Royal Cross Primary

Computing Curriculum KS2

Computing aspect	KS1	KS2
Computer science (CS)	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	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,

Computing aspect	KS1	**KS2**
Information Technology (IT)	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Use search technologies effectively 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

Computing aspect	KS1	**KS2**
Digital Literacy (DL)	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	Understand the opportunities [networks] offer for communication and collaboration 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

Subject Content

Key stage 1

Pupils should be 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

Key stage 2

Pupils should be 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

Key stage 2 (continued)

Pupils should be taught to:

- 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

KS2 Computing Curriculum 4 Year Cycle

Online Safety		Whole School Assemblies Anti-Bullying Week	Whole School Assemblies Safer Internet (Day) Week	Whole School Assemblies Health Week (Time spent on electronic devices.)
		Inventors & Inventions	**Moon Zoom**	**Buckets & Spades**
Year 1	2016 - 2017	Super Slideshows (DL)	Brilliant Beebots (CS)	Perfect Posters (IT:DL)
		All Change	**Us & Them**	**Great Outdoors**
Year2	2017 - 2018	Let's Animate (IT)	Let's Email (DL)	Video Magic (IT)
		Fire, Steam & Water	**Explorers**	**We are What we Eat!**
Year 3	2018 - 2019	Racing Cars (CS)	Lets Communicate Online (DL)	Digital Artists (IT)
		Home Sweet Home	**Wonderful World**	**Rock & Roll**
Year 4	2019 - 2020	Lets Be Safe (DL)	Multimedia Books (IT)	Scratch (CS)

Unit B Overview:

Unit A	Summary	Computing Strand
B1	Super Slideshows	Digital Literacy
B2	Brilliant Beebots	Computer Science
B3	Perfect Posters	Information Technology
B4	Lets Animate	Information Technology
B5	Lets Email	Digital Literacy

Unit B1	Super Slideshow Digital Literacy: Information Technology
Software: Power Point; Keynote Hardware: Laptops; iPads Outcome: Children make a slideshow.	
Step 1	Choose a research topic. Search for images through safe search site and include E-safety. Encourage quality over quantity.
Step 2	Children to create new slide and text boxes and images. Choose an overall theme. Decide how much information they need to show. Decide how much information they need to show.
Step 3	Children to present their slideshow to a class. Develop presentation skills. Children could write their 'script' out in Word.
Extension	Independent projects to research a curriculum area.

Unit B2	Brilliant Beebots Computer Science
Software: Beebot app Hardware: Laptops; iPad; Beebot; Truckbot; Bluebot Outcome: Children program a Beebot to move around.	
Step 1	Move the Beebot around to different destinations, enter numerical commands (e.g. forward 3 instead of 3 lots of the forward command).
Step 2	Put a pen in the Beebot, draw simple lines onto a sheet of paper. Program the Beebot, draw rectangular shapes. Children draw shapes & patterns using repeat commands.
Step 3	Children explore & reinforce skills. Program on the iPad using the Beebot app.
Extension	Independent projects to linked to creative curriculum area.

Unit B3	Perfect Posters Digital Literacy: Information Technology
Software: Word Hardware: Laptops Outcome: Children create a poster in Word using a range of tools.	
Step 1	Basic skills: shift key; space; arrow keys; delete; backspace; enter. Write sentences about selected theme. Make a list of colours, change each to correct colour.
Step 2	Change font to the best. Add photographs & clip art to the document. Add, format & manipulate a text box. Text boxes help position text around the poster WordArt to find the best effect
Step 3	Evaluating what makes a poster? Consider changing the orientation? Use zoom controls to view the whole page.
Extension	Independent projects to linked to creative curriculum area.

Unit B4	Lets Animate Information Technology
Software: http://pivotanimator.net/; Paint Hardware: Laptops Outcome: Children create a line drawing of a figure that can be animated.	
Step 1	Show children pivot stick animator. Model then let children experiment. Save animations to Flash. Animate different figure types & animations involving 2 figures.
Step 2	Children create backgrounds in Paint- save as a Jpeg. Children create a new figure in Pivot Stick Animator. Import their own background into Pivot Stick Animator.
Step 3	Children develop their animations. Children save their learning as a GIF file.
Extension	Independent projects to linked to creative curriculum area.

Unit B5	Lets Email Digital Literacy: Information Technology
Software: Outlook Hardware: iPad Outcome: Children compose email to class groups & family.	
Step 1	Show children email app. Explain how email works. Compare post & email. Refer to online safety: email address is personal information.
Step 2	Open an email. Compose an email for families. Discuss importance of correct email address. Online safety: only open email from people you know.
Step 3	Open email & attachment. Take photo, insert as attachment for email to families. Online safety: appropriate images.
Extension	Independent practice sending news home & into school.

Unit C Overview:

Unit A	Summary	Computing Strand
C1	Video Magic	Information Technology
C2	Racing Cars	Computer Science
C3	Lets Communicate online	Digital Literacy
C4	Digital Artists	Information Technology
C5	Lets Be Safe	Digital Literacy
C6	Multimedia Books	Information Technology
C7	Scratch	Computer Science

Unit C1	Video Magic Information Technology
Software: I can Animate; iMovie Hardware: iPad Outcome: Children compose a short frame animation video.	
Step 1	Children draw a character to use in stop frame animation video. Choose three messages the character could say. Decide on simple movements the character could make.
Step 2	Use 'I can animate'. Children film a short video. Discuss small movements each time there is a movement.
Step 3	Import the stop frame animation into IMovie. Add music to the video. Present to an audience.
Extension	Independent project to support creative curriculum area.

Unit C2	Racing Cars Computer Science
Software: Scratch Junior; Scratch Hardware: iPad; Laptops Outcome: Children make a car move around a track.	
Step 1	Discuss algorithms: instructions need to be exact. Generate routine task: children write algorithms. Explain car task. Children learn how to move a car around the screen.
Step 2	Children learn how to leave a trail using pen up and pen down. Think about how to change the width of the line. Test and debug as required.
Step 3	Children design own versions of the game using a fire engine.
Extension	Independent project; present their ideas to the class.

Unit C3	Lets Communicate Online Digital Literacy
Software: Outlook Hardware: iPad; Laptops Outcome: Children manage 'inbox'; compose & reply to email.	
Step 1	Brainstorm different ways to communicate using technology. Online safety: communicating appropriately How do these rules apply outside school? Set out rules for using email.
Step 2	Online safety: rules of passwords & e-safety rules Children send messages Online safety: what to do if ……
Step 3	Explore FACE TIME.
Extension	Independent project; send home news to family. Manage 'inbox'.

Unit C4	Digital Artists Information Technology
Software: Brushes 3 (free) Hardware: iPad Outcome: Children create digital Art using a range of techniques.	
Step 1	Children get started with Brushes. Choose colour, brush size & shape, begin painting. Experiment with effects.
Step 2	Explain what is meant by a story board. Children begin paintings to tell a story. Save in Gallery.
Step 3	Support children to make a short story board. Print & present.
Extension	Independent project; explore the work of Arcimboldo artwork.

Unit C5	Lets Be Safe Digital Literacy: Information Technology
Software: Publisher Hardware: Laptops Outcome: Children create an online safety poster using Publisher.	
Step 1	Brainstorm different ways to communicate using technology. Discuss importance of communicating appropriately . How do these rules apply outside school? How we can stay safe online? Plan the information to include in an E-safety leaflet.
Step 2	Show how to set up a leaflet template on Publisher. Show how to add borders to images. Children draft a leaflet & include images.
Step 3	Support children in making their leaflet on Publisher. Refine leaflets so they are easy to read.
Extension	Independent project: make a new leaflet to display around school.

Unit C6	Multi-Media Books Digital Literacy: Information Technology
Software: Book Creator Hardware: iPad Outcome: Children create a multi media book.	
Step 1	Can be non-fiction or fiction. Children use first sessions to research ideas & find images. Share features you might in a book. What extra features would a multimedia book have?
Step 2	Show how to add text, images, sound. Edit & crop images as necessary. Children use sessions to populate the book. Aim for: front cover; 3 written pages; mixture of images, sound & text.
Step 3	Share books & evaluate Which are easy to read? Why? Children edit books to produce finished product.
Extension	Independent project: make a multimedia book about a pet.

Unit C7	Scratch Computer Science
Software: Scratch; Scratch Junior Hardware: Laptops; iPads Outcome: Children create simple routines using blocks. & triggers.	
Step 1	Discuss algorithms and how instructions need to be exact. Generate day to day tasks that children could write algorithms for Explain the 'sprite' task: children will learn how to move 'sprites' & add backgrounds.
Step 2	Explore Scratch Junior website. Look at examples. Work through tasks on the site.
Step 3	Support children in making their own story with animation; background & triggers.
Extension	Independent project: Dance themed annimation.