

## Computing at Oakfield

### Computing

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Oakfield aims to ensure that all pupils:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Are responsible, competent, confident and creative users of information and communication technology

	Aut 1	Aut 2	Spr1	Spr2	Sum 1	Sum 2
FS	<p><b>Purpose:</b> Completes a simple program on a computer. Uses ICT hardware to interact with age-appropriate computer software. Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>					
Y1	<p><b>Content:</b> Create a series of instructions. Create digital content. Store digital content. Use technology safely.</p> <p><b>Purpose:</b> understand what algorithms are. Create and debug simple programs. Keep personal information private. Use technology purposefully to create,</p>	<p><b>Content:</b> Create a series of instructions. Retrieve digital content. Use a website. Keep personal information private.</p> <p><b>Purpose:</b> create and debug simple programs use technology safely and respectfully, use technology purposefully</p>	<p><b>Content:</b> Plan a journey for a programmable toy. Use a camera. Record sounds and playback. Keep personal information private.</p> <p><b>Purpose:</b> use logical reasoning to predict the behaviour of simple</p>			

	<p>organise, store, manipulate and retrieve digital content</p> <p><b>Skills:</b> Can tell an adult when I see something unexpected or worrying online. Give instructions to my friend and follow their instructions to move around.</p>	<p>to create, organise, store, manipulate and retrieve digital content</p> <p><b>Skills:</b> I can agree and follow sensible e-safety rules. Give instructions to my friend and follow their instructions to move around.</p>	<p>programs. Recognise common uses of information technology beyond school</p> <p><b>Skills:</b> Press the buttons in the correct order to make my robot do what I want. I can describe what actions I will need to do to make something happen and begin to use the word 'algorithm'. Begin to identify some of the benefits of using technology. Keep my password private</p>
Y2	<p><b>Content:</b> Use a range of instructions; directions, angles, turns. Test and amend a set of instructions. Organise digital content. Use technology respectfully.</p> <p><b>Purpose:</b> use technology safely and respectfully, keeping personal information private. Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p><b>Skills:</b> can tell you the order I need to do things to make something happen and talk about this as an algorithm. Can talk about why it is important to be kind and polite online and in real life. I know that not everyone is who they say they are on the internet.</p>	<p><b>Content:</b> Find errors and amend (debug). Write a simple program and test it. Predict what the outcome of a simple program will be (logical reasoning). Retrieve and manipulate digital content. Know where to go for help if I am concerned.</p> <p><b>Purpose:</b> create and debug simple programs. Use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p><b>Skills:</b> watch a program execute and spot where it goes wrong so that I can debug it. Can use the keyboard on my device to add, delete and space text for others to read.</p>	<p><b>Content:</b> Understand that algorithms are used on digital devices. Understand that programs need precise instructions. Navigate the web to complete simple searches. Know how technology is used inside and outside of school.</p> <p><b>Purpose:</b> use technology safely and respectfully, keeping personal information private. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</p>

			<p><b>Skills:</b> I can tell you the order I need to do things to make something happen and talk about this as an algorithm. I can program a robot. Describe the things that happen online that I must tell an adult about</p>
Y3	<p><b>Content:</b> Design a sequence of instructions including directional instructions. Use a range of software for similar purposes. Collect information. Use technology respectfully and responsibly. Know different ways I can get help if I am concerned.</p> <p><b>Purpose:</b> use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p><b>Skills:</b> I can use the safety features of websites as well as reporting concerns to an adult. I keep testing my program and can recognise when I need to debug it.</p>	<p><b>Content:</b> Write programs that accomplish specific goals. Design and create content. Present information. Understand what computer networks do and how they provide multiple services.</p> <p><b>Purpose:</b> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</p> <p><b>Skills:</b> I keep testing my program and can recognise when I need to debug it. I can</p>	<p><b>Content:</b> Work with various forms of input. Work with various forms of output. Search for information on the web in different ways. Manipulate and improve digital images. Discern where it is best to use technology and where it adds little value.</p> <p><b>Purpose:</b> use sequence, selection, and repetition in programs; work with variables and various forms of input and output use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p><b>Skills:</b> I can combine a mixture of text, graphics and sound to share my ideas and learning. I can tell you ways to communicate with others online.</p>

		describe the World Wide Web as the part of the internet that contains websites. I	
Y4	<p><b>Content:</b> Experiment with variables to control models. Select and use software to accomplish given goals. Recognise acceptable and unacceptable behaviour using technology.</p> <p><b>Purpose:</b> use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p><b>Skills:</b> I know that anything I post online can be seen by others. I can talk about why I need to ask a trusted adult before downloading files and games from the internet</p>	<p><b>Content:</b> Give an on-screen robots specific instructions that takes them from A to B. Collect and present data.</p> <p><b>Purpose:</b> Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.</p> <p><b>Skills:</b> I recognise that using algorithms will also help solve problems in other learning such as maths, science and design technology. I can organise data in different ways. I can collect data and identify where it could be inaccurate.</p>	<p><b>Content:</b> Make an accurate prediction and explain why I think something will happen (link to programming). Debug a program. Produce and upload a podcast.</p> <p><b>Purpose:</b> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</p> <p><b>Skills:</b> I know that I need to keep testing my program while I am putting it together.</p>
Y5	<p><b>Content:</b> Combine sequences of instructions and procedures to turn devices on and off. Analyse information. Evaluate information.</p>	<p><b>Content:</b> Use technology to control and external device. Understand how search results are selected and ranked. Understand that you have to make choices</p>	<p><b>Content:</b> Design algorithms that use repetition and two-way selection. Edit a film.</p>

	<p><b>Purpose:</b> select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</p> <p><b>Skills:</b> . I can recognise that an algorithm will help me sequence more complex programs. I can talk about mistakes in data and suggest how it could be checked.</p>	<p>when using technology and that not everything is true and/or safe.</p> <p><b>Purpose:</b> use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p><b>Skills:</b> I can discuss the importance of choosing an age- appropriate website or game. I can use a search engine to find appropriate information and check its reliability.</p>	<p><b>Purpose:</b> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals.</p> <p><b>Skills:</b> I can change an input to a program to achieve a different output. I use logical thinking, imagination and creativity to extend a program.</p>
Y6	<p><b>Content:</b> Design a solution by breaking a problem up. Recognise that different solutions can exist for the same problem. Select, use and design software for a range of digital devices. Discuss the risks of online use of technology.</p> <p><b>Purpose:</b> solve problems by decomposing them into smaller parts</p> <p><b>Skills:</b> I can deconstruct a problem into smaller steps, recognising similarities to solutions used before. I can explain the</p>	<p><b>Content:</b> Use logical reasoning to detect errors in algorithms. Use selection in programs. Use a range of technology for a specific project. Identify how to minimise risks.</p> <p><b>Purpose:</b> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p><b>Skills:</b> I can deconstruct a problem into smaller steps, recognising similarities to</p>	<p><b>Content:</b> Work with variables. Explain how an algorithm works. Explore ‘what if’ questions by planning different scenarios for controlling devices.</p> <p><b>Purpose:</b> use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p><b>Skills:</b> I can recognise when I need to use a variable to achieve a required output. I can use a variable and operators to stop a program.</p>

	consequences of sharing too much information about myself online	solutions used before. I can explain and program each of the steps in my algorithm.	
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