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Curriculum Subject Journey Skegness Infant and Junior Academies

Subject – Computing

LISTENING · SPEAKING · PROBLEM SOLVING · CREATIVITY · STAYING POSITIVE · AIMING HIGH · LEADERSHIP · TEAMWORK

Our Curriculum Partners for Computing	Kapow Primary · Teach Computing · PROJECT EVOLVE · NOS National Online Safety
Knowing More and Remembering More	*The first lesson for each unit of work is used to review children's prior learning from previous units to prepare them for the new one. Opportunities for retrieval practise are included in Computing lessons to ensure knowledge is transferred into the long-term memory. These activities may be in the form of a retrieval task, use of challenge questions and opportunities for peer discussions that focus on prior learning. Additonal opportunities on interactive programmes, such as Bedrock, Kahoot and Digial Leader sessions/assemblies, enable children to revisit key topic vocabulary.*

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		Time Travellers	Above and beyond	Telling Tales	A World Apart	Blue Planet	This is Me
Nursery		**Understanding the World:** Explore how things work.					
Reception		**PSED:** 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. **Expressive Arts and Design:** Explore, use and refine a variety of artistic effects to express their ideas and feelings. **Early Learning Goals:** **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. **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 Statements KS1		**Pupils should be taught to:** 1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions 1.2 create and debug simple programs 1.3 use logical reasoning to predict the behaviour of simple programs 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content 1.5 recognise common uses of information technology beyond school 1.6 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.					
Year 1		**Topic Overview** Teach Computing- Technology all around us **KS1 National Curriculum Links** 1.4 1.5 1.6 **Key Criteria** • To identify technology • To identify a computer and its main parts	**Topic Overview** Teach Computing- Creating Media- Digital writing **KS1 National Curriculum Links** **1.4** **1.6** **Key Criteria** • To use a computer to write • To add and remove text on a computer	**Topic Overview** Teach Computing- Creating Media- Digital painting **KS1 National Curriculum Links** 1.4 **Key Criteria** • To describe what different freehand tools do • To use the shape tool and the line tools	**Topic Overview** Teach Computing- Data and information- Grouping data **KS1 National Curriculum Links** 1.4 1.6 **Key Criteria** • To label objects • To identify that objects can be counted	**Topic Overview** Teach Computing- Programming A- Moving a robot **KS1 National Curriculum Links** 1.1 1.2 1.3 1.5 **Key Criteria** • To explain what a given command will do • To act out a given word	**Topic Overview** Teach Computing- Programming B- Programming animations **KS1 National Curriculum Links** 1.1 1.2 1.3 1.4 **Key Criteria** • To choose a command for a given purpose

		• To use a mouse in different ways • To use a keyboard to type on a computer • To use the keyboard to edit text • To create rules for using technology responsibility **Key vocabulary** Technology, computer, mouse, trackpad, keyboard, screen, double-click, typing. **Key enrichment experiences**: Managing online information	• To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper **Key vocabulary** Keyboard, keys, space, backspace, capital letters, bold, italic, underline, font **Key enrichment experiences**: Joint computing project Online bullying	• To make careful choices when painting a digital picture • To explain why I chose the tools I used • To use a computer on my own to paint a picture • To compare painting a picture on a computer and on paper **Key vocabulary** Paint programme, paintbrush, erase, fill, undo, shape tools, brush size **Key enrichment experiences**: Safer Internet Day Self-image and identity Privacy and security	• To describe objects in different ways • To count objects with the same properties • To compare groups of objects • To answer questions about groups of objects **Key vocabulary** Object, label, data, more, less, most, fewest, least, the same **Key enrichment experiences:** Joint E-Safety Project Online relationships	• To combine forwards and backwards commands to make a sequence • To combine four direction commands to make sequences • To plan a simple program • To find more than one solution to a problem **Key vocabulary** Bee-Bot, forwards, backwards, commands, directions, left, right, algorithm **Key enrichment experiences:** Online reputation Health, well-being and lifestyle	• To show that a series of commands can be joined together • To identify the effect of changing a value • To explain that each sprite has its own instructions • To design the parts of a project • To use my algorithm to create a program **Key vocabulary** ScratchJr, command, programming, block, joining, run, reset, predict, design **Key enrichment experiences:** Copyright and ownership
Year 2		**Topic Overview** Teach computing- Computing systems and networks- IT AROUND US **KS1 National Curriculum Links** 1.4 1.5 1.6 **Key Criteria** • To recognise the uses and features of information technology • To identify information technology in the school • To identify information technology beyond school • To explain how information technology helps us • To explain how to use information technology safely • To recognise that choices are made when using information technology **Key vocabulary** Information technology, computer, barcode, scanner/scan **Key enrichment experiences:** Managing online information	**Topic Overview** Teach computing- Creating media digital photography **KS1 National Curriculum Links** 1.4 1.5 1.6 **Key Criteria** • To use a digital device to take a photograph • To make choices when taking a photograph • To describe what makes a good photograph • To decide how photographs can be improved • To decide how photographs can be improved • To recognise that photos can be changed **Key vocabulary** Device, digital, landscape, portrait, focus, background, editing **Key enrichment experiences:** Joint computing project Online bullying	**Topic Overview** Teach computing- Creating media- Making Music **KS1 National Curriculum Links** 1.4 **Key Criteria** • To say how music can make us feel • To identify that there are patterns in music • To describe how music can be used in different ways • To show how music is made from a series of notes • To create music for a purpose • To review and refine our computer work **Key vocabulary** Emotions, pattern, rhythm, pulse, pitch, tempo, create, beat **Key enrichment experiences:** Safer Internet Day Self-image and identity Privacy and security	**Topic Overview** Teach computing- Programming A Robot Algorithms **KS1 National Curriculum Links** 1.1 1.2 1.3 1.4 **Key Criteria** • To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written **Key vocabulary** Instruction, sequence, algorithm, order, prediction, debugging **Key enrichment experiences:** Joint E-Safety Project Online relationships	**Topic Overview** Teach computing- Data and information- Pictograms **KS1 National Curriculum Links** 1.5 1.6 **Key Criteria** • To recognise that we can count and compare objects using tally charts • To recognise that objects can be represented by pictures • To create a pictogram • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer **Key vocabulary** Common, data, tally, pictogram, attribute, block diagram **Key enrichment experiences:** Online reputation Health, well-being and lifestyle	**Topic Overview** Teach computing- Programming B An introduction to quizzes **KS1 National Curriculum Links** 1.1 1.2 1.3 **Key Criteria** • To explain that a sequence of commands has a start. • To explain that a sequence of commands has an outcome. • To create a program using a given design. • To change a given design. • To create a program using my own design. • To decide how my project can be improved. **Key vocabulary** Sequence, command, modify, algorithm, debug, code **Key enrichment experiences:** Copyright and ownership

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Curriculum Statements KS2

Statement Number	National Curriculum Statement
2.1	design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
2.2	use sequence, selection, and repetition in programs; work with variables and various forms of input and output
2.3	use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
2.4	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
2.5	use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
2.6	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
2.7	use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Year 3

Topic Overview
Computing systems and networks – **Connecting computers**

KS2 National Curriculum Links
2.2, 2.4, 2.6

Key Criteria
- To explain how digital devices function
- To identify input and output devices
- To recognise how digital devices can change the way we work
- To explain how a computer network can be used to share information
- To explore how digital devices can be connected
- To recognise the physical components of a network

Key vocabulary

input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point

Key enrichment experiences
Digital Leaders election

Topic Overview
Programming- **Sequencing sounds**

KS2 National Curriculum Links
2.1, 2.2, 2.3, 2.6

Key Criteria
- To explore a new programming environment
- To identify that commands have an outcome
- To explain that a program has a start
- To recognise that a sequence of commands can have an order
- To change the appearance of my project
- To create a project from a task description

Key vocabulary
Scratch, programming, blocks, commands, code, sprite, motion, turn, point in direction, algorithm, bug, debug, code.

Key enrichment experiences
Joint computing project with KS1
NSPCC Speak Out, Stay Safe Project

Topic Overview
Creating Media- **Desktop Publishing**

KS2 National Curriculum Links
2.6, 2.6

Key Criteria
- To recognise how text and images convey information
- To recognise that text and layout can be edited
- To choose appropriate page settings
- To add content to a desktop publishing publication
- To consider how different layouts can suit different purposes
- To consider the benefits of desktop publishing

Key vocabulary
text, images, communicate, font, landscape, portrait, orientation, placeholder, template, layout,

Key enrichment experiences
Safer Internet Day

Topic Overview
Programming- **Events and actions in programs**

KS2 National Curriculum Links
2.1, 2.2, 2.3, 2.6

Key Criteria
- To explain how a sprite moves in an existing project
- To create a program to move a sprite in four directions
- To adapt a program to a new context
- To develop my program by adding features
- To identify and fix bugs in a program
- To design and create a maze-based challenge

Key vocabulary
motion, event, sprite, algorithm, logic, move, resize, action, debugging, errors, code, test, debug,

Key enrichment experiences
Joint E-Safety Project with KS1

Topic Overview
Data and Information- **Branching Databases**

KS2 National Curriculum Links
2.6

Key Criteria
- To create questions with yes/no answers
- To identify the object attributes needed to collect relevant data
- To create a branching database
- To explain why it is helpful for a database to be well structured
- To identify objects using a branching database
- To compare the information shown in a pictogram with a branching database

Key vocabulary
attribute, table, objects, branching, database, structure, compare, order, organise

Topic Overview
Creating Media- **Stop-frame animation**

KS2 National Curriculum Links
2.6, 2.7

Key Criteria
- To explain that animation is a sequence of drawings or photographs
- To relate animated movement with a sequence of images
- To plan an animation
- To identify the need to work consistently and carefully
- To review and improve an animation
- To evaluate the impact of adding other media to an animation

Key vocabulary
animation, flip book, stop-frame, frame, sequence, image, photograph, onion skinning, evaluation, delete, media, transition.

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Year 4		Topic Overview Computing systems and networks- **The Internet** **KS2 National Curriculum Links** 2.4, 2.5, 2.6, 2.7 **Key Criteria** • To describe how networks physically connect to other networks • To recognise how networked sevices make up the internet • To outline how websites can be shared via the World Wide Web (WWW) • To describe how content can be added and accessed on the World Wide Web (WWW) • To recognise how the content of the WWW is created by people • To evaluate the consequences of unreliable content **Key vocabulary** internet, network, router, switch, server, wireless access point (WAP), website, web browser, download, sharing, **Key enrichment experiences** Digital Leaders election	Topic Overview Programming- **Repetition in shapes** **KS2 National Curriculum Links** 2.1, 2.2, 2.3, 2.6 **Key Criteria** • To identify that accuracy in programming is important • To create a program in a text-based language • To explain what 'repeat' means • To modify a count-controlled loop to produce a given outcome • To decompose a task into small steps • To create a program that uses count-controlled loops to produce a given outcome **Key vocabulary** Logo (programming environment), program, turtle, commands, code, algorithm, debug, pattern, repeat, count-controlled loop, **Key enrichment experiences** Joint computing project with KS1 NSPCC Speak Out, Stay Safe Project	Topic Overview Creating Media- **Photo editing** **KS2 National Curriculum Links** 2.5, 2.6, 2.7 **Key Criteria** • To explain that the composition of digital images can be changed • To explain that colours can be changed in digital images • To explain how cloning can be used in photo editing • To explain that images can be combined • To combine images for a purpose • To evaluate how changes can improve an image **Key vocabulary** image, edit, digital, crop, rotate, undo, save, effects, colours, hue, saturation, retouch, select, combine, composite, background, foreground, **Key enrichment experiences** Safer Internet Day	Topic Overview Programming- **Repetition in games** **KS2 National Curriculum Links** 2.1, 2.2, 2.3 **Key Criteria** • To develop the use of count-controlled loops in a different programming environment • To explain that in programming there are infinite loops and count controlled loops • To develop a design that includes two or more loops which run at the same time • To modify an infinite loop in a given program • To design a project that includes repetition • To create a project that includes repetition **Key vocabulary** Scratch, programming, sprite, blocks, code, loop, repetition, forever, event block, duplicate, **Key enrichment experiences** Joint E-Safety Project with KS1	Topic Overview Data and Information- **Data Logging** **KS2 National Curriculum Links** 2.2, 2.5 **Key Criteria** • To explain that data gathered over time can be used to answer questions • To use a digital device to collect data automatically • To explain that a data logger collects 'data points' from sensors over time • To recognise how a computer can help us analyse data • To identify the data needed to answer questions • To use data from sensors to answer questions **Key vocabulary** data, table, input device, sensor, logger, interval, analyse, import, export, logged, review, conclusion.	Topic Overview Creating Media- **Audio Production** **KS2 National Curriculum Links** 2.5, 2.6, 2.7 **Key Criteria** • To identify that sound can be recorded • To explain that audio recordings can be edited • To recognise the different parts of creating a podcast project • To apply audio editing skills independently • To combine audio to enhance my podcast project • To evaluate the effective use of audio **Key vocabulary** audio, microphone, speaker, headphones, podcast, edit, trim, align, layer, record, playback, selection, load,
Year 5		Topic Overview Computing systems and networks- **Sharing information** **KS2 National Curriculum Links** 2.1, 2.2, 2.4, 2.6, 2.7 **Key Criteria** • To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To experiment with search engines • To describe how search engines select results	Topic Overview Programming- Selection in **Physical Computing** **KS2 National Curriculum Links** 2.1, 2.2, 2.3, 2.6 **Key Criteria** • To control a simple circuit connected to a computer • To write a program that includes count-controlled loops	Topic Overview Creating Media- **Video Production** **KS2 National Curriculum Links** 2.5, 2.6, 2.7 **Key Criteria** • To explain what makes a video effective • To identify digital devices that can record video • To capture video using a range of techniques • To create a storyboard • To identify that video can be improved	Topic Overview Programming- **Selection in quizzes** **KS2 National Curriculum Links** 2.1, 2.2, 2.3, 2.6 **Key Criteria** • To explain how selection is used in computer programs • To relate that a conditional statement connects a condition to an outcome	Topic Overview Data and Information- **Flat file databases** **KS2 National Curriculum Links** 2.5, 2.6 **Key Criteria** • To use a form to record information • To compare paper and computer-based databases • To outline how you can answer questions by	Topic Overview Creating Media- **Vector Drawing** **KS2 National Curriculum Links** 2.6 **Key Criteria** • To identify that drawing tools can be used to produce different outcomes • To create a vector drawing by combining shapes • To use tools to achieve a desired effect • To recognise that vector drawings consist of layers

		• To explain how search results are ranked • To recognise why the order of results is important, and to whom **Key vocabulary** system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking **Key enrichment experiences** Digital Leaders election	• To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project **Key vocabulary** microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer **Key enrichment experiences** Joint computing project with KS1 NSPCC Speak Out, Stay Safe Project	through reshooting and editing • To consider the impact of the choices made when making and sharing a video **Key vocabulary** video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share. **Key enrichment experiences** Safer Internet Day	• To explain how selection directs the flow of a program • To design a program which uses selection • To create a program which uses selection • To evaluate my program • Key Criteria **Key vocabulary** Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator **Key enrichment experiences** Joint E-Safety Project with KS1	grouping and then sorting data • To explain that tools can be used to select specific data • To explain that computer programs can be used to compare data visually • To use a real-world database to answer questions **Key vocabulary** database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.	• To group objects to make them easier to work with • To apply what I have learned about vector drawings **Key vocabulary** vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection
Year 6		Topic Overview Computing systems and networks- **Communication and collaboration** **KS2 National Curriculum Links** 2.1, 2.4, 2.5, 2.6, 2.7 **Key Criteria** • To explain the importance of internet addresses • To recognise how data is transferred across the internet • To explain how sharing information online can help people to work together • To evaluate different ways of working together online • To recognise how we communicate using technology • To evaluate different methods of online communication	Topic Overview Programming- **Variables in games** **KS2 National Curriculum Links** 2.1, 2.2, 2.3, 2.6 **Key Criteria** • To define a 'variable' as something that is changeable • To explain why a variable is used in a program • To choose how to improve a game by using variables • To design a project that builds on a given example	Topic Overview Creating Media- **3D Modelling** **KS2 National Curriculum Links** 2.6, 2.7 **Key Criteria** • To recognise that you can work in three dimensions on a computer • To identify that digital 3D objects can be modified • To recognise that objects can be combined in a 3D model • To create a 3D model for a given purpose	Topic Overview Programming- **Sensing Movement** **KS2 National Curriculum Links** 2.1, 2.2, 2.3, 2.6 **Key Criteria** • To create a program to run on a controllable device • To explain that selection can control the flow of a program • To update a variable with a user input • To use a conditional statement to compare a variable to a value	Topic Overview Data and Information- **Introduction to spreadsheets** **KS2 National Curriculum Links** 2.6 **Key Criteria** • To create a data set in a spreadsheet • To build a data set in a spreadsheet • To explain that formulas can be used to produce calculated data • To apply formulas to data • To create a spreadsheet to plan an event	Topic Overview Creating Media- **Web page creation** **KS2 National Curriculum Links** 2.5, 2.6, 2.7 **Key Criteria** • To review an existing website and consider its structure • To plan the features of a web page • To consider the ownership and use of images (copyright) • To recognise the need to preview pages • To outline the need for a navigation path

		Key vocabulary communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many **Key enrichment experiences** Digital Leaders election	• To use my design to create a project • To evaluate my project **Key vocabulary** variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare **Key enrichment experiences** Joint computing project with KS1 NSPCC Speak Out, Stay Safe Project	• To plan my own 3D model • To create my own digital 3D model **Key vocabulary** TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify **Key enrichment experiences** Safer Internet Day	• To design a project that uses inputs and outputs on a controllable device • To develop a program to use inputs and outputs on a controllable device **Key vocabulary** Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug **Key enrichment experiences** Joint E-Safety Project with KS1	• To choose suitable ways to present data **Key vocabulary** data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.	• To recognise the implications of linking to content owned by other people **Key vocabulary** website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.