

Smart Toy Engineers Workshop Years 5 & 6

Curriculum Links

<p>Please note:</p>	<p>Our workshops may not cover all of the links below in great depth as we are restricted by time, however you have the opportunity to cover them in the follow up activities you will be receiving from us.</p>	
<p>Aims and Activities taken from the workshop booklet</p>	<p>The Smart Toy Company has built several prototypes for a new range of programmable wheeled toys. The design team have called the prototypes Bit:Bot and they want to find out how well the prototypes work. Working in pairs your pupils act as test engineers first learning how to program Bit:Bot, then finding out how Bit:Bot behaves by carrying out a series of experiments and finally using the data collected to program Bit:Bot to successfully navigate a test track. The aims of the workshop are to: - provide a stimulating and practical activity suitable for all abilities, which compliments learning in school - learn how to program the BBC micro:bit computer using block code - carry out experiments by making accurate measurements, recording results, drawing and interpreting graphs - develop numeracy, logical thinking, analytical and problem solving skills - improve team working and communication skills - provide more experienced programmers the opportunity to use imagination and creativity</p>	
	<p>National Curriculum</p>	<p>Non-Statutory Opportunities</p>
<p>Science</p>	<p>Working Scientifically (UKS2)</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments 	<p>Pupils will have the opportunity to:</p> <ul style="list-style-type: none"> - carry out experiments to test the behaviour of Bit:Bot prototypes - Explore and ask questions about factors that affect the efficiency of programmable wheeled toys - take measurements and make systematic and careful observations about the effectiveness of Bit:Bots, thinking about ways to collect data - Report their findings using scientific vocabulary linked to properties of materials, wheel and axle mechanisms and forces and friction
<p>Computing</p>	<ul style="list-style-type: none"> • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output 	<ul style="list-style-type: none"> - Design, write and debug a program to make a Bit:Bot robot move -use computational thinking and creativity to understand robotics and explore how

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	<ul style="list-style-type: none"> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 	computer science is changing the world
DT	Technical Knowledge – apply knowledge of computing to program, monitor and control their products	Apply knowledge, understanding and skills from the maths, science and computing curriculum to build and evaluate a moving programmable robot
Maths	<p>The National Curriculum for mathematics aims to ensure that all pupils:</p> <ul style="list-style-type: none"> reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language can solve problems by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. <p>Pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.</p>	<p>The Bit:Bot robot provides pupils opportunity to</p> <ul style="list-style-type: none"> - develop reasoning and problem solving skills - break problems into a series or simpler steps - persevere in seeking solutions - make connections between maths and computing and real world careers in programming and robotics - make accurate measurements, record results using tables and graphs and interpret graphs
English	<ul style="list-style-type: none"> ask relevant questions to extend their understanding and knowledge articulate and justify answers, arguments and opinions developing a broader, deeper and richer vocabulary 	