

Leonardo V. Academy



Leonardo
V. Academy

Curriculum Leonardo V. Academy
(Grade 8, Year 9)

Framework for Leonardo V. Academy Curriculum

Grade 8/Year 9 (Key Stage 3)

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Disclaimer

To ensure the very best standards of learning and a quality education for our students, Leonardo V. Academy aims to offer an up-to-date, comprehensive, unique, as well as a thoroughly modern curriculum. Combining the high level of British academic standards with a forward-thinking, international outlook, our curriculum intends to be innovative and challenging, whilst also being accessible in addition to making a challenging learning environment enjoyable for any student that is already enrolled or is thinking of joining our school.

In keeping with these high academic standards, the Leonardo V. Academy curriculum for Grade 8 has been developed from the following national government and private educational authorities:

- ❖ Her Majesty's Government Department for Education
 - <https://www.gov.uk/government/organisations/department-for-education>
- ❖ National Curriculum in England (Secondary Education)
 - <https://www.gov.uk/government/publications/national-curriculum-in-england-secondary-curriculum>
- ❖ Cambridge International Examinations (Secondary 1)
 - <http://www.cie.org.uk/programmes-and-qualifications/cambridge-secondary-1/cambridge-secondary-1/>
- ❖ Czech Republic Ministry of Education, Youth and Sports – Framework Educational Programme for Basic Education
 - <http://www.msmt.cz/areas-of-work/basic-education-1>

Subjects of Study

During Grade 8, students at Leonardo V. Academy focus on the following subjects of study.

* English	(5 hours)
* Mathematics	(5 hours)
* Science	(4 hours)
* Geography	(2 hours)
* History	(2 hours)
* Information Technology	(2 hours)
* Art and Design	(2 hours)
* Design Technology	(1 hour)
* Music	(2 hours)
* Modern Languages	(3 hours)
* Physical Education	(2 hours)

Each subject is taught in full compliance with the National Curriculum of England.

English (Course Description)

By the beginning of Grade 8, pupils should be able to read and confidently analyze a wider range of contemporary and historical fiction and nonfiction texts with developing accuracy. During Grade 8, teachers should continue to emphasise pupils' enjoyment and understanding of language, especially vocabulary, to support their reading and writing.

In Grade 8, pupils should begin reading a range of high-quality, challenging, classic literature and literary non-fiction, such as essays, reviews and journalism. They should be able to read and understand most words effortlessly and determine unfamiliar vocabulary using linguistic and contextual clues. Pupils' knowledge of language, gained from stories, plays, poetry, non-fiction and textbooks, will support their increasing fluency as readers, their facility as writers, and their comprehension.

They should be reading frequently, outside as well as in school, for pleasure and information. Pupils should be able to summarise and analyze multiple readings of extended lengths accurately and in their own words. They should be able to read independently, with clear understanding, inferring the unstated nuances within the texts based on personal observations, and then discuss their findings in a coherent written and verbal manner. In Grade 8, students should begin to make critical comparisons across nonfiction and fiction texts. Students should understand how language, including figurative language, vocabulary choice, grammar, text structure and organisational features present meaning within and across multiple texts.

Pupils should be able to plan, write, and revise their own writing for extended academic writings. These synthesized writings should include independent academic research and reflection. They should begin to use and analyze academic primary sources for neutrality and validity. They should have experience writing for a variety of purposes and audiences across a range of contexts.

By the end of Grade 8, pupils' reading and writing should be sufficiently fluent and effortless for them to manage the general demands of the curriculum in Key Stage 4, across all subjects and not just in English, but there will continue to be a need for pupils to learn subject-specific vocabulary. They should be able to reflect their understanding of the audience for and purpose of their writing by selecting appropriate vocabulary and grammar.

Specific requirements for pupils to discuss what they are learning and to develop their wider skills in spoken language form part of this programme of study. In Grade 8, pupils' confidence, and mastery of language should be demonstrated

through formal assessments of public speaking, collaborative discussion, and debate. Pupils should communicate effectively and expressively by choosing and adjusting tone and style of speech to audience and purpose and should understand nuances in vocabulary choice and age-appropriate, academic vocabulary. This involves consolidation, practice and discussion of language.

Teachers should build on the knowledge and skills that pupils have been taught at key stages 2 and 3. Decisions about progression should be based on the security of pupils' linguistic knowledge, skills and understanding and their readiness to progress to the next stage. Pupils whose linguistic development is more advanced should be challenged through being offered opportunities for increased breadth and depth in reading and writing. Those who are less fluent should consolidate their knowledge, understanding and skills, including through additional practice. Teachers should prepare pupils for Key Stage 4 by ensuring that they can consciously control sentence structure in their writing and understand why sentences are constructed as they are. In addition, students should be able to confidently read and make critical comparisons across texts. Students should be able to create and develop personal opinions with detailed supporting evidence rooted in academic research. **English – key stages 2 and 3.**

English (Course Objectives)

i) Reading – Word Reading:

- Apply their growing knowledge of root words, prefixes and suffixes (morphology and etymology) as listed in English Appendix 1, both to read and to understand the meaning of new words that they meet.

ii) Reading – Comprehension:

- Maintain positive attitudes to reading and understanding of what they read by:
 - Continuing to read and discuss an increasingly wide range of contemporary and classic fiction, poetry, plays, non-fiction and reference books or textbooks
 - Reading texts that are structured in different ways and reading for a range of purposes
 - Increasing their familiarity with a wide range of books, including short stories, extended modern fiction, fiction from our literary heritage, and books from other cultures and traditions
 - Recommending books that they have read to their peers, giving reasons for their choices
 - Identifying and discussing themes and conventions in and across a wide range of writing
 - Make detailed comparisons within and across multiple texts
 - Learn and recite a wider, more complex range of poetry keeping in mind intonation, inflection, and dialect
 - Preparing poems and plays to read aloud and to perform, showing understanding through intonation, tone and volume so that the meaning is clear to an audience
- Understand what they read by:
 - Checking that the book makes sense to them, discussing their understanding and exploring the meaning of words in context
 - Asking questions to improve their understanding

- Drawing inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with textual evidence
 - Predicting what might happen from details stated and implied
 - Summarizing the main ideas drawn from more than one text, identifying key details that support the main ideas
 - Identifying how language, structure and presentation contribute to meaning
- Discuss and evaluate how authors use language, including figurative language, considering the impact on the reader
 - Distinguish between statements of fact and opinion in reading and in speech
 - Retrieve, record and present information from non-fiction
 - Participate in discussions about texts read independently and as a group, building on their own and others' ideas and challenging views courteously
 - Explain and discuss their understanding of what they have read, including through formal presentations and debates, maintaining a focus on the topic and using notes where necessary
 - Provide reasoned justifications for their views.

iii) Writing – Composition:

- Write legibly, fluently and with increasing speed and dexterity
- Plan their writing by:
 - Identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own
 - Noting and developing initial ideas using purposeful organization tools and drawing on reading and research where necessary

- In writing narratives, considering and emulating how authors have developed characters and settings in other texts
- Draft and write by:
 - Selecting appropriate grammar and vocabulary, understanding how such choices can change and enhance meaning
 - In narratives, describing settings, characters and atmosphere and integrating dialogue to convey character and advance the action.
 - Beginning to use figurative, poetic, and rhetorical language techniques in both persuasive and expository writings
 - Using a wide range of transitional and structural devices such as spacing, headings, and transition words and phrases to build cohesion and fluidity within and across paragraphs
 - Using further organizational and presentational devices to structure text and to guide the reader through a text
- Evaluate and edit by:
 - Assessing the effectiveness of their own and others' writing in a formal and constructive manner
 - Proposing and accepting changes to vocabulary, grammar and punctuation to enhance effects and clarify meaning
 - Ensuring the consistent and correct use of tense throughout a piece of writing
 - Ensuring correct subject and verb agreement when using singular and plural, distinguishing between the language of speech and writing and choosing the appropriate register
- Proof-read for spelling and punctuation errors.
- Perform their own compositions, using appropriate intonation, volume, and movement so that meaning is clear.

iv) Writing – Vocabulary, Grammar and Punctuation:

- Develop their understanding and continue successful usage of the concepts set out in Key Stage 2 and grades 6 and 7. In particular,

pupils should master the following grammatical objectives by the end of grade 8:

- Recognizing vocabulary and structures that are appropriate for formal speech and writing
 - Identifying and analyzing the elements of a sentence (parts of speech, subject, object, complement etc.)
 - Continuing to diagram sentences of increasing difficulty
 - Expand knowledge of morphology, particularly with regard to prefixes, affixes, and suffixes which stem from Greek and Latin
 - Recognizing types and purposes of phrases and clauses within a sentence
 - Recognizing the varying degrees of register within and across texts and purposefully implementing these variations in writing
 - Identify and analyze the etymological origin of modern English vocabulary
 - Understand how cultures, languages, and dialect can affect both meaning and pronunciation of modern English
- Use and understand the grammatical terminology in English Appendix 2 accurately and appropriately in discussing their writing and reading.

Mathematics (Course Description)

Learners develop and follow alternative approaches, reflecting on their own lines of enquiry and using a range of mathematical techniques. They examine and discuss generalisations or solutions they have reached. They convey mathematical or statistical meaning through precise and consistent use of symbols. They solve problems involving calculating with the extended number system, including powers, roots and standard form. They manipulate algebraic formulae, equations and expressions. They solve inequalities in two variables. They sketch and interpret graphs of linear, quadratic, cubic and reciprocal functions, and graphs that model real situations. They understand congruence and mathematical similarity, and use sine, cosine and tangent in right-angled triangles. They interpret and construct cumulative frequency tables and diagrams. They compare distributions and make inferences, using estimates of the median and inter-quartile range. They solve problems using the probability of a compound event.

Learners give reasons for the choices they make when investigating within mathematics. They use mathematical language and symbols effectively in presenting a convincing reasoned argument, including mathematical justification. They express general laws in symbolic form. They solve problems using intersections and gradients of graphs. They use, generate and interpret graphs based on trigonometric functions. They solve problems in two and three dimensions using Pythagoras' theorem and trigonometric ratios. They calculate lengths of circular arcs, areas of sectors, surface areas of cylinders, and volumes of cones and spheres. They interpret and construct histograms. They understand how different sample sizes may affect the reliability of conclusions. They recognise when and how to use conditional probability.

Mathematics (Course Objectives)

i) Number

Demonstrate an understanding of perfect square and square root, concretely, pictorially, and symbolically (limited to whole numbers)

- Represent a given perfect square as a square region using materials such as grid paper or square shapes.
- Determine the factors of a given perfect square, and explain why one of the factors is the square root and the others are not.
- Determine whether or not a given number is a perfect square using materials and strategies such as square shapes, grid paper, or prime factorization, and explain the reasoning.
- Determine the square root of a given perfect square and record it symbolically.
- Determine the square of a given number.

Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).

- Estimate the square root of a given number that is not a perfect square using the roots of perfect squares as benchmarks.
- Approximate the square root of a given number that is not a perfect square using technology (e.g., calculator, computer).
- Explain why the square root of a number shown on a calculator may be an approximation.
- Identify a number with a square root that is between two given numbers.

Demonstrate an understanding of percents greater than or equal to 0%.

- Provide a context where a percent may be more than 100% or between 0% and 1%.
- Represent a given fractional percent using grid paper.
- Represent a given percent greater than 100 using grid paper.
- Determine the percent represented by a given shaded region on a grid, and record it in decimal, fractional, and percent form.
- Express a given percent in decimal or fractional form.
- Express a given decimal in percent or fractional form.
- Express a given fraction in decimal or percent form.
- Solve a given problem involving percents.
- Solve a given problem involving combined percents (e.g., addition of percents, such as GST + PST).
- Solve a given problem that involves finding the percent of a percent (e.g., a population increased by 10% one year and then 15% the next year. Explain why there was not a 25% increase in population over the two years).

Demonstrate an understanding of ratio and rate

- Express a two-term ratio from a given context in the forms 3:5 or 3 to 5.
- Express a three-term ratio from a given context in the forms 4:7:3 or 4 to 7 to 3.
- Express a part to part ratio as a part to whole fraction (e.g., frozen juice to water; 1 can concentrate to 4 cans of water can be represented as, which is the ratio of concentrate to solution, or which is the ratio of water to solution).
- Identify and describe ratios and rates from real-life.

- Examples, and record them symbolically express a given rate using words or symbols (e.g., 20 L per 100 km or 20 L/100 km).
- Express a given ratio as a percent and explain why a rate cannot be represented as a percent.

Solve problems that involve rates, ratios, and proportional reasoning.

- Explain the meaning of a/b within a given context.
- Provide a context in which a/b represents a:
 - fraction
 - rate
 - ratio
 - quotient
 - probability
- Solve a given problem involving rate, ratio, or percent.

Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.

- Identify the operation required to solve a given problem involving positive fractions.
- Provide a context that requires the multiplying of two given positive fractions.
- Provide a context that requires the dividing of two given positive fractions.
- Estimate the product of two given positive proper fractions to determine if the product will be closer to 0, or 1.
- Estimate the quotient of two given positive fractions and compare the estimate to whole number benchmarks.

- Express a given positive mixed number as an improper fraction and a given positive improper fraction as a mixed number.
- Model multiplication of a positive fraction by a whole number concretely or pictorially and record the process.
- Model multiplication of a positive fraction by a positive fraction concretely or pictorially using an area model and record the process.
- Model division of a positive proper fraction by a whole number concretely or pictorially and record the process.
- Model division of a positive proper fraction by a positive proper fraction pictorially and record the process.
- Generalize and apply rules for multiplying and dividing positive fractions, including mixed numbers.
- Solve a given problem involving positive fractions, taking into consideration order of operations (limited to problems with positive solutions).

Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically

- Identify the operation required to solve a given problem involving integers.
- Provide a context that requires multiplying two integers.
- Provide a context that requires dividing two integers.
- Model the process of multiplying two integers using concrete materials or pictorial representations and record the process.
- Model the process of dividing an integer by an integer using concrete materials or pictorial representations and record the process.
- Solve a given problem involving the multiplication of integers (2-digit by 1-digit) without the use of technology.

- Solve a given problem involving the division of integers (2-digit by 1-digit) without the use of technology.
- Solve a given problem involving the division of integers (2-digit by 2-digit) with the use of technology.
- Generalize and apply a rule for determining the sign of the product and quotient of integers.

ii) Algebra

Model and solve problems using linear equations of the form concretely, pictorially, and symbolically, where a , b , and c are integers.

$$\begin{array}{l} ax = b \\ \frac{x}{a} = b, a \neq 0 \\ ax + b = c \\ \frac{x}{a} + b = c, a \neq 0 \\ a(x + b) = c \end{array}$$

- Model a given problem with a linear equation and solve the equation using concrete models (e.g., counters, integer tiles).
- Verify the solution to a given linear equation using a variety of methods, including concrete materials, diagrams, and substitution
- Draw a visual representation of the steps used to:
 - Solve a given linear equation and record each step symbolically solve a given linear equation symbolically.
- Identify and correct an error in a given incorrect solution of a linear equation.
- Apply the distributive property to solve a given linear equation (e.g., $2(x + 3) = 5$; $2x + 6 = 5$; ...).
- Solve a given problem using a linear equation and record the process

iii) Geometry

Draw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms.

- Draw and label the top, front, and side views for a given 3-D object on isometric dot paper.
- Compare different views of a given 3-D object to the object.
- Predict the top, front, and side views that will result from a described rotation (limited to multiples of 90 degrees) and verify predictions.
- Draw and label the top, front, and side views that result from a given rotation (limited to multiples of 90 degrees).
- Build a 3-D block object, given the top, front, and side views, with or without the use of technology.
- Sketch and label the top, front, and side views of a 3-D object in the environment with or without the use of technology.

Demonstrate an understanding of tessellation by explaining the properties of shapes that make tessellating possible; creating tessellations, and identifying tessellations in the environment.

- Identify, in a given set of regular polygons, those shapes and combinations of shapes that will tessellate, and use angle measurements to justify choices (e.g., squares, regular n-gons).
- Identify, in a given set of irregular polygons, those shapes and combinations of shapes that will tessellate, and use angle measurements to justify choices.
- Identify a translation, reflection, or rotation in a given tessellation.
- Identify a combination of transformations in a given tessellation.

- Create a tessellation using one or more 2-D shapes, and describe the tessellation in terms of transformations and conservation of area.
- Create a new tessellating shape (polygon or non-polygon) by transforming a portion of a given tessellating polygon (e.g., one by M. C. Escher), and describe the resulting tessellation in terms of transformations and conservation of area.
- Identify and describe tessellations in the environment.

iv) Measurement

Develop and apply the Pythagorean theorem to solve problems.

- Model and explain the Pythagorean Theorem concretely, pictorially, or using technology.
- Explain, using examples, that the Pythagorean Theorem applies only to right triangles.
- Determine whether or not a given triangle is a right triangle by applying the Pythagorean Theorem.
- Determine the measure of the third side of a right triangle, given the measures of the other two sides, to solve a given problem solve a given problem that involves Pythagorean triples (e.g., 3, 4, 5 or 5, 12, 13).

Draw and construct nets for 3-D objects.

- Match a given net to the 3-D object it represents.
- Demonstrate that the orientation of a given 3-D object does not affect its volume.
- Apply a formula to solve a given problem involving the volume of a right cylinder or a right prism.

v) Data

Critique ways in which data is presented.

- Compare the information that is provided for the same data set by a given set of graphs, including circle graphs, line graphs, bar graphs, double bar graphs, and pictographs, to determine the strengths and limitations of each graph.
- Identify the advantages and disadvantages of different graphs, including circle graphs, line graphs, bar graphs, double bar graphs, and pictographs, in representing a specific given set of data.
- Justify the choice of a graphical representation for a given situation and its corresponding data set.
- Explain how the format of a given graph, such as the size of the intervals, the width of bars, and the visual representation, may lead to misinterpretation of the data.
- Explain how a given formatting choice could misrepresent the data.
- Identify conclusions that are inconsistent with a given data set or graph, and explain the misinterpretation.

Solve problems involving the probability of independent events.

- Determine the probability of two given independent events and verify the probability using a different strategy.
- Generalize and apply a rule for determining the probability of independent events.
- Solve a given problem that involves determining the probability of independent events.

Science (Course Description)

The principal focus of science teaching in Grade 8 and throughout Key Stage 3 is to develop a deeper understanding of a range of scientific ideas in the subject disciplines of **Biology**, **Chemistry** and **Physics**. Pupils should begin to see the connections between these subject areas and become aware of some of the big ideas underpinning scientific knowledge and understanding.

Through the content across all three disciplines, pupils should be taught the following core principles of scientific study.

Scientific Attitudes: paying attention to objectivity and concern for accuracy, precision, repeatability and reproducibility; understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review; and how to evaluate risks.

Experimental skills and investigations: ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience; make predictions using scientific knowledge and understanding; select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables; use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety; make and record observations and measurements using a range of methods for different investigations; evaluate the reliability of methods and suggest possible improvements' and apply sampling techniques.

Analysis and evaluation: apply mathematical concepts and calculate results; present observations and data using appropriate methods, including tables and graphs; interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions; present reasoned explanations, including explaining data in relation to predictions and hypotheses; evaluate data, showing awareness of potential sources of random and systematic error; and identify further questions arising from their results.

Measurement: understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature; use and derive simple equations and carry out appropriate calculations; and undertake basic data analysis including simple statistical techniques.

Science (Course Objectives)

Biology

i) Plants

- Define and describe photosynthesis, write the word equation for photosynthesis
- Understand the importance of water and mineral salts to plant growth
- Understand sexual reproduction in flowering plants, including pollination, fertilization, seed formation and seed dispersal

ii) Ecology

- Explain the ways in which living things are adapted to their habitats
- Explain and model food chains, food webs and energy flow
- Explain the role of decomposers
- Describe factors affecting the size of populations
- Describe and investigate some effects of human influences on the environment

iii) Variation and classification

- Use and construct keys to identify plants and animals
- Understand that organisms inherit characteristics from their parents through genetic material that is carried in cell nuclei
- Describe how selective breeding can lead to new varieties
- Discuss the work of Darwin in developing the scientific theory of natural selection

Chemistry

i) Material properties

- Describe the structure of an atom
- Compare the structures of the first twenty elements of the Periodic Table
- Describe trends in groups and periods in the Periodic Table
- Talk about the contribution of scientists

ii) Material changes

- Explore and explain the idea of endothermic and exothermic reactions and give examples of both
- Describe the reactivity of metals with oxygen, water and dilute acids
- Explore and understand the reactivity series
- Give examples of displacement reactions
- Explain how to prepare some common salts by the reactions of metals and metal carbonates and be able to write word equations for these reactions
- Give an explanation of the effects of concentration, particle size, temperature and catalysts on the rate of a reaction

Physics

i) Forces and motion

- Explain that pressure is caused by the action of a force on an area
- Determine densities of solids, liquids and gases
- Explain pressures in gases and liquids (qualitative only)

- Know that forces can cause objects to turn on a pivot and understand the principle of moments, including calculations

ii) Electricity

- Describe electrostatics and the concept of charge
- Interpret and draw simple parallel circuits
- Model and explain how common types of components, including cells (batteries), affect current
- Explain how current divides in parallel circuits
- Measure current using ammeters and voltage using voltmeters

iii) Energy

- Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs, including research from secondary sources
- Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation
- Explain cooling by evaporation

Geography (Course Description)

During Grade 8, the key academic areas of study are: Rocks and Soil; Earth's Resources; Jobs and Work; International Development; Centre of the Earth; Russia; and the Middle East.

The Grade 8 curriculum for geography aims to ensure that all pupils develop contextual knowledge of the location of globally significant places – both terrestrial and marine – including their defining physical and human characteristics and how these provide a geographical context for understanding the actions of processes. Additionally, pupils should learn to understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time.

Pupils should be taught to: extend their locational knowledge and deepen their spatial awareness of the world's countries using maps of the world to focus on Africa, Russia, Asia (including China and India), and the Middle East, focusing on their environmental regions, including polar and hot deserts, key physical and human characteristics, countries and major cities; understand geographical similarities, differences and links between places through the study of human and physical geography of a region within Africa, and of a region within Asia; understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in: i) physical geography relating to: geological timescales and plate tectonics; rocks, weathering and soils; weather and climate, including the change in climate from the Ice Age to the present; and glaciation, hydrology and coasts, ii) human geography relating to: population and urbanisation; international development; economic activity in the primary, secondary, tertiary and quaternary sectors; and the use of natural resources; understand how human and physical processes interact to influence, and change landscapes, environments and the climate; and how human activity relies on effective functioning of natural systems; build on their knowledge of globes, maps and atlases and apply and develop this knowledge routinely in the classroom and in the field; interpret Ordnance Survey maps in the classroom and the field, including using grid references and scale, topographical and other thematic mapping, and aerial and satellite photographs; use Geographical Information Systems (GIS) to view, analyse and interpret places and data; and use fieldwork in contrasting locations to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information.

Geography (Course Objectives)

i) Rocks and Soil

- Rocks on the Planet
- Three rock groups
- Weathering
- Rock cycle
- British Isles
- Rock around the UK
- Rocks and landscapes

ii) Earth's Resources

- Natural resources
- Water
- Soil
- Desertification
- Oil for energy
- Renewable sources of energy
- Solar power

iii) Jobs and Work

- UK jobs
- UK employment structure
- Other countries employment structure
- UK factory jobs

- Clothing industry in Bangladesh

iv) International Development

- Divide between rich and poor
- Measuring and mapping development
- Malawi
- Singapore
- Development gap
- Poverty

v) Structure of the Earth

- Sections of the planet
- Plate movements
- Earthquakes
- Southwest China
- Tsunami
- Volcanoes
- Iceland
- Danger zones

vi) Russia

- History of Russia
- Physical features
- Climate zones

- Russian people
- European Russia

vii) The Middle East

- Physical geography
- Climate zones and biomes
- Middle Eastern people
- Conflict
- Israel and Palestine

History (Course Description)

During Grade 8, the key academic areas of historical enquiry are: Industry and Urbanisation; Victorian Health; Slavery; and World War I.

Pupils should extend and deepen their chronologically secure knowledge and understanding of British, local and world history, so that it provides a well-informed context for wider learning. Pupils should identify significant events, make connections, draw contrasts, and analyse trends within periods and over long arcs of time. They should use historical terms and concepts in increasingly sophisticated ways. They should pursue historically valid enquiries including some they have framed themselves, and create relevant, structured and evidentially supported accounts in response. They should understand how different types of historical sources are used rigorously to make historical claims and discern how and why contrasting arguments and interpretations of the past have been constructed. In planning to ensure the progression described above through teaching the British, local and world history outlined below, teachers should combine overview and depth studies to help pupils understand both the long arc of development and the complexity of specific aspects of the content.

Pupils should be taught to: know and understand the history of these islands as a coherent, chronological narrative, from the earliest times to the present day: how people's lives have shaped this nation and how Britain has influenced and been influenced by the wider world; know and understand significant aspects of the history of the wider world: the nature of ancient civilisations; the expansion and dissolution of empires; characteristic features of past non-European societies; achievements and follies of mankind; gain and deploy a historically grounded understanding of abstract terms such as 'empire', 'civilisation', 'parliament' and 'peasantry'; understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance, and use them to make connections, draw contrasts, analyse trends, frame historically-valid questions and create their own structured accounts, including written narratives and analyses; understand the methods of historical enquiry, including how evidence is used rigorously to make historical claims, and discern how and why contrasting arguments and interpretations of the past have been constructed History – key stage 3 2; gain historical perspective by placing their growing knowledge into different contexts, understanding the connections between local, regional, national and international history; between cultural, economic, military, political, religious and social history; and between short- and long-term timescales.

History (Course Objectives)

i) Industry and Urbanisation

- Factories
- Jack the Ripper
- Pollution in urban centres

ii) Victorian Health

- Diseases in Victorian England
- Joseph Merrick
- Charles Dickens
- Heroes of Public Health
- Crime and Punishment

iii) Slavery

- Modern Slavery
- Transatlantic slavery
- Life as a slave
- Abolishment of slavery
- 12 Years a Slave

iv) World War I

- Long term consequences
- Short term consequences
- Conscientious objectors

- Fighting in the war
- Weaponry
- Shot at dawn
- Soldiers of the Empire
- How war affects ordinary people
- Poppy day
- Countries avoiding war

Information Technology (Course Description)

Learners should learn to become critical and increasingly autonomous users of ICT, aware of the ways in which ICT tools and information sources can help them in their life and work. They should understand the limitations of such tools and of the results they produce, and use the concepts and relevant technical terms associated with ICT systems and software.

Information Technology (Course Objectives)

In Grade 8 ICT, the students are expected to:

1. Use a variety of information technology tools to access information
2. Apply information technology to all walks of life, including education and recreation, and to future careers
3. Identify and describe various information technology tools related to careers
4. Demonstrate an understanding of ethics and acceptable use of information when accessing and processing information
5. Develop simple programs for the computer
6. Demonstrate an understanding of safe ergonomic strategies for the use of information technology
7. Apply information technology tools in research

Skills developed

Learners should learn to:

1. Use hardware and develop knowledge of ICT
 - Use ICT hardware and software autonomously
 - Consider the purposes for which information is to be processed and communicated
 - Use their knowledge and understanding of ICT to design information systems, and to evaluate and suggest improvements to existing systems
 - Investigate problems by modelling, measuring and controlling, and by constructing ICT procedures
 - Consider the limitations of ICT tools and information sources, and of the results they provide, and compare their effectiveness and efficiency with other methods of working
 - Discuss some of the social, economic, ethical and moral issues raised by ICT

2. Communicate and handle information using ICT

- Use a range of ICT hardware and software efficiently to create good quality presentations for particular audiences, integrating information from several sources select appropriate ICT hardware and software to fulfil a specific purpose
- Be systematic and critical in their use of appropriate search methods to obtain accurate and relevant information from a range of sources
- Collect and edit quantitative and qualitative information for a particular purpose, and enter the data into a data-handling package for processing and analysis
- Interpret, analyse and display information, checking its accuracy and questioning its plausibility

3. Control, monitor and model using ICT

- Plan, develop, test and modify sets of instructions and procedures to control events
- Use a system that responds to data from sensors, and explain how it makes use of feedback
- Use ICT hardware and software to measure and record physical variables
- Explore a given model with a number of variables and create models of their own, in order to detect patterns and relationships
- Modify the rules and data of a model, and predict the effects of such changes
- Evaluate a computer model by comparing its behaviour with data gathered from a range of sources.

1. CONTROL FOR A PURPOSE (Flowol)

- Design a control system
- Build a sequence of events to activate multiple devices concurrently
- Correct and improve procedures
- Evaluate the system, identifying limitations

Prior knowledge	New words	
• Assumes that learners understand procedures • Complements and extends 'Starting Control' and 'Exploring Control'	• switch off • switch on • wait • run • activator • loop • actuator • sensor	• feedback • data capture • analogue • digital • interface • flowchart • motor

2. WEBSITE DESIGN FOR A PURPOSE (Microsoft Expression Web 4)

- Create a series of connected web pages
- Include links
- Insert images
- Demonstrate user awareness
- Recognise HTML code

Prior knowledge	New words	
• 'Exploring the Internet' module • Some awareness of how to make documents suitable for an audience	• hyperlinks • anchors • HTML • tags	• source code • image quality • image size

3. HARDWARE FOR A PURPOSE

4. NETWORKS FOR A PURPOSE

- Design a simple network
- Identify the purpose and components of a network
- Demonstrate understanding of management issues associated with networks
- Understand network security issues

Prior knowledge	New words	
• Recognise and identify hardware • Understand some simple reasons for connecting machines to a network	• LAN • WAN • node • switch • hub • router	• wireless • UTP • jack • file server • modem • bandwidth

5. VIDEO OR ANIMATION FOR A PURPOSE (Windows Movie Maker)

- Create a plan for video or animation
- Create source material for video or animation
- Produce video or animation with appropriate software
- Add soundtrack or narration to video or animation
- Demonstrate awareness of how the finished media text addresses a specific audience

Prior knowledge	New words	
• Can use a simple paint package • Complements and extends 'Exploring Images' and 'Exploring Multimedia'	• animation • footage • edit • media player file • preview	• focus • download • insert • frame • tween

Art & Design (Course Description)

Grade 8 marks a big leap in both the depth of teaching and expectations of pupils. During Grade 8, the topics of study are: Piet Mondrian; Baroque Still life; Problem solving; Abstraction; Elements of Art and Principles of Design; Art History; Movement; Printing Techniques; and Art Appreciation.

Art, craft and design embody some of the highest forms of human creativity. A high-quality art and design education should engage, inspire and challenge pupils, equipping them with the knowledge and skills to experiment, invent and create their own works of art, craft and design. As pupils progress, they should be able to think critically and develop a more rigorous understanding of art and design. They should also know how art and design both reflect and shape our history, and contribute to the culture, creativity and wealth of our nation.

Grade 8 should also aim to encourage and develop students in the following areas: produce creative work, exploring their ideas and recording their experiences; become proficient in drawing, painting, sculpture and other art, craft and design techniques; evaluate and analyse creative works using the language of art, craft and design; and to know about great artists, craft makers and designers, and understand the historical and cultural development of their art forms.

Art & Design (Course Objectives)

i) Piet Mondrian

- Biography
- Art Works
- Student research and presentation

ii) Baroque Still Life

iii) Problem Solving

- Abstraction
- Woodcut
- Print making techniques
- Original art

iv) Elements of Art and Principles of Design

- Unity
- Balance
- Proportion
- Contrast
- Variety
- Emphasis
- Movement
- Repetition

ii) Art History

- Timelines
- Movements: realism, impressionism, post-impressionism, pop-art

iii) Printing Techniques

- Print making
- Photography – creative photos
- Mosaic techniques
- Book binding
- Collage technique
- Aquarelle – water colour techniques
- Indian Inks
- Lino cuts

iv) Art Appreciation

- Art work discussion
- Expected to produce more emotive and personal work

Design Technology (Course Description)

During Grade 8, the topics of study are: Book Art/Sketch Book; Greek Pottery; Automotive and Bicycle Design; and Skateboard Design.

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

The for design and technology aims to ensure that all pupils: develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world; build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users' and critique, evaluate and test their ideas and products and the work of others.

Design Technology (Course Objectives)

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion]. When designing and making, pupils should be taught to:

i) Specific topics:

- Book art
- Sketch book
- Greek pottery
- Automotive design
- Bicycle design
- Skateboard design

ii) Design

- Use research and exploration, such as the study of different cultures, to identify and understand user needs
- Identify and solve their own design problems and understand how to reformulate problems given to them
- Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- Use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses
- Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

iii) Make

- Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
- Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

iv) Evaluate

- Analyse the work of past and present professionals and others to develop and broaden their understanding
 - Investigate new and emerging technologies
 - Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
 - Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
- Design and technology – key stage 3

iv) Technical knowledge

- Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- Understand how more advanced mechanical systems used in their products enable changes in movement and force
- Understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]

- Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

Music (Course Description)

Music is a universal language that embodies one of the highest forms of creativity. A high-quality music education should engage and inspire pupils to develop a love of music and their talent as musicians, and so increase their self-confidence, creativity and sense of achievement. As pupils progress, they should develop a critical engagement with music, allowing them to compose, and to listen with discrimination to the best in the musical canon.

Pupils should build on their previous knowledge and skills through performing, composing and listening. They should develop their vocal and/or instrumental fluency, accuracy and expressiveness; and understand musical structures, styles, genres and traditions, identifying the expressive use of musical dimensions. They should listen with increasing discrimination and awareness to inform their practice as musicians. They should use technologies appropriately and appreciate and understand a wide range of musical contexts and styles.

Pupils should be taught to: play and perform confidently in a range of solo and ensemble contexts using their voice, playing instruments musically, fluently and with accuracy and expression; improvise and compose; and extend and develop musical ideas by drawing on a range of musical structures, styles, genres and traditions; use staff and other relevant notations appropriately and accurately in a range of musical styles, genres and traditions; identify and use the inter-related dimensions of music expressively and with increasing sophistication, including use of tonalities, different types of scales and other musical devices; listen with increasing discrimination to a wide range of music from great composers and musicians; and develop a deepening understanding of the music that they perform and to which they listen, and its history.

Music (Course Objectives)

i) Developing Knowledge

World Music

- African
- Indonesian
- Chinese
- Indian
- Turkish
- Japanese
- Cuban
- Brazilian
- Mexican
- Spanish
- Irish
- Czech Music (tonality, specific sound, traditional instruments, influences, role of the music...)

Music in 20th Century

- Blues
- Country Music
- Jazz
- Rock and roll
- Disco
- Hip hop
- New-age music...

Music in 21st Century

- Student's work
- Favorite contemporary music
- Try to find the contexts
- Discussion
- Evaluation

ii) Preparation of the Performance

- Developing knowledge, skills and understanding through the integration of performing, composing and listening.
- Participating, collaborating and working with others as musicians, adapting to different musical roles and respecting the values and benefits others bring to musical learning.
- Performing with control of instrument-specific techniques and musical expression.
- Exploring and developing musical ideas when performing.
- Students will have the chance to organize themselves and show personal responsibility, initiative, creativity and enterprise with a commitment to learning and self-improvement.

Modern Language (Course Description)

In Grade 8, students will study the following example topics: Connections; Life; Go Back in Time; Recreation; Suspension; See you tomorrow!

At Leonardo V. Academy, our students have the option of studying a choice of modern languages. For Czech citizens, Grade 8 students will follow a curriculum that closely follows the Czech national curriculum, whereas non-native Czech speakers will follow a curriculum that is based on methodologies that closely follow a standard European framework.

Additionally, our students have the option of studying French, following a curriculum that adheres strictly to the standards of the National Curriculum of England.

Learning a foreign language is a liberation from insularity and provides an opening to other cultures. A high-quality languages education should foster pupils' curiosity and deepen their understanding of the world. The teaching should enable pupils to express their ideas and thoughts in another language and to understand and respond to its speakers, both in speech and in writing. It should also provide opportunities for them to communicate for practical purposes, learn new ways of thinking and read great literature in the original language. Language teaching should provide the foundation for learning further languages, equipping pupils to study and work in other countries.

The curriculum for languages aims to ensure that all pupils: understand and respond to spoken and written language from a variety of authentic sources; speak with increasing confidence, fluency and spontaneity, finding ways of communicating what they want to say, including through discussion and asking questions, and continually improving the accuracy of their pronunciation and intonation; can write at varying length, for different purposes and audiences, using the variety of grammatical structures that they have learnt; and discover and develop an appreciation of a range of writing in the language studied.

Modern Language (Course Objectives)

Teaching may be of any modern foreign language and should build on the foundations of language learning laid at key stage 2, whether pupils continue with the same language or take up a new one. Teaching should focus on developing the breadth and depth of pupils' competence in listening, speaking, reading and writing, based on a sound foundation of core grammar and vocabulary. It should enable pupils to understand and communicate personal and factual information that goes beyond their immediate needs and interests, developing and justifying points of view in speech and writing, with increased spontaneity, independence and accuracy. It should provide suitable preparation for further study.

i) Specific Content and Topics

- Connections
- Life
- Go back in time
- Recreation
- Suspension
- See you tomorrow!

ii) Grammar and vocabulary

- Identify and use tenses or other structures which convey the present, past, and future as appropriate to the language being studied
- Use and manipulate a variety of key grammatical structures and patterns, including voices and moods, as appropriate
- Develop and use a wide-ranging and deepening vocabulary that goes beyond their immediate needs and interests, allowing them to give and justify opinions and take part in discussion about wider issues
- Use accurate grammar, spelling and punctuation.

iii) Linguistic competence

- Listen to a variety of forms of spoken language to obtain information and respond appropriately
- Transcribe words and short sentences that they hear with increasing accuracy
- Initiate and develop conversations, coping with unfamiliar language and unexpected responses, making use of important social conventions such as formal modes of address
- Express and develop ideas clearly and with increasing accuracy, both orally and in writing
- Speak coherently and confidently, with increasingly accurate pronunciation and intonation
- Read and show comprehension of original and adapted materials from a range of different sources, understanding the purpose, important ideas and details, and provide an accurate English translation of short, suitable material
- Read literary texts in the language [such as stories, songs, poems and letters], to stimulate ideas, develop creative expression and expand understanding of the language and culture

Physical Education (Course Description)

A high-quality physical education curriculum inspires all pupils to succeed and excel in competitive sport and other physically-demanding activities. It should provide opportunities for pupils to become physically confident in a way which supports their health and fitness. Opportunities to compete in sport and other activities build character and help to embed values such as fairness and respect.

During Grade 8, pupils will be encouraged to: develop competence to excel in a broad range of physical activities; are physically active for sustained periods of time; engage in competitive sports and activities; and to lead healthy, active lives.

Physical Education (Course Objectives)

Pupils should build on and embed the physical development and skills learned in key stages 1 and 2, become more competent, confident and expert in their techniques, and apply them across different sports and physical activities. They should understand what makes a performance effective and how to apply these principles to their own and others' work. They should develop the confidence and interest to get involved in exercise, sports and activities out of school and in later life, and understand and apply the long-term health benefits of physical activity.

Pupils should be taught to:

- use a range of tactics and strategies to overcome opponents in direct competition through team and individual games [for example, badminton, basketball, cricket, football, hockey, netball, rounders, rugby and tennis]
- develop their technique and improve their performance in other competitive sports [for example, athletics and gymnastics]
- perform dances using advanced dance techniques within a range of dance styles and form
- take part in outdoor and adventurous activities which present intellectual and physical challenges and be encouraged to work in a team, building on trust and developing skills to solve problems, either individually or as a group
- analyse their performances compared to previous ones and demonstrate improvement to achieve their personal best
- take part in competitive sports and activities outside school through community links or sports clubs.

References

English:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244215/SECONDARY_national_curriculum_-_English2.pdf

Mathematics:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239058/SECONDARY_national_curriculum_-_Mathematics.pdf

Science:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/335174/SECONDARY_national_curriculum_-_Science_220714.pdf

Geography:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239087/SECONDARY_national_curriculum_-_Geography.pdf

History:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239075/SECONDARY_national_curriculum_-_History.pdf

Information Technology:

http://www.computingatschool.org.uk/data/uploads/secondary_national_curriculum_-_computing.pdf

Art and Design

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239062/SECONDARY_national_curriculum_-_Art_and_design.pdf

Design and Technology

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239089/SECONDARY_national_curriculum_-_Design_and_technology.pdf

Music

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239088/SECONDARY_national_curriculum_-_Music.pdf

Modern Languages

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239083/SECONDARY_national_curriculum_-_Languages.pdf

Physical Education

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239086/SECONDARY_national_curriculum_-_Physical_education.pdf