Boyne Hill Infant and Nursery School – Knowledge & Skills Progression Overview

Computing

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 & 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 programmes, 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.

Intent: At Boyne Hill, we aim to develop our pupils' understanding of and application of the concepts of computer science including abstraction, logic, algorithms and data representation; to analyse problems in computational terms and have practical experience of solving such problems; to evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems; to be responsible, competent, confident and creative users of information and communication technology. We begin with the question, "How can technology help us?" We are aware that many of our young children have access to a lot of modern technology but they are not always able to articulate or understanding its purpose, benefits or pitfalls. Our aim is to help them make informed decisions about when to use technology across the whole curriculum. We are committed to always asking the question, "How can we keep ourselves safe online?" as this is so important to our pupils' ability to thrive in a technologically advancing society. Our cross-curriculum approach to learning throughout the school enables us to use our computing skills to support other curriculum subjects and our progression is developed through this intent.

Early Years Foundation Stage Links the EYFS Framework

N.B: Technology has been removed as an aspect of learning in the revised EYFS framework and there is no longer a discrete early learning goal for Technology for the end of Reception year. The table below demonstrates the prerequisite skills for computing in the national curriculum. The most relevant statements are taken from the following areas of learning:

- Personal, Social and Emotional Development (PSED)
- Physical Development (PD)
- Understanding the World (UW)
- Expressive Arts and Design (EAD)

3-4 Years **(FS1 Nursery)** Development Matters 2021	**PSED**	Remember rules without needing an adult to remind them.
	PD	Match their developing physical skills to tasks and activities in the setting.
	UW	Explore how things work.
4-5 Years **(FS2 Reception)** Development Matters 2021	**PSED**	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'.
	PD	Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	EAD	Explore, use and refine a variety of artistic effects to express their ideas and feelings.

Early Learning Goal (ELG)	**PSED** 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.
	EAD Creating with Materials	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Key Stage 1 National Curriculum Statutory requirements

- Understand what algorithms are; how they are implemented as programmes on digital devices and that programmes execute by following precise and unambiguous instructions.
- Create and debug simple programmes.
- Use logical reasoning to predict the behaviour of simple programmes.
- 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.

We have divided our Computing skills into 3 categories:

1. **Digital Literacy**
2. **Information Technology**
3. **Computer Science**

Below is a progression of skills that children should learn from FS1 until they leave us at the end of Year 2.

Digital Literacy

FS1	FS2	Year 1	Year 2
	PRIOR LEARNING **Digital devices such as the I-touch table and the interactive whiteboard (IWB) are used as a tool for learning and for a clear purpose.**	**PRIOR LEARNING** **Making safe choices • Keeping personal information private.**	**PRIOR LEARNING** **Safe logins • Concept of privacy • Concept of ownership • The need to logout • Developing ideas about the concept of technology that we are surrounded by and its purpose.**
Digital devices such as the I-touch table and the interactive whiteboard (IWB) are used as a tool for learning and for a clear purpose.	Talk and learn about good & bad choices in real life, e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you.	Log in safely and understand why that is important.	Know how to refine searches using the Search tool.
	Talk about good and bad choices when using websites – being kind, telling a grown up if something upsets you & keeping	Know that a password is a secret word or phrase that allows a user to access a website	Use digital technology to share work on Purple Mash to communicate and connect with others locally.

	yourself safe by keeping personal information private.	and it should not be shared with anyone else.	
	Children know to ask for help if needed.	Understand the importance of logging out.	Have some knowledge and understanding about sharing more globally on the Internet.
		Create an avatar and to understand what this is and how it is used.	Be introduced to Email as a communication tool.
		Create a picture and add own name to it.	Understand how we should talk to others in an online situation.
		Save work in a given space and know how to retrieve it.	Open and send simple online communications in the form of email.
		To open and print saved work.	Understand that information put online leaves a digital footprint or trail.
		Be able to find examples of where technology is used.	Identify the steps that can be taken to keep personal data and hardware secure.
		Be able to record examples of where technology is used, including outside school.	Understand the terminology associated with searching.
			Gain a better understanding of searching on the Internet.

End of Key Stage 1 Expectations:

1. Recognise common uses of information technology beyond school.
2. 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.

Information Technology

FS1	FS2	Year 1	Year 2
	PRIOR LEARNING **Children can use toys with buttons to press which cause an effect • Mark-making on paint software on the IWB or I-touch table.**	**PRIOR LEARNING** **Adding colour, patterns and textures to pictures on the IWB or I-touch table • Using the pen tool or a finger to write letters on the IWB or I-touch table.**	**PRIOR LEARNING** **Animating images using built in effects • Concept of background (static) and foreground (can move) • Sorting data according to criteria • Collecting and presenting data in a picture format.**

Skills taught throughout the year through continuous provision, enhanced provision and direct teaching.	Add colour to pictures on the IWB or I-touch table.	Add animation to a story.	Learn the functions of the 2Paint a Picture tool.
Digital devices such as the I-touch table and the IWB are used as a tool for learning and for a clear purpose.	Add patterns and textures to pictures on the IWB or I-touch table.	Add sound to a story, including voice recording.	Learn about and recreate the Impressionist style of art.
Children can use toys with buttons to press which cause an effect, e.g. toy hoover, toy microwave etc.	Use the pen tool or a finger to write letters on the IWB or I-touch table.	Work on a more complex story, including adding backgrounds and copying and pasting pages.	Recreate Pointillist art and look at the work of pointillist artists such as Seurat.
Mark-make on paint software on the IWB or I-touch table.		Understand that data can be represented in picture format.	Learn about the work of Piet Mondrian and recreate the style using the lines template.
		Use a pictogram to record the results of an experiment.	Learn about the work of William Morris and recreate the style using the patterns template.
		Know what a spreadsheet program looks like.	Explore surrealism and e-Collage.
		Enter data into spreadsheet cells.	Explore how a story can be presented in different ways.
		Add clipart to cells.	Make a fact file on a non-fiction topic.
		Use control tools: lock, move cell, speak and count.	Make music digitally using 2Sequence.
			Explore, edit and combine sounds.
			Edit and refine composed music.
			Think about how music can be used to express feelings and create tunes which depict feelings.
			Upload a sound from a bank of sounds.
			Record and upload environmental sounds and use these sounds to create tunes.
			Learn about data handling tools that can give more information than pictograms.
			Use yes/no questions to separate information.
			Construct a binary tree to identify items.

			Use a binary tree database to answer questions.
			Use a database to answer more complex search questions.
			Use the Search tool to find information.
			Use 2Calculate image, lock, move cell, speak and count tools to make a counting machine.
			Learn how to copy and paste.
			Use a spreadsheet for money calculations and the equals tool to check calculations.
			Collect data and produce a graph.

End of Key Stage 1 Expectations:

1. Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Computer Science

FS1	FS2	Year 1	Year 2
	PRIOR LEARNING **Digital devices such as the I-touch table and the IWB are used as a tool for learning and for a clear purpose • Children can use toys with buttons to press which cause an effect.**	**PRIOR LEARNING** **Pressing buttons on a floor robot (Bee Bot) and talk about the movements: forwards and backwards • Independently accessing the I-touch table to use a range of given educational activities.**	**PRIOR LEARNING** **Algorithms • Logical decision making • Sequencing instructions • Following instructions • Creating programs using sequencing and repeat • Visual use of the Logo programming language • Program logic and structure.**
Skills taught throughout the year through continuous provision, enhanced provision and direct teaching.	Use simple software to make things happen.	Compare the effects of adhering strictly to instructions to completing tasks without complete instructions.	Understand what an algorithm is.
Digital devices such as the I-touch table and the IWB are used as a tool for learning and for a clear purpose.	Press buttons on a floor robot (Bee Bot) and talk about the movements: forwards and backwards.	Follow and create simple instructions on the computer.	Create a computer program using an algorithm.
Children can use toys with buttons to press which cause an effect, e.g. toy hoover, toy microwave etc.	Explore options and make choices with toys and with adult support, software.	Consider how the order of instructions affects the result.	Create a program using a given design.

	Independently change educational activities or increase levels of difficulty from the choices given on the I-touch table.	Understand the functionality of the direction keys.	Understand the collision detection event.
		Sort items using a range of criteria.	Understand that algorithms follow a sequence.
		Understand how to create and debug a set of instructions (algorithm).	Design an algorithm that follows a timed sequence.
		Use the additional direction keys as part of an algorithm.	Understand what different events do in code.
		Understand how to change and extend the algorithm list.	Understand that different objects have different properties.
		Create a longer algorithm for an activity.	Understand the function of buttons in a program.
		Understand what instructions are and predict what might happen when they are followed.	Understand and debug simple programs.
		Use code to make a computer program.	
		Understand what object and actions are.	
		Understand what an event is and use an event to control an object.	
		Begin to understand how code executes when a program is run.	
		Understand what backgrounds and objects are.	
		Plan and make a computer program.	

End of Key Stage 1 Expectations:

1. Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
2. Create and debug simple programs.
3. Use logical reasoning to predict the behaviour of simple programs.