Uplands Junior L.E.A.D Academy Subject Overview

Computing

Intent: We want all our children to become digitally literate so that they can be active participants in the digital world. Through our computer science lessons, children learn the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Pupils then apply this knowledge to use information technology to create programs and systems.

	Year 3	Year 4	Year 5	Year 6		
	Skills – In Computing the children will learn a range of skills across each of the topics.					
	Unit: Connecting computers	Unit: The internet	Unit: Systems and searching	Unit: Communication and		
	Identifying that digital devices	Recognising the internet as a	Recognising IT systems around us	collaboration		
	have inputs, processes, and	network of networks including the	and how they allow us to search	Identifying and exploring how		
	outputs, and how devices can	WWW, and why we should	the internet	data is transferred and		
	be connected to make	evaluate online content.		information is shared online.		
$\sim $	networks.		Key Vocabulary:			
og) ork:		Key Vocabulary:	digital system, physical	Key Vocabulary:		
nol Two	Key Vocabulary:	Router, World Wide Web, online	connection, electronic connection	Web address, IP address, Domain		
ech ne t	Input, process, output,	content	computer system, search engine	Name Server (DNS), data packet,		
µq ב⊥נ	network, network components,		rank, web search, web crawler,	header, data payload, copyright		
tior Is a	server, Wireless Access Point,	Knowledge:	search engine index, content	Internet communication, internet		
na.	network switch	- To describe how networks	creator	collaboration, security, privacy		
fori yst		physically connect to other				
(Ini Ig s	Knowledge:	networks	Knowledge:	Knowledge:		
1 cutin	-To explain how digital devices	 To recognise how networked 	- To explain that computers can	- To explain the importance of		
br	function	devices make up the internet	be connected together to form	internet addresses		
Con	- To identify input and output	- To outline how websites can be	systems	- To recognise how data is		
< ●	devices	shared via the World Wide Web	- To recognise the role of	transferred across the internet		
	- To recognise how digital	(WWW)	computer systems in our lives	- To explain how sharing		
	devices can change the way	- To describe how content can be	- To identify how to use a search	information online can help		
	that we work	added and accessed on the World	engine	people to work together		
	- To explain how a computer	Wide Web (WWW)	- To describe how search engines	- To evaluate different ways of		
	network can be used to share	- To recognise how the content of	select results	working together online		
	information	the WWW is created by people				

	 To explore how digital devices can be connected To recognise the physical components of a network Prior Knowledge: Knowledge and understanding of technology by focusing on digital and non-digital devices 	-To evaluate the consequences of unreliable content Prior Knowledge: Knowledge and understanding of networks in Year 3	 To explain how search results are ranked To recognise why the order of results is important, and to whom Prior Knowledge: knowledge and understanding of computing systems 	 To recognise how we communicate using technology To evaluate different methods of online communication Prior Knowledge: Knowledge and understanding of computing systems and online collaborative working.
nce)	Unit: Sequencing sounds Creating sequences in a block- based programming language	Unit: Repetition in games Using a block-based programming language to explore count-	Unit: Selection in quizzes Exploring selection in programming to design and code	Unit: Variables in games Exploring variables when designing and coding a game.
	Key Vocabulary: Scratch, backdrop, code, motion block, event block, motion, stage	creating a game Key Vocabulary: Count-controlled loop, loop, snippet of code, infinite loop,	Key Vocabulary: Conditions, 'ifthenelse' structure, program flow, branching structure, setup code	Key Vocabulary: Variable, program variable, value Knowledge: - To define a 'variable' as
Autumn 2 (Computer Scie Programming	Knowledge: - 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	event block, code blocks Knowledge: - 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	 Knowledge: To explain how selection is used in computer programs To relate that a conditional statement connects a condition to an outcome To explain how selection directs the flow of a program To design a program that uses selection To create a program that uses selection To evaluate my program 	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 - To use my design to create a project - To evaluate my project Prior Knowledge: Experience of programming in Scratch. Specifically, familiar with the programming constructs of

	Prior Knowledge:		Prior Knowledge:	sequence, repetition, and
	Learners will have some prior	Prior Knowledge:	Experience of programming using	selection.
	experience of programming	sequence of commands in a	block-based construction (e.g.	
		program to using count-controlled	Scratch), understand the concepts	
		loops	of 'sequence' and 'repetition', and	
			have some experience of using	
			'selection'.	
	Unit: Desktop publishing	Unit: Stop-frame animation	Unit: Vector drawing	Unit: Video production
	Creating documents by	Capturing and editing digital still	Creating images in a drawing	Planning, capturing, and editing
	modifying text, images, and	images to produce a stop-frame	program by using layers and	video to produce a short film.
	page layouts for a specified	animation that tells a story	groups of objects.	
	purpose.			Key Vocabulary:
		Key Vocabulary:	Key Vocabulary:	Video, audio, recording,
	Key Vocabulary:	Animation, frame, stop-frame	Vector, vector drawing, alignment	storyboard, script, soundtrack,
	Publisher, text, image, desktop	animation, story board, sequence	grid, resize handle, zoom tool,	dialogue, capture, zoom, storage,
	publishing, return, shift,	of frames, onion skinning	layers, duplicate (images), group	digital, tape, AV (audiovisual),
	template, page orientation,		and ungroup (images)	videographer, video techniques,
	place holder, layout	Knowledge:		zoom, pan, tilt, angle, content,
.e		- To explain that animation is a	Knowledge:	camera, colour, export, trim/clip,
1 Jed	Knowledge:	sequence of drawings or	 To identify that drawing tools 	titles, end credits, timeline,
e n g n	- To recognise how text and	photographs	can be used to produce different	transitions, soundtrack,
Spr atin	images convey information	- To relate animated movement	outcomes	retake/reshoot, special effects
Lea 1	- To recognise that text and	with a sequence of images	 To create a vector drawing by 	
0	layout can be edited	- To plan an animation	combining shapes	Knowledge:
	- To choose appropriate page	- To identify the need to work	- To use tools to achieve a desired	-To explain what makes a video
	settings	consistently and carefully	effect	effective
	- To add content to a desktop	- To review and improve an	- To recognise that vector	- To use a digital device to record
	publishing publication	animation	drawings consist of layers	video
	- To consider how different	- To evaluate the impact of adding	 To group objects to make them 	- To capture video using a range of
	layouts can suit different	other media to an animation	easier to work with	techniques
	purposes		- To apply what I have learned	- To create a storyboard
	- To consider the benefits of	Prior Knowledge:	about vector drawings	- To identify that video can be
	desktop publishing	knowledge and understanding of		improved through reshooting and
		using digital devices to create	Prior Knowledge:	editing
	Prior Knowledge:	media		

	Knowledge and understanding	Knowledge and understanding of	To consider the impact of the
	of using digital devices to	digital painting and has some links	choices made when making and
	combine text and images	to the Year 3 'Creating media –	sharing a video
	_	Desktop publishing' unit, in which	-
		learners used digital images	Prior Knowledge:
			Knowledge and understanding of
			creating media by systematically
			through the process involved in
			creating a video. The unit builds
			on the Year 4 unit 'Photo editing'
			where composition is introduced
			and the Year 3 unit 'Stop-frame
			animation' where learners
			explored some of the features of
			video production
	Unit: Branching databases	Unit: Flat-file databases	Online Safety - Project Evolve
	Building and using branching	& Spreadsheet	Unit: Managing online
	databases to group objects	Using a database to order data	information
	using yes/no questions	and create charts to answer	
5		questions.	Knowledge
log	Key Vocabulary:		-explain how search engines work
ouc u	Attribute, value, questions,	Key Vocabulary:	and how results are selected and
echatic	table, objects, branching	Database, data, information,	ranked.
L Ü	databases, objects, equal, even,	record, field, sort, order, group,	-explain how to use search
atio	separate, order, organise,	search, criteria, value, graph,	technologies effectively.
ig 2 (Informa Data and ir	j2data, selecting, pictogram,	chart, axis, compare, filter,	-describe how some online
	information, decision tree,	presentation	information can be opinion and
	questions		can offer examples.
		Knowledge:	-explain how and why some
orir	Knowledge:	- To use a form to record	people may present 'opinions' as
Š	 To create questions with 	information	'facts'; why the popularity of an
	yes/no answers	- To compare paper and	opinion or the personalities of
	-To identify the attributes	computer-based databases	those promoting it does not
	needed to collect data about an	- To outline how you can answer	necessarily make it true, fair or
	object	questions by grouping and then	perhaps even legal.

	- To create a branching		sorting data	-define the terms 'influence'
	databaso		To explain that tools can be used	(manipulation' and (norsuasion'
	To ovalain why it is helpful for		to solost specific data	and explain how someone might
	- To explain why it is helpful for		To evaluate that computer	and explain now someone might
	a database to be well		- To explain that computer	encounter these online
	structured		programs can be used to compare	-understand the concept of
	- To plan the structure of a		data visually	persuasive design and how it can
	branching database		-To use a real-world database to	be used to influences peoples'
	- To independently create an		answer questions	choices.
	identification tool			-demonstrate how to analyse and
				evaluate the validity of 'facts' and
			Prior Knowledge:	information and I can explain why
	Prior Knowledge:		Understanding how data is stored	using these strategies are
	Knowledge and understanding			important.
	of the categories of data			-explain how companies and news
	handling, with a particular			providers target people with
	focus on implementation			online news stories they are more
				likely to engage with and how to
				recognise this.
				-describe the difference between
				online misinformation and
				disinformation
				-explain why information that is
				on a large number of sites may
				still be inaccurate or untrue
				-identify flag and report
				inappropriate content
	Online Sefety - Project Evolue	Linit: Photo oditing	Online Safety - Project Evolve	Inappropriate content.
	Unite Salety - Project Evolve	Manipulating digital images and	Unite Salety - Project Evolve	Dianning developing and
<u>a</u>	information	rofloating on the impact of		Plaining, developing, and
1 edi	Information	reflecting on the impact of	Information	evaluating 3D computer models of
, Me		changes and whether the required		physical objects.
ing	Knowledge	purpose is fulfilled	Knowledge	
Sur eat	-demonstrate how to use key		-explain the benefits and	Key Vocabulary:
Ŭ	phrases in search engines to	Key Vocabulary:	limitations of using different types	3D model, three dimensions, lift,
	gather accurate information		of search technologies	lower, work plane, recolour,
	online.			placeholders

-explain what autocomplete is	Rotate, crop, filter, colour effect,	-explain what is meant by 'being	
and how to choose the best	cloning, photo retouch, duplicate,	sceptical'	Knowledge:
suggestion.	combined image	-evaluate digital content and can	- To recognise that you can work
-explain how the internet can		explain how to make choices	in three dimensions on a
be used to sell and buy things	Knowledge:	about what is trustworthy	computer
-explain the difference between	- To explain that the composition	-explain key concepts including:	- To identify that digital 3D objects
a 'belief', an 'opinion' and a	of digital images can be changed	information, reviews, fact,	can be modified
'fact.	- To explain that colours can be	opinion, belief, validity, reliability	- To recognise that objects can be
 -explain that not all opinions 	changed in digital images	and evidence.	combined in a 3D model
shared may be accepted as true	- To explain how cloning can be	-identify ways the internet can	- To create a 3D model for a given
or fair by others	used in photo editing	draw us to information for	purpose
-describe and demonstrate how	- To explain that images can be	different agendas	- To plan my own 3D model
we can get help from a trusted	combined	-describe ways of identifying	- To create my own digital 3D
adult	- To combine images for a	when online content has been	model
	purpose	commercially sponsored or	
	- To evaluate how changes can	boosted	Prior Knowledge:
	improve an image	-explain what is meant by the	Prior to undertaking this unit,
		term 'stereotype', how	learners should have worked with
	Prior Knowledge:	'stereotypes' are amplified and	2D graphics applications
	knowledge and understanding of	reinforced online, and why	
	digital photography and using	accepting 'stereotypes' may	
	digital devices to create media	influence how people think about	
		others.	
		-describe how fake news may	
		affect someone's emotions and	
		behaviour, and explain why this	
		may be harmful.	
		-explain what is meant by a 'hoax'.	
		I can explain why someone would	
		need to think carefully before	
		they share	

	Unit: Events and actions in	Online Safety - Project Evolve	Unit: Selection in physical
	programs	Unit: Managing online	computing (CRUMBLE)
	Writing algorithms and	information	Exploring conditions and selection
	programs that use a range of		using a programmable
	events to trigger sequences of	Knowledge:	microcontroller
	actions	-analyse information to make a	
		judgement about probable	Key Vocabulary:
	Key Vocabulary:	accuracy	Microcontroller, crumble
	Event, action, code,	-describe how to search for	controller, components, LED,
	programming extension, pen	information within a wide group	Sparkle, crocodile clips, connect,
	extension, pen down block,	of technologies	battery box, program, repetition,
	bugs, debugging, outcome, pen	-describe some of the methods	infinite loop, count-controlled
(e)	trail, set up block	used to encourage people to buy	loop, condition, true, false, input,
enc		things online	action, selection, motor, switch,
Scie	Knowledge:	-explain why lots of people	algorithm, debug, evaluate
ing	-To explain how a sprite moves	sharing the same opinions or	
but	in an existing project	beliefs online do not make those	Knowledge:
om ran	- To create a program to move	opinions or beliefs true.	- To control a simple circuit
С Ово	a sprite in four directions	-explain that technology can be	connected to a computer
PI PI	- To adapt a program to a new	designed to act like or	- To write a program that includes
ů.	context	impersonate living things (e.g.	count-controlled loops
шn	- To develop my program by	bots) and describe what the	- To explain that a loop can stop
S	adding features	benefits and the risks might be.	when a condition is met
	- To identify and fix bugs in a	-explain what is meant by fake	- To explain that a loop can be
	program	news	used to repeatedly check whether
	- To design and create a maze-		a condition has been met
	based challenge		- To design a physical project that
			includes selection
			- To create a program that
	Prior Knowledge:		controls a physical computing
	Programming A unit introduces		project
	the Scratch programming		
	environment and the concept		Prior Knowledge:
	of sequences.		Experience of programming using
			a block-based language (eg

		Scratch) and understand the concepts of sequence and repetition

Based on the TEACH COMPUTING scheme