Polehampton CE Infant and Junior Schools
Curriculum Milestones: Computing

Introduction

Milestones are designed to provide focus for progression points throughout a child's journey through the school. Early Years Foundation Stage is also included in this document to highlight the links between Early Years and the National Curriculum. For Years 1 to 6, teachers refer to the National Curriculum at all planning stages.

Milestones overview: Early Years Foundation Stage

There are separate plans for EYFS which outline the topics covered and highlight cross-curricular links (including within the National Curriculum). Below is an explanation of how the subject links with the Areas of Learning in EYFS.

Milestones overview: Years 1 to 6 (National Curriculum)

We follow the National Curriculum. Using the National Curriculum as our core document, we have created milestone objectives for Key Stage 1 (KS1), Lower Key Stage 2 (KS2) and Upper Key Stage 2 (KS2) based on our own curriculum needs, desired assessment outcomes and research from a range of sources.

Area of Learning: **Personal, Social and Emotional Development**	
Nurseries (3/4 y/o)	• Remember rules without needing an adult to remind them.
Reception (4/5 y/o)	• Show resilience and perseverance in the face of a challenge. • Know and talk about the different factors that support their overall health and wellbeing: sensible amounts of 'screen time'.
End of YR: ELG	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.

Area of Learning: **Physical Development**	
Nurseries (3/4 y/o)	• Match their developing physical skills to tasks and activities in the setting.
Reception (4/5 y/o)	• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
End of YR: ELG	

Area of Learning: **Understanding the World**	
Nurseries (3/4 y/o)	• Explore how things work.
Reception (4/5 y/o)	• Children are encouraged to explore, observe and find out about technology.

Area of Learning: **Expressive Arts and Design**	
Nurseries (3/4 y/o)	
Reception (4/5 y/o)	• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
End of YR: ELG	Creating with Materials • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Online safety (and online usage)	
KS1	**KS1 Computing National Curriculum** • 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. **Children can, by the end of Year 2, meet the following statements in this concept area:** a) Search and download appropriate images from the internet safely. b) Understand that we are connected to others when using the internet. c) Understand we have a 'digital footprint' so must be careful about what we share (including personal information). d) Recognise common uses of information technology, including beyond school. e) Learn what to do if they come across something online that worries them or makes them feel uncomfortable. f) Understand how to interact safely with others online, including how their actions may affect others.
LKS2	**KS2 Computing National Curriculum** • 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. • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. **Children can, by the end of Year 4, meet the following statements in this concept area:** a) Identify whether information is safe or unsafe to be shared online. b) Analyse (at a simple level and using strategies taught) information to check if something they read online is true. c) Understand that information found by searching the internet is not all grounded in fact and that information shared online can include facts, beliefs and opinions. d) Know that privacy settings limit who can access your important personal information (such as your name, age, gender etc.). e) Understand why some results come before others when searching on a browser. f) Use key words to increase specificity in a search for information on the internet. g) Be able to create a strong password. h) Learn what to do if they experience bullying online. i) Know that there are age restrictions on many apps and websites. j) Learn to be respectful of others when sharing online and ask for their permission before sharing content.
UKS2	**KS2 Computing National Curriculum** • 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. • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Children can, by the end of Year 6, meet the following statements in this concept area:

a) Learn how to use search engines effectively to find information, including key word searches and evaluating search returns.
b) Learn strategies to create a positive online reputation.
c) Learn strategies to capture evidence of online bullying in order to seek help.
d) Understand how search engines work.
e) Understand the positive and negative impacts of sharing online, including the impact of social media.
f) Understand the importance of secure passwords and how to create them.
g) Recognise that updated software can help to prevent data corruption and hacking.
h) Know some common online scamming / phishing methods.

Computing systems and networks	
KS1	**KS1 Computing National Curriculum** • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Be responsible, competent, confident and creative users of information and communication technology. **Children can, by the end of Year 2, meet the following statements in this concept area:** a) Log in and out of a laptop and account (e.g. Teams). b) Navigate a laptop and tablet to a basic level (core skills). c) Use a search bar on a device to find information. d) Develop control of the mouse through dragging, clicking and resizing of images to create different effects. e) Develop some accuracy and speed with typing. f) To know that buttons are a form of input that give a computer an instruction about what to do (output). g) Know that computers can link and 'work together'.
LKS2	**KS2 Computing National Curriculum** • Be responsible, competent, confident and creative users of information and communication technology. • 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. **Children can, by the end of Year 4, meet the following statements in this concept area:** a) Use an appropriate device to accurately (and with purpose) record a planned instruction. b) Identify the key components within a network and their purpose, including whether they are wired or wireless. c) Navigate our school network effectively, accurately and independently. d) Develop increasing confidence with typing. e) Use a range of shortcuts and tasks when using word processors or similar. f) Understand how some elements of a computer work together (e.g. hard drive, memory and processor). g) Understand that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.
UKS2	**KS2 Computing National Curriculum** • Be responsible, competent, confident and creative users of information and communication technology. • 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. **Children can, by the end of Year 6, meet the following statements in this concept area:** a) Use an appropriate device to accurately (and with purpose) plan and execute an instruction. b) Be able to type with accuracy and age-appropriate speed. c) Know the basic history of computers and digital technology devices. d) Understand that external devices can be controlled by a separate computer.

Programming	
KS1	**KS1 Computing National Curriculum** • Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • 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 (i.e. using a Bee Bot or a simple app programme). • Use logical reasoning to predict the behaviour of simple programs**.** **Children can, by the end of Year 2, meet the following statements in this concept area:** a) Know what an algorithm is (when instructions are put in an exact order). b) Know that programs execute by following precise instructions. c) Use decomposition and sequencing to solve unplugged challenges (and know what these processes mean). d) Follow more complex instructions. e) Assemble simple instructions/a simple algorithm. This includes programming a device to follow a planned route. f) Debug planned instructions (or other) do not work as expected. g) Use programming language to explain how a Bee-Bot (or comparative device) works. h) Use an algorithm to write a basic computer program.
LKS2	**KS2 Computing National Curriculum** • Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • 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. **Children can, by the end of Year 4, meet the following statements in this concept area:** a) Know that combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem. b) Understand that pattern recognition means identifying patterns to help them work out how the code works. c) Use decomposition to explore the code behind an animation (including debugging theirs and others' work). d) Use abstraction to identify the important parts when completing both plugged and unplugged activities. e) Code a simple game or quiz, using variables. f) Incorporate variables to make code more efficient, in simple terms. g) Use simple loops to improve programming. h) Know what a conditional statement is in programming.

UKS2	**KS2 Computing National Curriculum** • Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • 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. **Children can, by the end of Year 6, meet the following statements in this concept area:** a) Decompose a program into an algorithm with limited support. b) Write more complex algorithms for a purpose. c) Program with limited support, debugging and seeking ways to make the code more efficient (with purpose). d) Use and adapt nested loops. e) Predict and evaluate code to understand its purpose, adapting it if necessary. f) Know how to adapt code. g) Understand that using loops can make the process of writing music simpler and more effective. h) To know that a Micro:bit is a programmable device that uses a block coding language similar to Scratch.

Creating media	
KS1	**KS1 Computing National Curriculum** • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • Use logical reasoning to predict the behaviour of simple programs. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. **Children can, by the end of Year 2, meet the following statements in this concept area:** a) Use a basic range of tools within graphic editing software. b) Take and edit photographs (in simple terms). c) Operate a camera to take a photo or video. Have some consideration of the outcome, including retaking to improve the media. d) Understand that holding the camera still and considering angles and light are important to take good pictures.
LKS2	**KS2 Computing National Curriculum** • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • 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. **Children can, by the end of Year 4, meet the following statements in this concept area:** a) Manipulate text and images to some degree when creating digital documents. b) Take photographs and record videos to tell a story. c) Use software to edit and enhance their video adding music, sounds and text on screen with transitions, in simple terms. d) Develop some skills in using shortcuts to cut and paste (e.g. CTRL+C and CTRL+V), using Word or other software. e) Use software to work collaboratively with others, including handling information, media or data. f) Know that a website is a collection of pages that are all connected.
UKS2	**KS2 Computing National Curriculum** • Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. • 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. **Children can, by the end of Year 6, meet the following statements in this concept area:** a) Use a range of software (e.g. Word, PowerPoint and Publisher) to produce pieces. b) Use search and word processing skills to create a presentation. c) Use video editing software to animate. d) Identify ways to improve and edit programs, videos, images etc. e) Use 3D design software package and produce a 3D item. f) Make, edit and improve a stop motion animation.