

# Computing at The Grove Junior School

## *National Curriculum*

### Purpose of Study

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.

Pupils in Key Stage 2 should be taught to:

- 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
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

## *Links to learning in KS1*

The majority of pupils transition to the Grove Junior School from The Grove Infant School. The pupils are taught Computing through the 'Teach Computing' programme of study <https://teachcomputing.org/curriculum/key-stage-1>

This covers the content from the National Curriculum which states that pupils should be taught to:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Recognise common uses of information technology beyond school
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

## ***Intent***

The Grove Junior School aims to deliver a memorable Computing curriculum to make the knowledge 'sticky' for the children so that the learning remains with them for it to grow and deepen. The school understands that when the learning experience has a purpose that is explained to the pupils clearly they are more engaged and able to become active learners. The school wants its pupils to embrace technology and use it in a safe way and understand its ever-increasing role in our world and the rise in career opportunities linked with the sector. An emphasis on online safety is paramount at our school and staff recognise the importance of staying informed on any developments that create a risk to the children. The school recognises that for many of the children at the school, they become literate at using devices at home, however they may not necessarily be taught how to use it responsibly or to think about computing as a broad subject. For example, many of the children may use their devices for gaming purposes. The curriculum is designed to expose children to the three strands of Computing: digital literacy, information technology and computer science in order to ensure our learners have a broad understanding of the subject. The Computing lessons aim to allow all learners to have access to a computing device and to provide the children with a weekly lesson. The lessons also aim to be engaging and to ensure the children learn knowledge and skills that enable all to have mastery opportunities and where the gap between disadvantaged and non-disadvantaged pupils is narrowed and eventually removed.

## ***Implementation***

Computing at The Grove Junior School is taught weekly, following the Purple Mash scheme of work that is designed to be a spiral curriculum. The National Curriculum is covered through a sequence of units taught and revisited throughout the Key Stage.

### *Purple Mash Units:*

*-Coding and computational thinking*

*-Spreadsheets*

*-Internet and e-mail*

*-Art and Design*

*-Databases and graphing*

*-Writing and presenting*

*-Communication and networks*

The scheme allows children to develop depth in their knowledge and skills over the duration of the Key Stage. Our curriculum also allows for opportunities to use other applications and platforms such as Google Workplace, 'Scratch' and programmable devices like 'Artie 3000'. This allows for a range of assessment opportunities for teachers so the learners can be observed using a variety of resources. The Purple Mash scheme is used to assess the pupils after each unit and to allow it to inform the planning and teaching of subsequent lessons. There is balanced coverage of computer science, digital literacy and information technology. The school currently uses a range of devices to implement its Computing lessons:

*-Chromebooks (48 devices)*

*-Laptops (16 devices)*

*-iPads (15 devices)*

The devices are timetabled so that each child has access to their own device during the lessons and each child has their own login to use Purple Mash. The school recognises the valuable opportunity for cross-curricular teaching when implementing Computing. PSHE will frequently be taught, namely to deliver online safety. Maths and

Science skills can be practised in Computing when learning about data handling and data presentation. Humanities research may be conducted in Computing lessons when learning about the internet and search engines. Art and Design may be included during a Computing lesson when learning about graphics.

To help make the learning memorable, opportunities to invite visitors from STEM careers to the school to share expertise and knowledge are developed. The children are also given opportunities to demonstrate their skills during assemblies. For example, this may be through children showing some coding skills on a device they have. In addition, educational visits that are linked with the Computing curriculum are organised. For example, in Year 6, the children visit the STEM Discovery Centre in Stevenage to learn about coding to give them an opportunity to apply what they have learnt from their prior learning. Teaching staff at the school receive CPD during staff meetings so that they feel confident to deliver the curriculum, reflect on ways to be innovative and can evaluate their own subject knowledge and understanding of how to use different resources to teach and assess. Online safety updates from the local authority are shared with the community including parents and carers and staff and sometimes these may be shared with the children during an assembly or discussed during their next Computing lesson and PSHE session.

### ***Impact***

As a result of our Computing curriculum, the children leave The Grove Junior School as competent, confident and equipped learners, who have a secure knowledge and skill-set in Computing, upon which to build. Regular assessment from teachers enables early intervention to be put in place for pupils who may not be achieving at an age-related expectation. In addition, this allows for close monitoring of any groups such as disadvantaged pupils or those with special educational needs. The consistent access that the children have to computing devices enables all pupils to get regular practise and to enhance their skills so that any learners who do not get access at home to a device have this experience in school.

The use of educational visits and the involvement of visitors inspires our children and helps them to link Computing with a context beyond the school classroom as well as providing the opportunity for learners to consolidate or extend their knowledge and experience of the subject. The pupils place a value on learning about Computing and create aspirations for themselves and their future. The children are equipped to use Computing safely and respectfully and understand how to make informed decisions about how to keep themselves safe. They do this by being reflective and showing that they can self-regulate their online behaviour. CPD delivered to the staff enables teachers to feel confident about delivering the curriculum and how to assess and also how to teach using different resources such as Google Workplace and programmable devices and understand the purpose of this.

## **Computing Long Term Plan**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	<b>Induction</b> (1 session)  <b>Online Safety</b> (3 sessions)  <b>Branching Databases</b> (3/4 sessions)	<b>Email</b> (6 sessions)  <b>Online safety assessment</b> (1 session)	   <b>Coding</b> (6 sessions)	<b>Touch Typing</b> (4 sessions)  <b>Online safety assessment</b> (1 session)	   <b>Simulations</b> (3 sessions)  <b>Spreadsheets</b> (3 sessions)	   <b>Graphing</b> (2 sessions)  <b>Online safety assessment</b> (1 session)  <b>Presenting</b> (5 sessions)
	<u>Resources:</u> <b>Online Safety</b> Purple Mash, 1decision  <b>Branching Databases</b>	<u>Resources:</u> <b>Email</b> eEmail, 2Connect, 2DIY  <b>Online safety assessment is in</b>	<u>Resources:</u> <b>Coding</b> 2Coding  <i>Lesson 4 in the sequence to be from 'Teaching Computing Unplugged': To create algorithms based on symbolic</i>	<u>Resources:</u> <b>Touch Typing</b> 2Type  <b>Online safety assessment is in Computing folder</b>	<u>Resources:</u> <b>Simulations</b> 2Simulate, 2Publish  <b>Spreadsheets</b> 2Calculate	<u>Resources:</u> <b>Graphing</b> 2Graphs <b>Presenting</b> Microsoft PowerPoint, Google Slides <b>Online safety</b>

	2question	<b>Computing folder</b>	<i>representation in order to solve a problem (p 14-15).</i>			<b>assessment is in Computing folder</b>
Year 4	<b>Online Safety (3 sessions)</b>  <b>Logo (4 sessions)</b>	<b>Spreadsheets (6 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>Coding (6 sessions)</b>	<b>Writing for different audiences (5 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>Animation (3 sessions)</b>  <b>Effective Search (3 sessions)</b>	<b>Making Music (4 sessions)</b>  <b>Online safety assessment (1 sessions)</b>  <b>Hardware Investigators (2 sessions)</b>
	<u>Resources:</u> <b>Online Safety</b> Purple Mash, 1decision  <b>Logo</b> Logo	<u>Resources:</u> <b>Spreadsheets</b> 2Calculate  <b>Online safety assessment is in Computing folder</b>	<u>Resources:</u> <b>Coding</b> 2Code  <i>Lesson 4 in the sequence to be from 'Teaching Computing Unplugged': To use logical reasoning to determine the outcome of conditionals (p 140-143)</i>	<u>Resources:</u> <b>Writing for different audiences</b> 2Email, 2Connect, 2DIY  <b>Online safety assessment is in Computing folder</b>	<u>Resources:</u> <b>Animation</b> 2Animate  <b>Effective Search</b> Browser, safesearch.com (session 3)	<u>Resources:</u> <b>Making Music</b> Busy Beats, 2Sequence  <b>Online safety assessment is in Computing folder</b>
Year 5	<b>Online Safety (3 sessions)</b>  <b>Game Creator (5 sessions)</b>	<b>Spreadsheets (6 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>Coding (6 sessions)</b>	<b>Databases (4 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>3D Modelling (3 sessions)</b>  <b>Concept Maps (3/4 sessions)</b>	<b>Word Processing (7/8 sessions)</b>  <b>Online safety assessment (1 session)</b>
	<u>Resources:</u> <b>Online Safety</b> Purple Mash, 1decision  <b>Game Creator</b> 2DIY, 3D	<u>Resources:</u> <b>Spreadsheets</b> 2Calculate  <b>Online safety assessment is in Computing folder</b>	<u>Resources:</u> <b>Coding</b> 2Code	<u>Resources:</u> <b>Databases</b> 2Question, 2Investigate, Google Forms (sessions 3&4)  <b>Online safety assessment is in Computing folder</b>	<u>Resources:</u> <b>3D Modelling</b> 2Design, Make  <b>Concept Maps</b> 2Connect	<u>Resources:</u> <b>Word Processing</b> Microsoft Word, Google  <b>Online safety assessment is in Computing folder</b>
Year 6	<b>Online Safety (3 sessions)</b>  <b>Text Adventures (5 sessions)</b>	<b>Binary (4 sessions)</b>  <b>Network (3 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>Coding (6 sessions)</b>	<b>Blogging (5 sessions)</b>  <b>Online safety assessment (1 session)</b>	<b>Quizzing (6 sessions)</b>	<b>Spreadsheets (7/8 sessions)</b>  <b>Online safety assessment (1 session)</b>

	<p><u>Resources:</u> <b>Online Safety</b> Purple Mash, 1decision</p> <p><b>Text Adventures</b> 2Code, 2Connect</p>	<p><u>Resources:</u> <b>Binary</b> 2Connect</p> <p><b>Online safety assessment is in Computing folder</b></p>	<p><u>Resources:</u> <b>Coding</b> Scratch (Module 1 from Raspberry Pi) <a href="https://projects.raspberrypi.org/en/codeclub/scratch-module-1">https://projects.raspberrypi.org/en/codeclub/scratch-module-1</a></p>	<p><u>Resources:</u> Purple Mash</p> <p><b>Online safety assessment is in Computing folder</b></p>	<p><u>Resources:</u> <b>Quizzing</b> 2Quiz, Google Forms (session 6)</p> <p>Context for quizzes: Create assessments for Year 6 curriculum.</p>	<p><u>Resources:</u> <b>Spreadsheets</b> Google Sheets</p> <p><b>Online safety assessment is in Computing folder</b></p>
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