

## FIRST® LEGO® League Explore Progression of skills

Design and Technology					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Designing</b>	<ul style="list-style-type: none"> <li>– Draw on their own experience to help generate ideas and research conducted on criteria.</li> <li>– Begin to understand the development of existing products.</li> <li>– Start to suggest ideas and explain what they are going to do</li> <li>– Begin to develop their ideas through talk and drawings.</li> <li>– Identify a target group for what they intend to design and make based on design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to generate own ideas by drawing on their own and other people's experiences.</li> <li>– Begin to develop their design ideas through discussion, observation, drawing and modelling.</li> <li>– Identify a purpose for what they intend to design and make.</li> <li>– Develop their ideas through talk and drawings and label parts.</li> <li>– Identify a target group for what they intend to design and make based on design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>– With growing confidence generate ideas for an item, considering its purpose and the user/s.</li> <li>– Identify a purpose and establish criteria for a successful product.</li> <li>– Understand how well products have been designed, made, what materials have been used and the construction technique.</li> <li>– Learn about inventors, designers and engineers.</li> <li>– Start to understand whether products can be recycled or reused.</li> <li>– Know to make drawings with labels when designing.</li> <li>– When planning explains their choice of materials and components including function and aesthetics.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to generate ideas, considering the purposes for which they are designing.</li> <li>– Confidently make labelled drawings from different views showing specific features.</li> <li>– Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail.</li> <li>– Identify the strengths and areas for development in their ideas and products.</li> <li>– When planning considers the views of others, including intended users, to improve their work.</li> <li>– Learn about inventors, designers and engineers.</li> <li>– When planning explains their choice of materials and components including function and aesthetics.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to generate, develop, model and communicate their ideas through discussion and annotated sketches.</li> <li>– Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.</li> <li>– With growing confidence apply a range of finishing techniques, including those from art and design.</li> <li>– Draw up a specification for their design.</li> <li>– With growing confidence select appropriate materials, tools and techniques.</li> <li>– Start to understand how sustainable and innovative products are and the impact they have beyond their intended purpose.</li> </ul>

## Design and Technology

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Making</b>	<ul style="list-style-type: none"> <li>– Begin to make their design using appropriate techniques.</li> <li>– Begin to build structures, exploring how they can be made stronger, stiffer and more stable.</li> <li>– Explore and use mechanisms (e.g. levers, sliders, wheels and axles).</li> <li>– Begin to assemble, join and combine materials and components together.</li> <li>– Begin to use simple finishing techniques to improve the appearance of their product.</li> </ul>	<ul style="list-style-type: none"> <li>– Begin to select tools and materials; use correct vocabulary to name and describe them.</li> <li>– Build structures, exploring how they can be made stronger, stiffer and more stable.</li> <li>– Start to assemble, join and combine materials in order to make a product.</li> <li>– Start to choose and use appropriate finishing techniques based on own ideas.</li> </ul>	<ul style="list-style-type: none"> <li>– Select a wider range of techniques for making their product i.e. construction materials and kits.</li> <li>– Explain their choice of tools and equipment in relation to the skills and techniques they will be using.</li> <li>– Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement.</li> <li>– Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to join and combine materials and components accurately in temporary and permanent ways.</li> <li>– Know how mechanical systems such as cams or pulleys or gears create movement.</li> <li>– Start to understand that mechanical and electrical systems have an input, process and output.</li> <li>– Know how simple electrical circuits and components can be used to create functional products.</li> <li>– Understand how more complex electrical circuits and components can be used to create functional products.</li> <li>– Continue to learn how to program a computer to monitor changes in the environment and control their products.</li> <li>– Understand how to reinforce and strengthen a 3D framework.</li> <li>– Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</li> </ul>	<ul style="list-style-type: none"> <li>– Understand how mechanical systems such as cams or pulleys or gears create movement.</li> <li>– Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.</li> <li>– Understand that mechanical and electrical systems have an input, process and output.</li> <li>– Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</li> </ul>
<b>Evaluating</b>	<ul style="list-style-type: none"> <li>– Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria).</li> <li>– When looking at existing products explain what they like and dislike about products and why.</li> <li>– Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.</li> </ul>	<ul style="list-style-type: none"> <li>– Evaluate their work against their design criteria</li> <li>– Look at a range of existing products and explain what they like and dislike about the products and why.</li> <li>– Start to evaluate their products as they are developed, identifying strengths and possible changes they might make.</li> <li>– With confidence talk about their ideas, saying what they like and dislike about them.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to evaluate their product against original design criteria.</li> <li>– Evaluate familiar products and consider the views of others to improve them.</li> <li>– Evaluate the key designs of individuals in design and technology and how it has helped shape the world.</li> </ul>	<ul style="list-style-type: none"> <li>– Evaluate their products carrying out appropriate tests.</li> <li>– Be able to evaluate familiar products and consider the views of others to improve them.</li> <li>– Evaluate the key designs of individuals in design and technology and how it has helped shape the world.</li> </ul>	<ul style="list-style-type: none"> <li>– Start to evaluate a product against the original design specification and by carrying out tests.</li> <li>– Evaluate their work both during and at the end of the assignment.</li> <li>– Begin to evaluate it personally and seek evaluation from others.</li> <li>– Evaluate the key designs of individuals in design and technology and how it has helped shape the world.</li> </ul>

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	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Programming</b>	<ul style="list-style-type: none"> <li>- I can describe what happens when I press buttons on a robot.</li> <li>- I can press the buttons in the correct order to make my robot do what I want.</li> <li>- I can describe what actions I will need to do to make something happen and begin to use the word 'algorithm'.</li> <li>- I can begin to predict what will happen for a short sequence of instructions.</li> <li>- I can begin to use software/apps to create movement and patterns on a screen.</li> <li>- I can use the word 'debug' when I correct mistakes when I program.</li> </ul>	<ul style="list-style-type: none"> <li>- I can program a robot or software to do a particular task.</li> <li>- I can look at my friend's program and tell you what will happen.</li> <li>- I can use programming software to make objects move.</li> <li>- I can watch a program execute and spot where it goes wrong so that I can debug it.</li> </ul>	<ul style="list-style-type: none"> <li>- I can break an open ended problem up into smaller parts.</li> <li>- I can put programming commands into a sequence to achieve a specific outcome.</li> <li>- I keep testing my program and can recognise when I need to debug it.</li> <li>- I can use repeat commands I can describe the algorithm I will need for a simple task.</li> <li>- I can detect a problem in an algorithm.</li> </ul>	<ul style="list-style-type: none"> <li>- I can use logical thinking to solve an open ended problem by breaking it up into smaller parts.</li> <li>- I can use an efficient procedure to simplify a program.</li> <li>- I can use a sensor to detect a change which can select an action within my program.</li> <li>- I know that I need to keep testing my program while I am putting it together.</li> <li>- I can use a variety of tools to create a program.</li> <li>- I can recognise an error in a program and debug it.</li> <li>- I can recognise that an algorithm will help me sequence more complex programs.</li> </ul>	<ul style="list-style-type: none"> <li>- I can decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program.</li> <li>- I can refine a procedure using repeat commands to improve a program.</li> <li>- I can use a variable to increase programming possibilities.</li> <li>- I can change an input to a program to achieve a different output.</li> <li>- I can use logical reasoning to detect and debug mistakes in a program.</li> <li>- I use logical thinking, imagination and creativity to extend a program.</li> </ul>

Science			
	Year 1 and 2	Year 3 and 4	Year 5
<b>Working Scientifically</b>	<ul style="list-style-type: none"> <li>- Explore the world around them and raise their own simple questions.</li> <li>- Begin to recognise different ways in which they might answer scientific questions.</li> <li>- Carry out simple tests.</li> <li>- Ask people questions and use simple secondary sources to find answers.</li> <li>- Observe closely using simple equipment with help, observe changes over time.</li> <li>- With guidance they should notice patterns and relationships.</li> <li>- Record simple data.</li> <li>- Use their observations and ideas to suggest answers to questions – talk about what they have found out.</li> <li>- With help, they should record and communicate their findings.</li> </ul>	<ul style="list-style-type: none"> <li>- Raise their own relevant questions about the world around them.</li> <li>- Start to make their own decisions about the most appropriate scientific enquiry they might use to answer questions.</li> <li>- Set up simple practical enquiries.</li> <li>- Recognise when and how secondary sources might help them to answer questions.</li> <li>- Make systematic and careful observations – help to make decisions about what observations to make and how long to make them for.</li> <li>- Collect and record data from their own observations.</li> <li>- Discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including displays or presentations of results.</li> <li>- With support they should identify new questions arising from the data, making predictions for new values.</li> </ul>	<ul style="list-style-type: none"> <li>- Use their science experiences to explore ideas and raise different kinds of questions.</li> <li>- Recognise which secondary sources will be most useful to research their ideas.</li> <li>- Make their own decisions about what observations to make, what measurements to use and how long to use them for.</li> <li>- Decide how to record data and results of increasing complexity from a choice of familiar approaches; tables and graphs.</li> <li>- Use relevant scientific language and illustrations to discuss, communicate and justify their ideas.</li> <li>- Use their results to make predictions and identify when further observations and comparative tests might be needed.</li> </ul>

Art and Design					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Form</b>	<ul style="list-style-type: none"> <li>- Construct.</li> <li>- Use materials to make known objects for a purpose.</li> <li>- Make simple joins.</li> </ul>	<ul style="list-style-type: none"> <li>- Awareness of natural and man-made forms.</li> <li>- Expression of personal experiences and ideas.</li> <li>- To shape and form from direct observation.</li> <li>- Decorative techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Shape, form, model and construct.</li> <li>- Plan and develop.</li> <li>- Understanding of different methods of construction.</li> <li>- Aesthetics.</li> </ul>	<ul style="list-style-type: none"> <li>- Plan and develop.</li> <li>- Analyse and interpret natural and manmade forms of construction.</li> </ul>	<ul style="list-style-type: none"> <li>- Plan and develop ideas.</li> <li>- Shape, form, model and join.</li> <li>- Observation or imagination.</li> <li>- Properties of media.</li> </ul>

## Speaking and listening

	Year 1 and 2	Year 3 and 4	Year 5
<b>Listen carefully and understand</b>	<ul style="list-style-type: none"> <li>– Take turns to talk, listening carefully to the contributions of others.</li> <li>– Seek clarification when a message is not clear.</li> <li>– Understand instructions with more than one point.</li> </ul>	<ul style="list-style-type: none"> <li>– Engage in discussions, making relevant points.</li> <li>– Ask for specific additional information to clarify.</li> </ul>	<ul style="list-style-type: none"> <li>– Understand how to answer questions that require more than a yes/no or single sentence response.</li> <li>– Demonstrate active listening by justifying ideas or expanding on the ideas of others.</li> </ul>
<b>Develop a wide and subject-specific vocabulary</b>	<ul style="list-style-type: none"> <li>– Use subject specific vocabulary to explain and describe.</li> <li>– Suggest words or phrases appropriate to the topic being discussed.</li> </ul>	<ul style="list-style-type: none"> <li>– Use interesting adjectives, adverbial phrases and expanded noun phrases in discussion.</li> <li>– Use vocabulary that is appropriate to the topic being discussed or the audience that is listening.</li> </ul>	<ul style="list-style-type: none"> <li>– Use adventurous and sophisticated vocabulary.</li> <li>– Explain the meaning of words, offering alternatives.</li> <li>– Use a wide range of phrases that include determiners, modifiers and other techniques to add extra interest and clarity.</li> </ul>
<b>Speak with clarity and confidence</b>	<ul style="list-style-type: none"> <li>– Speak in a way that is clear and easy to understand.</li> <li>– Speak confidently to a group of peers so that they understand the message of what is being said.</li> <li>– Reflect on the clarity of the message given.</li> </ul>	<ul style="list-style-type: none"> <li>– Use a mixture of sentence lengths to add interest to discussions and explanations.</li> <li>– Explain a project or concept to a group of peers.</li> <li>– Explain and develop ideas across the curriculum.</li> <li>– Reflect on the effectiveness of the explanation.</li> </ul>	<ul style="list-style-type: none"> <li>– Vary the length and structure of sentences.</li> <li>– Ask questions and make suggestions to take an active part in discussions.</li> <li>– Present an idea, topic or explanation to a group of peers.</li> <li>– Expand and justify ideas across the curriculum.</li> <li>– Reflect on the effectiveness of the explanation, expansion and justification.</li> </ul>
<b>Hold conversations and debates</b>	<ul style="list-style-type: none"> <li>– Take turns to talk, listening carefully to the contributions of others.</li> <li>– Know that different people hold opinions that are different from our own.</li> <li>– Know that different language is appropriate in different situations (formal and informal).</li> <li>– Make contributions that are relevant to those that have come before.</li> </ul>	<ul style="list-style-type: none"> <li>– Make relevant comments or ask questions in a discussion or a debate.</li> <li>– Seek clarification by actively seeking to understand others' points of view.</li> <li>– Respectfully challenge opinions or points, offering an alternative.</li> <li>– Vary language between formal and informal according to the situation.</li> </ul>	<ul style="list-style-type: none"> <li>– Negotiate and compromise by offering alternatives.</li> <li>– Debate, using relevant details to support points.</li> <li>– Offer alternative explanations when others don't understand.</li> <li>– Select appropriate language in a range of situations (formal or informal).</li> </ul>

Mathematics					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Number (number and place value)</b>	<ul style="list-style-type: none"> <li>Count to and across 100.</li> <li>Read and write numbers from 1 to 20.</li> </ul>	<ul style="list-style-type: none"> <li>Read and write numbers to at least 100 in numerals and in words.</li> <li>Use place value and number facts to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>Solve number problems and practical problems involving number and place value concepts.</li> </ul>	<ul style="list-style-type: none"> <li>Solve number and practical problems that involve number and place value concepts with increasingly large positive numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Solve number problems and practical problems that involve larger numbers, negative numbers and rounded numbers.</li> </ul>
<b>Number (addition and subtraction)</b>	<ul style="list-style-type: none"> <li>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures.</li> </ul>	<ul style="list-style-type: none"> <li>Add and subtract numbers mentally.</li> <li>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</li> </ul>	<ul style="list-style-type: none"> <li>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>	<ul style="list-style-type: none"> <li>Solve addition and subtraction multi-step problems in contexts.</li> </ul>
<b>Number (multiplication and division)</b>	<ul style="list-style-type: none"> <li>Solve one-step problems involving multiplication and division.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems involving multiplication and division, using materials and multiplication and division facts, including problems in contexts.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems, including missing number problems, involving multiplication and division.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems involving multiplying and adding.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems involving addition, subtraction, multiplication and division and a combination of these.</li> </ul>
<b>Number (fractions)</b>	<ul style="list-style-type: none"> <li>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems that involve fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Solve simple measure problems involving fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems which require knowing percentage and decimal equivalents.</li> </ul>
<b>Measurement</b>	<ul style="list-style-type: none"> <li>Compare, describe and solve practical problems for: <ul style="list-style-type: none"> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time</li> </ul> </li> <li>Measure and begin to record the following: <ul style="list-style-type: none"> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time</li> </ul> </li> <li>Sequence events in chronological order using language.</li> </ul>	<ul style="list-style-type: none"> <li>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and mass (kg/g) to the nearest appropriate unit, using rulers and scales.</li> </ul>	<ul style="list-style-type: none"> <li>Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g).</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of measure.</li> </ul>	<ul style="list-style-type: none"> <li>Convert between different units of metric measure.</li> </ul>

## Mathematics

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Geometry (properties of shape)</b>	<ul style="list-style-type: none"> <li>– Recognise and name common 2-D and 3-D shapes, including:               <ul style="list-style-type: none"> <li>– 2D shapes</li> <li>– 3D shapes</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– Identify and describe the properties of 2-D shapes</li> <li>– Identify and describe the properties of 3-D shapes</li> <li>– Identify 2-D shapes on the surface of 3-D shapes</li> <li>– Compare common 2-D and 3-D shapes and everyday objects</li> </ul>	<ul style="list-style-type: none"> <li>– Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> </ul>		<ul style="list-style-type: none"> <li>– Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> </ul>
<b>Geometry (position and direction)</b>	<ul style="list-style-type: none"> <li>– Describe position, direction and movement, including whole, half, quarter and three-quarter turns</li> </ul>	<ul style="list-style-type: none"> <li>– Order and arrange combinations of objects in patterns and sequences</li> <li>– Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)</li> </ul>	<ul style="list-style-type: none"> <li>– Interpret and present data using bar charts, pictograms and tables</li> </ul>		<ul style="list-style-type: none"> <li>– Complete, read and interpret information in tables, including timetables</li> </ul>

English				
	Year 1	Year 2	Year 3 and 4	Year 5
<b>Reading (word reading)</b>	<ul style="list-style-type: none"> <li>Apply phonic knowledge and skills as the route to decode words.</li> <li>Read accurately by blending sounds in unfamiliar words containing GPCs that have been taught.</li> </ul>	<ul style="list-style-type: none"> <li>Read further common exception words, noting unusual correspondences between spelling and sound and where these occur in the word.</li> <li>Read most words quickly and accurately, without overt sounding and blending, when they have been frequently encountered.</li> </ul>	<ul style="list-style-type: none"> <li>Apply their growing knowledge of root words, prefixes and suffixes both to read aloud and to understand the meaning of new words they meet.</li> <li>Read further exception words, noting the unusual correspondences between spelling and sound, and where these occur in the word.</li> </ul>	<ul style="list-style-type: none"> <li>Apply their growing knowledge of root words, prefixes and suffixes both to read aloud and to understand the meaning of new words that they meet.</li> </ul>
<b>Reading (comprehension)</b>	<ul style="list-style-type: none"> <li>Discussing word meanings, linking new meanings to those already known.</li> </ul>	<ul style="list-style-type: none"> <li>Discussing and clarifying the meanings of words, linking new meanings to known vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Read further exception words, noting the unusual correspondences between spelling and sound, and where these occur in the word.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain positive attitudes to reading and understanding of what they read by continuing to read and discuss an increasingly wide range of genres.</li> <li>Understand what they read by asking questions to improve their understanding.</li> <li>Distinguish between statements of fact and opinion.</li> <li>Retrieve, record and present information from non-fiction.</li> </ul>
<b>Writing (transcription)</b>	<ul style="list-style-type: none"> <li>Apply simple spelling rules and guidance.</li> </ul>	<ul style="list-style-type: none"> <li>Learning new ways of spelling phonemes for which one or more spellings are already known, and learn some words with each spelling, including a few common homophones.</li> <li>Learning to spell common exception words.</li> </ul>	<ul style="list-style-type: none"> <li>Spell words that are often misspelt.</li> </ul>	<ul style="list-style-type: none"> <li>Use knowledge of morphology and etymology in spelling and understand that the spelling of some words needs to be learnt specifically.</li> </ul>
<b>Writing (composition)</b>	<ul style="list-style-type: none"> <li>Write sentences.</li> <li>Discuss what they have written with the teacher or other pupils.</li> </ul>	<ul style="list-style-type: none"> <li>Develop positive attitudes towards and stamina for writing by writing for different purposes.</li> <li>Consider what they are going to write before beginning by writing down ideas and/or key words, including new vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Plan their writing by discussing and recording ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Plan their writing by noting and developing initial ideas, drawing on reading and research where necessary.</li> </ul>
<b>Writing (vocabulary, grammar and punctuation)</b>		<ul style="list-style-type: none"> <li>Learn how to use sentences with different forms: statement, question, exclamation, command.</li> </ul>		