting their findings to the rest of the class	

Age-related Learning Opportunities for Biology Class 6-8 C7	**Relevant Learning Descriptors**
Children should have the opportunity **Human Biology** • To explore the digestive organs and processes, food substances (carbohydrates, protein, fat, vitamins etc and food additives) and diets. • To explore different food cultures. • To explore and experience processes of respiration and circulation. • To learn about the functions, functioning and symbolism of the heart. • To learn about the structure, function and care of the skin, hair and fingernails. • To learn further about the biology of and different cultural attitudes towards sexual organs and sexual characteristics, reproduction and sexuality. • To learn about contraception, sexual health and consent. • To learn about the nerve-sense system and the brain. • To explore the senses of balance, sight, hearing, taste and temperature. • To explore the nature of health, and the impact of disease and disorder. • To explore a range of factors that promote or limit physical and mental health. • To learn about medicine, its history, and a range of approaches to promoting health and wellbeing, and managing disease, illness and disorders.	**Proficient Human Biology** Pupils have a foundational and practical understanding of the functions of the different organs and systems of the human body and their relationship to the organism as a whole. They can talk about a number of common disorders of these organs/systems, and their relationship to health. Pupils can give an outline of the digestive process from sight/smell to excretion and beyond. They can relate this knowledge to an understanding of food, food types, food quality and eating behaviour. They can compare and contrast a range of food cultures. Pupils can give an outline of the processes of respiration and circulation, and the role of the heart and lungs. They can talk about the symbolism of the heart in different cultures. Pupils can write about and/or illustrate the structure of the skin, and several of its functions. They can describe some skin and hair types, and how these are cared for in different cultures. Pupils can describe human sexual organs, and primary and secondary sexual characteristics, both visible and invisible. They can give an outline of the process of reproduction. Pupils can describe a number of common methods of contraception, and talk about how to keep sexual relationships safe and consensual. Pupils can give an outline of the nerve-sense system, and the brain as a monitoring organ at the centre of this system. They can talk about senses as a way of perceiving the world, and the restrictions of sensory limitations (e.g. visual impairment, hearing impairment, effects of alcohol on balance etc).

Age-related Learning Opportunities for Design and Technology, Class 6-8 C7	**Relevant Learning Descriptors**
Children should have the opportunity **Tool Use** • To further develop woodworking tool skills • To further develop green woodworking skills • To learn to use bookbinding tools, e.g. guillotines, knives, awls etc **Materials** • To explore how wood in different forms and from different sources can be shaped and transformed • To explore a craft of the teacher's choosing, depending on available skills and resources • To make glue for book binding from raw materials **History and Context** • To encounter the cultural and historical nature of woodworking and other craft tools • To experience a craftsperson's perspective	**Proficient Tool Use** Pupils can use a wide range of woodworking tools safely, effectively and appropriately, assessing the risks involved and demonstrating their understanding of how to mitigate these. **Proficient Materials** Pupils can select an appropriate raw material, e.g. species of tree, type of seasoned wood, for their project. If available skills and resources allow, children can learn some methods and techniques to transform a material through additional craft teaching. **Proficient History and Culture** Pupils have an understanding of the craft workshop as a place of community practices that mediates appreciation and respect. They can talk about the social, cultural and technological history of many of the tools they use.