



Grange Primary School

Pursuing excellence for every child

Computing Policy

Curriculum Intent

Digital technology is everywhere and plays a significant part in children's everyday lives. We want to model and educate our pupils on how to use technology positively, responsibly and safely. At Grange Primary School the intention is that we prepare children for their future by giving them opportunities to gain knowledge and develop skills that will equip them for an ever changing digital world and ensure that they are able to meet the challenges of the modern workplace and be responsible online citizens. We want to empower children to be independent and capable learners, enabling them to decide whether and how to use digital technology and be fluent using a range of skills. We want to instil a sense of enjoyment around using technology and to develop pupil's appreciation of its capabilities and the opportunities technology offers to, create, manage, organise, and collaborate. We endeavour to encourage curiosity about digital technology and encourage our pupils to ask questions about digital systems around them and explore how technology is used in the real world. We aim to provide inclusive and aspirational environments and learning experiences where pupils progress and build the cultural capital they need to make aspirational choices about their futures, overcoming any barriers.



Aspirations

This driver will ensure that our pupils are aware of a diverse range of career opportunities and the lifelong learning available to them. This will be achieved through aspirational speakers that visit our school and studying significant people within the curriculum.

Independence

Independence is the thread throughout all of our curriculum and is carefully nurtured through well planned lessons with some clear success criteria. Pupils are encouraged to seek out resources, practise, apply and develop skills as well as building resilience.

Characteristics of a Techie

- A competence in coding for a variety of practical and inventive purposes, including application of ideas within subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data effectively.

Implementation

We have carefully selected a scheme of work that we feel covers the National Curriculum statements for Key Stage 1 and Key Stage 2. Computing is planned, taught and assessed using the online scheme of work, resources and assessment tool from **Teach Computing**. Teach Computing provides an innovative progression framework where computing content (concepts, knowledge, skills, and objectives) are organised into interconnected networks called learning graphs. Teachers use these learning graphs to directly inform lesson planning and the plans can be adapted to meet the needs of the learners. Our pupils should be able to develop their knowledge, skills and understanding around the following four units which are revisited and build on previous learning:

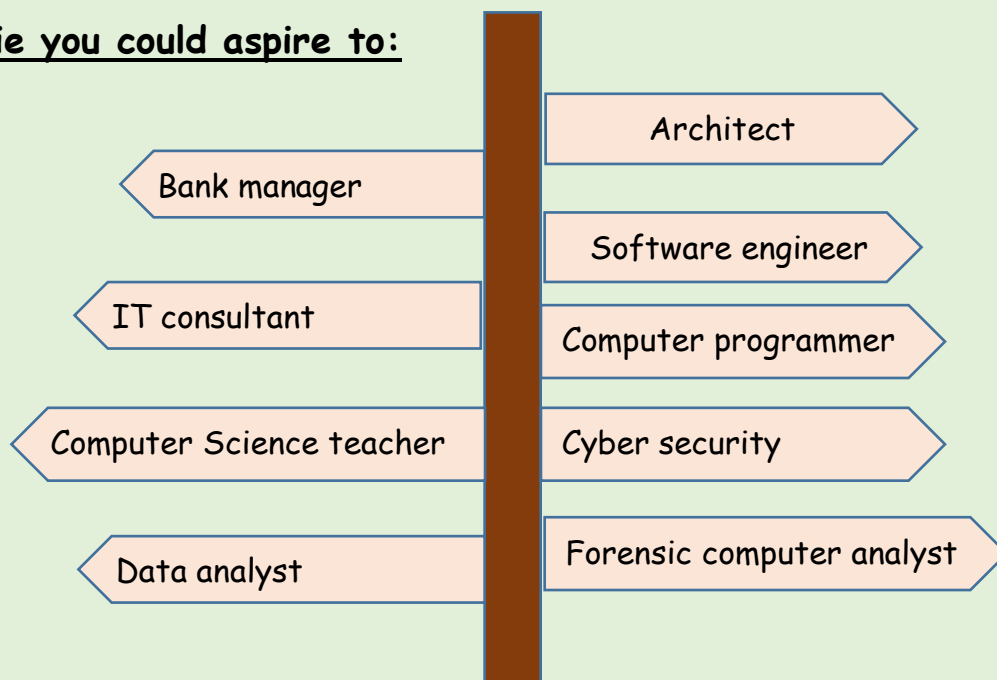
- Computing systems and networks
- Data and Information
- Creating media
- Programming

Alongside the Teach Computing scheme of learning we also use some of the DFE's 'Education for a Connected World' framework. When used in conjunction with RSE & PSHE scheme it helps equip our children for life in the digital world, including developing their understanding of appropriate online behaviour, copyright issues, being discerning consumers of online information and healthy use of technology.

[Link to the curriculum structure of the units of work](#)

[Computing NCCE SOL.docx](#)

As a techie you could aspire to:



Assessment

Through the explicit teaching of Computing skills, both the teachers and the pupils assess their learning continuously throughout the lesson. Every lesson includes formative assessment opportunities for teachers to use. These opportunities are listed in the lesson plan and are included to ensure that misconceptions are recognised and addressed if they occur. They vary from teacher observation or questioning, to marked activities. Progress will be checked at three assessment intervals throughout the year from pupils' folders. We also look for evidence through reviewing pupil's knowledge and skills digitally through tools like Google Classroom and observing learning. Progress of our computing curriculum is demonstrated through outcomes and the record of coverage in the process of achieving these outcomes.

Links to EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas.

The most relevant early years outcomes for computing are taken from the Early Learning Goals from the EYFS Statutory Framework and the Development Matters to match the programme of study for Computing. The most relevant statements for computing are taken from the areas of learning:

Personal, Social and Emotional Development

Communication and Language

Physical Development

Understanding the World

Expressive Art and Design

Expressive Arts and Design

Computing			
Three and Four-Year-Olds	Personal, Social and Emotional Development		Increasingly follow rules, understanding why they are important.
	Physical Development		Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		Explore how things work.
Reception	Personal, Social and Emotional Development		Show resilience and perseverance in the face of a challenge.
	Physical Development		- Develop their small motor skills so that they can use a range of tools competently, safely and confidently. - Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
	Expressive Arts and Design		Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. - Explain the reasons for rules, know right from wrong and try to behave accordingly.
	Expressive Arts and Design	Creating with Materials	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Curriculum Impact

The implementation of this curriculum ensures that when children leave Grange Primary School in Year 6, they are competent and safe users of ICT with an understanding of how technology works. They will have developed skills to express themselves and be creative in using digital media and be equipped to apply their skills in Computing to different challenges going forward. We want our learners to discuss, reflect and appreciate the impact computing has on their learning, development and well-being. Finding the right balance with technology is key to an effective education and a healthy life-style. We feel the way we implement computing will help children realise the positives of technology and the need for the right balance and one they can continue to build on in their next stage of education and beyond. The way pupils showcase, share, celebrate and publish their work will best show the impact of our curriculum and ultimately meet the expectations outlined in the National curriculum for Computing.

EYFS

In the EYFS, children will be introduced to career aspirations through discussions and photographs. They will begin to develop their skills and knowledge through some adult led focused tasks and inputs and child initiated play whilst hearing and using the language and vocabulary which is appropriate to their learning. Most children by the end of EYFS, at Grange Primary School, will be able to:

Computer Systems and Networks and Digital Literacy

Know a computer has a mouse, screen and keyboard. Use a mouse/finger to manipulate a program. Use a keyboard and understand that it represents letters and numbers. Name some different digital devices. Know how technology is used in the

home. Recognise some technology in everyday life and know that technology has changed since their adults were young. Know how to handle and use an iPad or tablet appropriately.

Know some ways to be safe online and who to tell if they are worried about something.

Know that a password is secret and used to log on.

Know some personal information and when it is acceptable to share it.

Creating Media

Listen to digital audio. Take a photo using a digital device. Record a video using a digital device. Record audio. Use a paint program to make a digital picture. Type their name on a keyboard. Know how to use their fingers on a touch screen, and control a mouse/trackpad on a computer with hand eye coordination.

Data and Information

Sort and group objects by an attribute. Create a tally chart and pictogram.

Programming

Follow a set of simple instructions to complete a task. Program a floor robot to follow a simple set of instructions eg. Beebot

Early Learning Goals

Understanding the World: Past and Present:

- Talk about the lives of people around them and their roles in society.
- Know some differences and similarities between things in the past and now, drawing on their experiences

People, Culture and Communities:

- Describe their immediate environment using knowledge from observation, discussion, texts, maps.

Personal, Social and Emotional Development: Managing self:

- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.
- Explain the reasons for rules, know right from wrong and try to behave accordingly

Expressive Arts and Design: Creating with Materials:

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Physical: Fine motor

- Begin to show accuracy and care when drawing.

User a range of small tools.

Communication and Language.

- Speaking
- Listening and Attention.

Year 1&2

By the end of year 1 and 2, pupils at Grange Primary School will know about some of jobs that someone who enjoys Computing could do. With support, they will develop their skills and independence, whilst using the language and vocabulary which is appropriate to their learning.

Most children by the end of year 1 and 2, at Grange Primary School, will be able to:

Skills:

Computer Systems and Networks- Digital literacy.

Use a mouse /trackpad and type on a keyboard. Use keyboard to edit text and change appearance. Make a new line using enter/return keys and use of the delete key. Use the internet and navigate the web to complete simple searches with adult support. Log on and shutdown a device.

Creating Media

Use tools to paint a digital picture. Use a digital device to take a photo, edit and improve images. Use a computer to explore rhythms and melodies to create music. Present ideas and information by combining media, e.g. text and images.

Data and Information

To be able to collect data for a topic. Select objects by attribute and make comparisons. Create a tally chart and pictogram. Modify simple charts/pictograms, e.g. add title, item or labels.

Programming

Follow simple algorithms. Write a simple algorithm for a floor robot and debug a simple algorithm. Predict an outcome of an algorithm. Children will be able to implement a simple algorithm on a digital device. Choose a command for a given purpose. Write an algorithm to create a simple program to move a character and use events to trigger a sequence of code.

Knowledge

Pupils will recognise and name a range of digital devices. They will know the main parts of a computer and will know some of the uses and features of IT in the home, school and beyond. They will know some rules for acceptable use of technology and what personal information is and why it is important to keep it private. Pupils will know that not all information online is true and who they can tell if they are worried about something online. Pupils will know what an algorithm is and that a sequence of commands have an outcome. Pupils will know what programming means.

Vocabulary

- Technology, Computer, mouse/trackpad, keyboard, screen, click, drag, draw, double-click, Input device, Shift, space bar, Safely, responsibly, barcode, scanner/scan
- paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool
- Forwards, backwards, turn, clear, go, commands, instructions, algorithm, program
- Word processor, type, backspace/delete toolbar, bold, italic, underline,
- ScratchJr, Bee-Bot, command, instruction, sequence, sprite, compare, programming, Block, joining, start block, run, background, delete, reset, algorithm, predict, effect, change, value, block program
- Device, camera, photograph, capture, image, digital Framing, focal point, subject matter, format, compose, natural lighting, artificial lighting. Blurred. focus
- Debugging, command, run, start Sprite, design, modify, change
- organise, data, object, tally chart, votes,
- Pictogram, attribute, group,

Years 3&4

By the end of year 3 and 4 pupils at Grange Primary School will know about some of jobs that someone who enjoys Computing could do. With support, they will develop their skills and independence, whilst using the language and vocabulary which is appropriate to their learning.

Most children by the end of year 3 and 4, at Grange Primary School, will be able to:

Skills

Computing systems and networks Digital literacy

Evaluate online content. Assess websites on the WWW safely using key phrases in search engines. Explain some risks of communicating online with unknown others. Explain why we need to think carefully about how content posted might affect others, their feelings and how it may affect how others feel about them (their reputation). Explain how using technology can distract from doing other things. Use some strategies to help limit time spent online. Classify input and output devices.

Creating Media

Add content to a desktop publishing publication combining media independently, e.g. text and images, apply different layouts for different purposes. Edit the style and effect of my text and images to make documents more engaging and eye-catching, e.g. borders and shadows. Use cut, copy and paste to quickly duplicate and organise text. Use spell check and thesaurus including through Siri and other AI technology. Create animations in role with more life-like realistic outcomes

using animation tools. Improve stop motion animation clips with techniques like onion skinning and adding other media. Use a digital device to record sound and edit audio. Arrange multiple sounds to create a planned effect.

Data & Information

Use a branching database. Create yes/no questions about a collection of objects to create a branching database. Use a digital device to collect data automatically. Use collected data to answer questions.

Programming

Create sequences in a block based programming language to make music. Write an algorithm that uses a range of events to trigger sequences of actions. Use text based programming language to use loops when drawing shapes. Use block based programming to use count controlled and infinite loops in a game. Use abstraction to focus on what's important in a design. Use logical reasoning to detect and correct errors in programs- debugging.

Knowledge.

Know what a computer is (input > process > output) and that school computers are connected. Know how a computer network can be used to share information. Pupils will be able to explain the role of switch, server and wireless access point in a network. Understand the difference between the Internet and the World Wide Web(WWW.) Know how to keep a password safe and when not to share personal information. Know games/films have age ratings. Know what kinds of websites are trustworthy sources of information and that not everything on the WWW is true. Recognise the benefits and risks of different apps and websites. Know that the media can portray groups of people differently and that online identities can be different to the identity in 'real life' Know how to use technology responsibly knowing how to access help if they are concerned. Know what to do if they are contacted by someone they don't know online. Explain why copying someone else's work from the internet without permission can cause problems and know where to find copyright free content. Will know how to make a program to move a sprite in different directions, knowing that commands in Scratch are represented as blocks. To know which layouts are suited to different purposes. To know that animation is a sequence of drawing or photographs. Know that a digital recording is stored as a file.

Vocabulary.

- Digital device, input, output, process Program Connection, network, network switch, server, wireless access point (WAP) router, route tracing, internet, browser content, webpage, download, sharing, ownership, permission, podcast.
- Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, sequence, event, task, design, code, loop, run the code design, algorithm, bug, debug, repetition, count-controlled loop, infinite loop, duplicate, forever.
- Data, table layout, branching database, database, attribute, value, questions, objects, equal, even, separate. input device, sensor, data logger, data point, interval, analyse, import, export.
- Text, images, landscape, portrait, orientation, template.

Year 5&6

By the end of year 5 and 6 pupils at Grange Primary School will know about some of jobs that someone who enjoys Computing could do. With support, they will develop their skills and independence, whilst using the language and vocabulary which is appropriate to their learning.

Most children by the end of year 5 and 6, at Grange Primary School, will be able to:

Skills

Computing systems and networks Digital literacy

Perform a complex search for information. Be able to find copyright free images. Critically evaluate websites for reliability of information and authenticity. Use a search engine safely. Use technology safely and responsibly to communicate with friends and family. Create a webpage using HTML.

Creating Media

Create a vector drawing by combining shapes using different drawing tools to create images. Create images by layering and duplicating images to create more complex pieces of work. Create a webpage. Evaluate and improve their own designs. Select, combine and remix a range of media to create original content. Consider all steps of the design process when

creating content (e.g. identify problem, plan, create, evaluate, share.) Identify the most effective tools to present information for a specific purpose. Capture a video using a range of techniques and improve the video with reshooting and editing. Construct a 3D digital image

Data & Information

Perform a search to answer questions about data. Create graphs and charts from data. Use simple formulae in a spreadsheet to find out information from a set of data. Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae, including duplicating. Produce graphs from data in a spreadsheet to answer a question. Analyse and evaluate data and information in a spreadsheet, chart or database. Use a digital device to collect data automatically. Use data collected over time to find information.

Programming

Name a range of sensors in physical systems. Predict what will happen in a program or algorithm when the input changes. Use two-way selection i.e. if... then...else... Recognise variables in a program. Create programs including 'repeat until' loops. Create and use simple variables, e.g. to keep score. Create an algorithm for a physical system (with sensor). Design and program a system that uses sensors. Plan out a program in detail, including task, algorithm, code and execution level. Use selection statements in a program. Combine a variable with relational operators (< = >) to determine when a program changes. Control a simple circuit connected to a computer.

Knowledge.

Know the difference between the internet and the World Wide Web; and between a search engine and a web browser. Know how information is transferred over the internet. Explain what makes a strong password and why this is important at school and in the wider world. Know some of the 'dangers' of being online. Know that too much screen time is not healthy. Know what to do if they see inappropriate content. Know how to protect personal information understanding the importance of online security. Have knowledge of how algorithms are used to track online activities with a view to targeting advertising and information. Know that there are laws around the purchase of games; the production, sending and storage of images; what is written online; and around online gambling. Know why it is important to use copyright free images and audio. Know the difference between data and information. Know what a spreadsheet is and what it is used for. Be knowledgeable about key concepts in programming (sequence, selection, repetition and variables). Know that computers can be connected together to form systems. Know how search engines select results and the way that they are ranked. Have knowledge about how we communicate using technology. Recognise the role of computer systems in our lives.

Vocabulary.

System, connection, digital, input, process, output Protocol, address, packet/ Microcontroller, Crumble controller, components, LED, Sparkle, program, repetition, infinite loop, selection, controlled loop, task, design, selection, condition, action, microcontroller, algorithm, Database, data, information, record, field, sort, order, group graph, chart, axis, compare, filter. Vector, drawing tools, shapes, object, icons, toolbar organise, zoom, select, rotate, object, alignment grid, resize, handles, consistency, refine index, crawler, bot, search engine, Ranking, Website, web page, browser, media, Hypertext Markup Language (HTML) Web page, website, logo, layout, header, media, purpose Copyright, fair use, hyperlink, Variable, name, value, set, change Spreadsheet, data heading, data set, cells, columns and rows, Formula, calculation, input, output. cells, cell reference 2D, 3D, Rotate, position, select, duplicate Dimensions, placeholder, Micro:bit, input, process, output, flashing, USB Selection, condition, if... then... else, variable