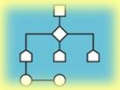
PGPS - Computing Learning Journey

Pierrepont Gamston Primary School
Aiming High, Caring for All



UKS2
Years 5/6

iProgram
Using scratch, kudu and Looking Glass

Audience
iOS
Sharing information
Connections
Trust
Sharing
Cyber Bullying
Privacy
iApp
iNetwork
iSafe
Android
Purpose
Search Engines
Computer Networks
Digital Citizenship
Communication
Collaboration
HTML
iWeb
Hacking
Game design
Algorithms
Development and testing
Logic
Codes
Cyphers
iAlgorithm
iCrypto
Iterations
Logic and problem solving
Instructions
Secure Communication
Risk
Personal/Private information
Privacy
Cyber Bullying
Security
Plagiarism
Digital footprint
iSafe

LKS2
Years 3/4

Problem solving
Development and testing
URLs
Hyperlinks
Network
iSimulate
iProgram
iConnect
Sequencing
Algorithms
Logic
Credibility of information
Encoding
Storing information
iData
Database
Post
Send
Reply
Login
iBlog
iDo Mail
iAlgorithm
Game design
iAnimate
Collect, analyse, evaluate and pre-
Sort
Justify
Att
Reasoning
Development and testing
iData
Survey
Graph
Refine
Drawing
Research
Answer
Jesse & Friends
Touch Typing
Digital Text
Program
iPub
iModel
iSearch
iSafe
iWrite
iPad
Daisy
Present
Plan
Representing
Modelling
Locate
Personal Information
OOo4kids
Stop Motion
iAnimate
Scratch Jr
Animations

KS1
Years 1/2

Smartboards
Beebots
iPads
Patterns
Follow
iProgram
Children are encouraged to use technology to achieve a specific purpose.
iAlgorithm
Virtual Toys
Voice recorders
Laptops
Controls
Sort
Microphones
Telephones
CD/Radio players
Voice recorders
Torches

EYFS
F2

Children experience and use a range of technology through play and directed teaching.

AIMING HIGH, CARING FOR ALL

Pierrepont Gamston Primary School

Computing Policy

Introduction

At Pierrepont Gamston, computing lessons develop the children's knowledge and understanding of 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. 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 using technology – at a level suitable for the future workplace and as active participants in a digital world.

Values

Our school curriculum is underpinned by the values that we hold dear. Everyone is equally valued and treated with respect, and is made in the image of God, which means that everyone has an equal opportunity to achieve and will be challenged and supported to ensure that they continue to grow and learn within all areas of the curriculum.

Intent (incorporating the Aims of the National Curriculum)

- Children can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- Children can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- Children can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Children are responsible, competent, confident and creative users of information and communication technology.
- Children will use topic specific vocabulary to support their learning (see appendix 3).

Implementation (incorporating the National Curriculum key stage overviews)

All classes following a rolling two-year cycle using the iCompute scheme of work as a basis for their lessons.

Foundation Stage

Despite computing not being explicitly mentioned within the Early Years Foundation Stage (EYFS) statutory framework, there are many opportunities for young children to use technology to solve problems and produce creative outcomes. In particular, many areas of the framework provide opportunities for pupils to develop their ability to use computational thinking effectively, such as through undertaking projects involving the concepts and approaches suggested by iCompute's scheme of work.

As young children take part in a variety of tasks with digital devices, such as moving a Bee Bot around a classroom, they will already be familiar with the device before being asked to undertake tasks related to the key stage one computing curriculum, such as writing and testing a simple program.

Key Stage 1

Through the iCompute curriculum, pupils are 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.

Key Stage 2

Through the iCompute curriculum, pupils are 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.

Children with Special Educational Needs and Disabilities

We make appropriate provision to overcome all barriers to learning and ensure pupils with SEN have full access to the National Curriculum, as stated in our SEN policy. We provide additional resources or support for children with special needs as required. This may be in the form of adaptions, differentiation by outcome, intervention, adult support or a personalised curriculum.

Assessment

Children's work in computing is assessed through teacher observations of the children working during lessons using the iCompute criteria as a guide. Teachers record the progress made by children each half term against the descriptors on the curriculum subject's spreadsheet. Teachers make judgements as to whether a child has met or working towards the expectations. This is recorded on the spreadsheet and can be used to make biannual assessments of overall progress for a child when writing annual reports for parents.

Subject leader role

The role of a subject leader is to:

- Provide strategic lead and direction for a specific subject
- Support and offer advice to colleagues on issues related to the subject
- Monitor pupil progress in that subject area
- Provide efficient resources management for the subject

It is the role of each subject leader to keep up to date with developments in their subject, at both national and local level. They review the way the subject is taught in school and plan for improvement. This development planning links to whole school objectives. Each subject leader reviews the curriculum plans for their subject, ensures that there is full coverage of the National Curriculum and that progression is planned into programmes of study.

Monitoring and Review

- Class teachers are responsible for the day to day planning, organisation and delivery of the curriculum subject.
- Subject leaders monitor the way their subject is taught throughout school and feedback to SLT and whole school where appropriate.
- The allocated Governor is responsible for liaising with subject leaders to closely monitor the way the school teaches each subject.

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Appendixes:

1. Computing programmes of study: key stages 1 and 2 (National Curriculum in England)

Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/239033/PRIMARY_national_curriculum_-_Computing.pdf

2. iCompute scheme of work 2- year cycle:

KS1 – Cycle A

Term	1st Half	2nd Half
Autumn	**iAlgorithm** Sessions 1-3	**Y1 iProgram Unit 1**
		Programming physical and virtual toys
	'unplugged' activities to support understanding of algorithms	**Y2 iAnimate** Sessions 1-3
		Introduction to animation
Spring	**Y1 iPad**	**Y2 iProgram** Sessions 1-3
	Algorithms & Programming with iPads	Creating simple animations
	Y1 iWrite	**KS1 iSafe Unit 1**
	Creating and manipulating digital text	Personal information and being safe online
Summer	**Y2 iSearch** Sessions 1-3	**Y2 iBlog** Sessions 1-3
	Using the web to find things out	Writing and responding with blogs
	Y1 iModel Sessions 1-2	**Y2 iPub** Sessions 1-3
	Introduction to computer modelling	Creating interactive eBooks

Minimum 36 sessions

KS1 – Cycle B

Term	1st Half	2nd Half
Autumn	**KS1 iAlgorithm** Sessions 4-5	**Y1 iProgram – Unit 2**
		Algorithms & Programming
	Off-computer activities to support understanding of algorithms	**Y2 iAnimate** Sessions 4-6
		Introduction to animation
Spring	**Year 2 iPad**	**Y2 iProgram** Sessions 4-6
	Programming Daisy the Dinosaur	Creating simple animations
	Y1 iData	**KS1 iSafe – Unit 2**
	Introduction to data representation	Personal information and being safe online
Summer	**Y2 iSearch** Sessions 4-5	**Y2 iBlog** Sessions 1-3
	Using the web to find things out	Writing and responding with blogs
	Y1 iModel Sessions 3-4	**Y2 iPub** Sessions 4-6
	Introduction to computer modelling	
	Y2 iDo Mail	
	Introduction to Email	Creating interactive eBooks

Minimum 36 sessions

LKS2 – Cycle A

Term	1st Half	2nd Half
Autumn	**Y3 iProgram** Sessions 1-3	**Y4 iProgram** Sessions 1-3
	Games and animation development	Making shapes and navigating mazes
	LKS2 iAlgorithm Sessions 1-3	**LKS2 iSafe – Unit 1** Sessions 1-3
	Sorting and splitting. How problems can be solved more easily	Staying safe online
Spring	**Year 3 iPad**	**LKS2 iSafe** – Unit 1 (sessions 4-5) **LKS2 iSafe** – Unit 2 (sessions 1-2)
		Staying safe online
		LKS2 iData Sessions 1-2
	Programming with Kodable	Introduction to data representation
Summer	**LKS2 iConnect** Sessions 1-3	**Year 4 iPad** (Unit 1)
	Computer networking	Programming with LightBot Jr + LightBot
	Y3 iDo WeDo (*Optional*) Sessions 1-5	**Y3 iSimulate** Sessions 1-3
		Exploring Computer Simulations
		Year 4 iAnimate Sessions 1-2
	Robotics with LEGO™ WeDo	Introduction to animation

Minimum 43 sessions

LKS2 – Cycle B

Term	1st Half	2nd Half
Autumn	**Y3 iProgram** Sessions 4-6	**Y4 iProgram** Sessions 4-6
	Games and animation development	Making shapes and navigating mazes
Spring	**LKS2 iSafe – Unit 2** Sessions 3-8	**Year 4 iPad – Unit 2** (Alternatively teach Y4 iPad Unit 1 sessions 1-3 in Cycle A & 4-6 here)
	Staying safe online	Programming physical systems
Summer	**LKS2 iConnect** Sessions 4-6	**LKS2 iData** Sessions 3-5
	Computer networking	Introduction to data representation
	Y4 iDo WeDo (*Optional*) Sessions 1-4	**Y3 iSimulate** Sessions 4-6
	Robotics with LEGO™ WeDo	Exploring Computer Simulations
	Y4 – iProgram Unit 3	**Year 4 iAnimate** Sessions 3-6
	Programming puzzle solutions	Introduction to animation

Minimum 37 sessions

UKS2 – Cycle A

Term	1st Half	2nd Half
Autumn	Y5 iProgram Unit 1	UKS2 iAlgorithm
		Searching, Sorting and Networks
		UKS2 iSafe Sessions 1-4
	Designing and developing computer programs	Staying safe in a digital world
Spring	iWeb	Y5 iProgram Unit 2
	Remixing and creating web content using HTML	Designing and developing Xbox games
Summer	Y5 iPad	UKS2 iSafe Sessions 5-9
	Programming with Hopscotch	Staying safe & being responsible digital citizens
	Y6 iApp - Unit 1	iCrypto Sessions 1-3
	Designing & Developing apps	Cryptography

Minimum 45 sessions

UKS2 – Cycle B

Term	1st Half	2nd Half
Autumn	Y6 iProgram – Unit 1	iNetwork
		Networks, data and creating web content
	Designing and developing computer programs	iCrypto Sessions 4-6
		Cryptography
Spring	Y6 iApp – Unit 2	Year 6 iPad Unit 1
	Designing and developing mobile apps	Programming with Cato's Hike
Summer	Y6 iProgram – Unit 2	UKS2 iSafe Sessions 9-14
	Programming 3D Animations	Staying safe & being responsible digital citizens

Minimum 38 sessions

Appendix 3 - Computing Vocabulary Progression

	E Safety	Programming	Computing Software	Hardware and Networking
EYFS	Internet, online, website, safe.	Instruction, command, program, forward, backward, turn, right, left, pause, clear, debug, steps, first, next, then, before, after, second, last, sideways.	Image, pixel, grid, code, decode, key, pattern, video, film, recording, playback, pause, rewind, fast forward, photograph, picture, image, text, sound, camera, app.	Computer, mobile, tablet, internet, websites, equipment, buttons, screen, mouse, touch screen, images, keyboard, paint, share, create, collect, count, organise, on/off.
KS1	SMART rules, (Safe, Meet, Accept, Reliable, Tell), personal information, trust, online, untrustworthy, sensation, emotion, fear, panic, nervous, anxious, happy, excited.	Motion, move, interact, bump, fast, slow, speed up, speed down, beginning, middle, end, wait, text.	Return, backspace, spacebar, scroll, text, mouse, click, shift, backspace return, open, print, save, delete, word bank, word processor, font bold, italics, underscore, save, print.	Email, buttons, printer, programme, app, videos, sounds, images, words, spacebar, communicate, pictogram, digitally, select, click, double click, right click.
	Share, post, emails, websites, password, personal, private, communication.	Device, signal, response, input, output, algorithm, sequence, execute, command, order, re-run.	Website, world wide web, link, connected, information, interact, past/present/future technology, input devices, email, eBook, multimedia, interact, audio, survey, tally, information, data, pictogram, graph, icon, column, row, sort, classify.	Digital footprints, keyword, search, forward, backward, algorithm, sequence, debug, predict, template, animation, caps lock, content, save, save as, print, file, folder, retrieve, magnify, microchip, microprocessor, computer memory, storage.
LKS2	Messaging, gaming, privacy settings, like, dislike, block, comment, group, public, private, fan, threat, manipulation, pressure, flatter, bribe, offers, self-esteem, worry, isolation, fans, advertising, target, pop-up, vlogging, endorsement, block, personal, private, strong, logon, account, symbols, upper-case, lower-case.	Sprite, blocks, coordinates axis, if statement, sequence, animate, repeat, loop, import, record, 2D, degrees, rotate.	Simulation, choice, rules, variables, model, pattern, decision, real-life, choice, effect, cause.	Secure, log, sequence, size, enlarge, reduce, reflect, flip, green screen, amend, appropriate, database, contribute.
	Privacy, digital footprint, reputation, personal information, over-sharing, settings, assumption, opinion, fact, point of view, phishing, fake, scam, real, URL, SSL, chat, bot, digital assistant, virtual assistant, profile, username, fake, suspicious, real.	Code, sensor, motor, input, output, command sequence, forever force, motion, gears, gear up, gear down, design, evaluate.	Binary series, base, data, digital, information, record, field, file, chart.	Edit, complex, modify, bullet point, keyboard, shortcut, spell check, feedback, network, inaccurate, world wide web, connected, router, data, text, audio, images, video, surfing, hyperlinks, home, browser, favourites, search engine, data, spider, crawl, sort, hits, tab, up-to-date, safe, author, domain, copyright.
UKS2	Communication, malware, virus, add-blocker, anti-virus software, e-safety technology, smart, web address, search engine, search bar, compare, user-friendly, instant messaging, chat, cyberbullying.	Control, simulation, process, condition, if, then, logical operators, variables, algorithm, costume, iteration, amend systemically, Java object.	Smart, smartphone, components, properties, code, Android, iOS, operating system, hardware, software, conditional handler, component.	Virus, multimedia, transitions, search strategies, spreadsheet, interpret.
	Two factor verification, encryption, complexity, hacker, by-stander, up-stander, harassment, conflict, cyberbullying, misunderstanding, clarify, tone, face-to-face, support. Advice, abuse, block, trusted adult	Orientated, 3D, background, procedure, editor, scene, instance, object, declare, argument, class, procedure, subclass, inheritance, abstraction, condition, repeat, while, controlled structure, nested parameter, argument, functions, parameters.	X and Y coordinates, procedure, function, variables, value, type, call, argument, decision, decomposition, interface, interact, pseudocode, amend systemically.	Mimic, measure, input, interrogate, plausibility.