Computing Long Term Plan

Computing is the safe use of technology to enhance our lives.

Vision

At Oatlands Junior School, we aim to equip our children with the necessary skills and confidence to benefit from the ever-advancing technology on offer to them. We hope to open their eyes to the wealth of learning opportunities offered by technology and ensure that they also have a solid understanding of how to use it safely.

OJS Curriculum Threads

Our curriculum vision is based upon our knowledge of our pupils and community. Our three curriculum threads are:

- Promote Equality and Diversity
- Provoke Curiosity
- Embed Safe Behaviours

These threads are woven through each subject, alongside individual subject pedagogy, to ensure our learners benefit from a purposeful curriculum.

Fundamental British Values

-Democracy
-Rule of Law
-Individual Liberty
-Mutual Respect and tolerance of different faiths and beliefs.

The Computing curriculum is inclusive and promotes respect, tolerance and appreciation of equality and diversity through their pedagogical approaches (see Curriculum Handbook). Children are immersed into interesting and fun topics, that develop lively, enquiring minds. They are encouraged to create and to make links through well-connected knowledge and celebrate diversity. Links to Spiritual, Moral, Social and Cultural & FBV are made in Year Group OJS Passports and the wider curriculum offer in Computing.

National Curriculum Aims

The national curriculum for Computing 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.*

Planning and Resources

At OJS, we follow the National Curriculum as a foundation for our Computing planning. We then bespoke our planning by using Purple Mash documentations. Computing is taught in two-hour sessions in half term and termly blocks. In Computing lessons, every child has access to an iPad. E-safety is key to our Computing curriculum, and is taught both discreetly and within each unit. Our close links with Oatlands Infants School and our local secondary schools ensure that our Computing curriculum is both fluid and progressive.

Wider Offer

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In Computing, our wider offer within the school day is: topic specific visitors and trips, and sharing work across the school, E-Safety Week, Hour of the Code, visitors and national Purple Mash competitions. We celebrate Computing through weekly Achievement Awards, Scarth's Celebrations, Oatlands Points, as well as celebrating national events such as E-Safety Week, Safer Internet Day, Hour of the Code and national Purple Mash competitions.

Pupil Voice Groups

Through the pupil voice groups, Digital Leaders, we gather pupil feedback about the Computing when monitoring and evaluating our Computing curriculum offer.

Links to other documents:

- Curriculum Handbook
- OJS Passport
- Teaching and Learning Policy
- Assessment and Reporting policy
- Key Knowledge Progression
- Keeping Myself Safe at OJS (PSHE Page)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	**Online Safety Spreadsheets** **Key Learning Objectives** -Carry out searches to find digital content on a range of online systems. -Consider what the most appropriate software to use when given a task. -Collect data and input it into software. -Analyse data using features within software to help.	**Coding** **Key Learning Objectives** - Make a real-life situation into an algorithm for a program. -Design an algorithm carefully. -Identify an error in a program and fix it. -Experiment with timers in programs. -Know that a variable stores information while a program is running.	**Email** **Key Learning Objectives** - Create purposeful (appropriate) content and attach this to emails. - Explain the negative consequences of not keeping passwords safe and secure. -Use communication tools such as 2Email respectfully and use good etiquette. -Create a secure password and explain	**Branching Databases** **Key Learning Objectives** - Sort objects using just 'yes' or 'no' questions. -Complete a branching database using 2Question. -Create a branching database of the children's choice. **Key Vocabulary**	**Simulations** **Key Learning Objectives** -Consider what simulations are. -Explore a simulation. -Analyse and evaluate a simulation. **Key Vocabulary** Advantages, analysis, decision, disadvantages, evaluation, modelling, point-of-view, realistic, simulation, solution, unrealistic	**Graphing and Presenting** **Key Learning Objectives** -Enter data into a graph and answer questions. -Solve an investigation and present the results in graphic form. -Understand the uses of PowerPoint. -Create a page in a presentation. -Add media to a presentation.

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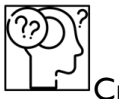
	-Present data and information using different software. -Understand the importance of keeping safe online and behaving respectfully. -Report unacceptable content and contact online in more than one way to a trusted adult. **Key Vocabulary** Appropriate, inappropriate, internet, password, personal information, permission, spoof, verify Bar chart, cell, data, equals, advanced mode, pie chart, quiz tool, spinner tool, table **Wider Offer** • **Curriculum Threads**	-Identify 'If' statements, repetition and variables. -Read programs with several steps and predict what it will do. -Identify the difference in using between the effect of a timer or repeat command in code. **Key Vocabulary** Action, alert, algorithm, background, bug, button, events, code, command, debug, object, flowchart, repeat, scene, run **Wider Offer** • Hour of the Code (December)	the importance of having a secure password and not sharing it with others. **Key Vocabulary** Address book, attachment, BCC (blind carbon copy), CC (carbon copy), communication, inbox, password, personal information, trusted contact **Wider Offer** • Safer Internet Day (February) **Curriculum Threads**  Write emails safely and respectfully. **Fundamental British Values** Introduction to	Binary tree, database, debugging **Wider Offer** • **Curriculum Threads**  Carry out safe searches online.	**Wider Offer** • **Curriculum Threads**  Link to other areas of learning.  Select appropriate software.	-Add animations to a presentation. -Add timings to a presentation. -Use the skills learnt to design and create an engaging presentation. **Key Vocabulary** Axis, chart, column, graph, investigation, row, sorting, survey, tally, title Animation, audio, properties, duration, editing, fill colour, layer, media, design, preview, slideshow, sound effect, theme, transition **Wider Offer** • **Curriculum Threads**  Create a presentation for another lesson.

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	 Ensure that everyone is safe online.  Link searches to History and Geography units.  Create secure passwords **Fundamental British Values** Introduction to **Rule Of Law** through discussions about privacy and personal information. Introduction to **Respect and Tolerance** through discussion of respect online.	**Curriculum Threads**  Create animations.	**respect and tolerance** through communicating to others.			
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 4	**Online Safety** **Coding**	**Writing for Different Audiences**	**Logo**	**Animations**	**Effective Search** **Hardware Investigators**	**Spreadsheets**

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	Key Learning Objectives -Understand selection in computer programming. -Understand how an IF statement works. -Understand how to use co-ordinates in computer programming. -Understand the 'repeat until' command. -Understand how an IF/ELSE statement works. -Understand what a variable is in programming. -Use a number variable. -Create a playable game. **Key Vocabulary** Adfly, attachment, collaborate, cookies, copyright, data analysis, digital footprint, malware, phishing, plagiarism,	**Key Learning Objectives** -Explore how font size and style can affect the impact of a text. -Use a simulated scenario to produce a news report. -Use a simulated scenario to write for a community campaign. **Key Vocabulary** Campaign, format, font, genre, opinion, reporter, viewpoint **Wider Offer** • Hour of the Code (December) **Curriculum Threads**  Use a story to inspire computing work. Link to English learning.	**Key Learning Objectives** -Learn the structure of the coding language of Logo. -Input simple instructions in Logo. -Use 2Logo to create letter shapes. -Use the Repeat function in Logo to create shapes. -Use and build procedures in Logo. **Key Vocabulary** Grid, logo commands, multi line mode, pen down, pen up, procedure, run speed, SETPC, SETPS **Wider Offer** • Safer Internet Day (Februaryu) **Curriculum Threads**	**Key Learning Objectives** -Discuss what makes a good animated film or cartoon. -Learn how animations are created by hand. -Find out how animation can be created in a similar way using the computer. -Learn about onion skinning in animation. -Add backgrounds and sounds to animations. -Be introduced to 'stop motion' animation. -Share animation on the class display board and by blogging. **Key Vocabulary** Frame per second, onion skinning, pause, stop motion **Wider Offer** • **Curriculum Threads**	**Key Learning Objectives** -Locate information on the search results page. -Use search effectively to find out information. -Assess whether an information source is true and reliable. -Understand the different parts that make up a computer. -Recall the different parts that make up a computer. **Key Vocabulary** Balanced view, Easter eggs, reliability, key words, search engine, results page Components, CPU, graphics card, hard drive, hardware, input, motherboard, network card,	**Key Learning Objectives** -Format cells as currency, percentage, decimal to different decimal places or fraction. -Use the formula wizard to calculate averages. -Combine tools to make spreadsheet activities such as timed times tables tests. -Use a spreadsheet to model a real- life situation. -Add a formula to a cell to automatically make a calculation in that cell. **Key Vocabulary** Average, budget, calculations, decimal place, equals to tool, format cell, formula Wizard, line graph, percentage, random number tool, resize,

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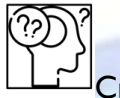
	ransomware, report, SMART, software, spam, virus, watermark Code blocks, execute, 'if' statement, 'if/else' statement, input, nest, prompt, implement, predict, repeat until, selection, sequence, variable **Wider Offer** • **Curriculum Threads**  Use the internet safely. **Fundamental British Values** **Rule of Law** through discussions about privacy and personal information.		 Create a logo for a purpose.	 Link to Science learning.	output, peripherals, RAM, software **Wider Offer** • **Curriculum Threads**  Use the internet safely when carrying out searches.	set image, timer, totals **Wider Offer** • **Curriculum Threads**  Create a spreadsheet to present information about our class/ community.

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	Respect and Tolerance through discussion of respect online.					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 5	**Online Safety Coding** **Key Learning Objectives** -Begin to simplify code. -Create a playable game. -Understand what a simulation is. -Program a simulation using 2Code. -Know what decomposition and abstraction are in computer science. -Take a real-life situation, decompose it and think about the level of abstraction. -Understand how to use friction in code. -Begin to understand what a function is and	**Databases** **Key Learning Objectives** -Learn how to search for information in a database. -Contribute to a class database. -Create a database around a chosen topic. **Key Vocabulary** Arrange, database report, field, group, record, search, sort, statistics **Wider Offer** • Hour of the Code (December)	**Spreadsheets** **Key Learning Objectives** - Use formulae within a spreadsheet to convert measurements of length and distance. -Use the count tool to answer hypotheses about common letters in use. -Use a spreadsheet to model a real- life problem. -Use formulae to calculate area and perimeter of shapes. -Create formulae that use text variables. -Use a spreadsheet to help plan a school cake sale.	**Game Creator** **Key Learning Objectives** -Plan a game. -Design and create the game environment. -Design and create the game quest. -Finish and share the game. -self and peer evaluate. **Key Vocabulary** Evaluation, feedback, image, promotion, quest, texture **Wider Offer** • **Curriculum Threads**	**Modelling** **Key Learning Objectives** -Be introduced to 2Design and the skills of computer aided design. -Explore the effect of moving points when designing. -Design a 3D Model to fit certain criteria. -Refine and print a model. **Key Vocabulary** 2D, 3D, 3D printing, CAD (Computer Aided Design), design brief, net, patter fill, points, template **Wider Offer** •	**Concept Maps and Word** **Key Learning Objectives** -Understand the need for visual representation when generating and discussing complex ideas. -Understand the uses of a 'concept map'. -Understand and use the correct vocabulary when creating a concept map. -Create a concept map. -Understand how a concept map can be used to retell stories and information.

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	how functions work in code. -Understand what the different variables types are and how they are used differently. -Understand how to create a string. -Understand what concatenation is and how it works. -Have a secure knowledge of online safety rules taught at school. -Demonstrate the safe and respectful use of different online technologies and online services. -Relate appropriate online behaviour to my right to have personal privacy. -Know how to not let my mental wellbeing or others be affected by use of online technologies and services.	**Curriculum Threads**  E-safety reminders when using internet.	**Key Vocabulary** Area, computational model, formula bar, 'How Many?' tool, perimeter, profit, rows, totalling tool, variable **Wider Offer** • Safer Internet Day (February) **Curriculum Threads**  E-safety reminders when using internet.	  Create an inclusive game for Year ¾ children	**Curriculum Threads**  Link to maths learning	-Create a collaborative concept map and present to an audience. -Know what a word processing tool is for. -Add and edit images to a word document. -Add features to a document to enhance its look and usability. **Key Vocabulary** Concept, connection, heading, sub-heading, node, presentation mode, story mode Attributing, bulleted lists, breaks, caps lock, captions, columns, copy and paste, copyright, creative commons, cropping, cursor, distributing columns, drop capitals, editor options, font, grammar check, hyperlink

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	Key Vocabulary Avatar, bibliography, citation, creative commons licence, critical thinking, encrypt, identity theft, image manipulation, ownership, validity Abstraction, co-ordinates, decomposition, efficient, friction, function, physical system, print to screen, simplify, tabs, string **Wider Offer** • **Curriculum Threads**  Create a game using own ideas **Fundamental British Values**					**Wider Offer** • **Curriculum Threads**  Link to learning in English and History

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	Rule of Law through discussions about privacy, personal information and scamming. **Respect and Tolerance** through discussion of respect online and respecting privacy.					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 6	**Online Safety Coding** **Key Learning Objectives** -Design a playable game with a timer and a score. -Plan and use selection and variables. -Understand how the launch command works. -Use functions and understand why they are useful.	**Spreadsheets** **Key Learning Objectives** -Use a spreadsheet to investigate the probability of the results of throwing many dice. -Use a spreadsheet to calculate the discount and final prices in a sale. -Use a spreadsheet to plan how to spend pocket money and the effect of saving money.	**Blogging** **Key Learning Objectives** -Identify the purpose of writing a blog. -Identify the features of a successful blog. -Plan the theme and content for a blog. -Understand how to write a blog and a blog post. -Consider the effect upon the audience of changing the visual properties of the blog.	**Text Adventures** **Key Learning Objectives** -Find out what a text adventure is. -Use 2Connect to plan a story adventure. -Make a story-based adventure using 2Create a Story. -Introduce an alternative model for a text adventure which has a less sequential narrative. -Use written plans to code a map-	**Networks and Quizzing** **Key Learning Objectives** -Learn about what the Internet consists of. -Find out what a LAN and a WAN are. -Find out how the Internet is accessed in school. -Research and find out about the age of the Internet. -Think about what the future might hold.	**Understanding Binary** **Key Learning Objectives** -Examine how whole numbers are used as the basis for representing all types of data in digital systems. -Recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is

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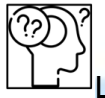
	-Understand how functions are created and called. -Use flowcharts to create and debug code. -Create a simulation of a room in which devices can be controlled. -Understand how user input can be used in a program. -Identify secure sites by looking for privacy seals of approval. -Review the meaning of a digital footprint. -Understand how information online can persist. -Understand the importance of balancing game and screen time with other parts of their lives. -Identify the positive and negative influences of technology on health and the environment. **Key Vocabulary**	-Use a spreadsheet to plan a school party or fundraising event. **Key Vocabulary** Dice tool, expense, move cell tool, probability **Wider Offer** • Hour of the Code (December) **Curriculum Threads**  Create a spreadsheet for a class party or link to Summer Fair.  Create an inclusive spreadsheet.	-Understand how to contribute to an existing blog. -Understand how and why blog posts are approved by the teacher. -Understand the importance of commenting on blogs. **Key Vocabulary** Approval, commenting, vlog, blog, archive, blog post, nodes **Wider Offer** • Safer Internet Day (February) **Curriculum Threads**  Blog and research safely. **Fundamental British Values**	based adventure in 2Code. **Key Vocabulary** Link, QR code, sprite, selection **Wider Offer** • **Curriculum Threads**  Link to English or History learning.  Share with Y3 reading buddies.	-Create a picture-based quiz for young children. -Learn how to use the question types within 2Quiz. -Explore the grammar quizzes. -Make a quiz that requires the player to search a database. -Make a quiz to test teachers or parents. **Key Vocabulary** DNS (Domain Name Server), ethernet, hosting, hub/switch, IP address, ISP (Internet Service Provider), LAN (Local Area Network), network, router, WAN (Wide Area Network), web page, web server, WLAN (Wireless Local Area Network), Wi-Fi	why they are called digital systems). -Understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics. **Key Vocabulary** Binary, bit, denary, digit, game states, integer, microprocessor, nanotechnology, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, switch, transistor **Wider Offer** • Alex Stanhope to visit each class and talk about his job. **Curriculum Threads**

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	Secure websites, PEGI ratings, screenshot, location sharing Concatenation, execute, launch command, procedure, turtle object, x and y properties **Wider Offer** • **Curriculum Threads**  Create a game to share **Fundamental British Values** **Rule of Law** through discussions about privacy and personal information. **Respect and Tolerance** through discussion of respect online.		**Rule of Law** through discussions about privacy and personal information. **Respect and Tolerance** through discussion of respect online when commenting on each blogs.		Audience, case-sensitive, clone, cloze, database field, selfie, image filter **Wider Offer** **Curriculum Threads**  Research safely  Link to Science learning.	 Interview an adult who works in the world of computing. **Fundamental British Values** **Individual Liberty** through exploration of personal interests and job choices.

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