Glapton Academy
A L.E.A.D. Academy

Computing Overview		
Block 1 **Y1 -** iAlgorithm **Y2 -** iSafe **Y3 -** iSafe **Y4 -** iSafe **Y5 -** iSafe **Y6 -** iSafe **English:** **Maths**	**Block 2** **Y1 -** iProgram **Y2 -** iPub **Y3 -** iProgram **Y4 -** Iprogram **Y5 –** iCrypto **Y6 -** iData **English:** **Maths**	**Block 3** **Y1 -** iWrite **Y2 -** iPub **Y3 –** iSimulate **Y4 -** iMail **Y5 -** iWeb **Y6 -** iNetwork **English:** **Maths**
Block 4 **Y1 -** iData **Y2 -** iProgram **Y3 -** iData **Y4 -** iAnimate **Y5 -** iAlgorithm **Y6 – N/A** **English:** **Maths**	**Block 5** **Y1 -** iSafe **Y2 -** iProgram **Y3 -** iConnect **Y4 – iProgram 2** **Y5 -** iProgram **Y6 -** iProgram **English:** **Maths**	**Block 6** **Y1 -** iModel **Y2 -** N/A **Y3 –** iAlgorithm **Y4 -** iData **Y5 –** iProgram 2 **Y6 -** iApp **English:** **Maths**

EYFS

Year 1

Computing – Year 1		
Block 1 **Subject/Conceptual knowledge/skills:** iAlgorithm LEAPS: • I can understand that algorithms are precise instructions that can be followed. • I can follow and devise a simple algorithm. • I can understand that programs execute by following precise instructions. • I can plan, test and debug a simple algorithm. • I can make predictions about an outcome based on a simple algorithm. • I can understand conditions or outcomes. • I can understand that some statements can only be true or false. Vocabulary: Instructions, sequence, forward, backwards, turn, up, down, algorithm, left, right, plan, test, debug, predict	**Block 2** **Subject/Conceptual knowledge/skills:** iProgram LEAPS: • I can understand what algorithms are, how they are used as programs. • I can recognise common uses of information technology beyond school. • I can understand that programs execute by following precise instructions. • I can use logical reasoning to predict the behaviour of simple programs. • I can create and debug simple programs. • I can use technology purposefully to create, organise, store, change and retrieve digital content. Vocabulary: Device, signal, instruction, response, forward, back, left, steps, program, input, output, debugging, command.	**Block 3** **Subject/Conceptual knowledge/skills:** iWrite LEAPS: • I can recognise that text can be created in a number of ways. • I can use word processing software to create a text. • I can insert text into a word processing application. • I can open and save a word document. Vocabulary: Return, backspace, spacebar, scroll, text, keyboard, shift, open, save, cut, font.

Block 4 **Subject/Conceptual knowledge/skills:** iData **LEAPS:** • I can understand why pictograms are useful. • I can collect and organise information to solve a problem. • I can create a pictogram using collected data. • I can sort information and present data using a graph. **Vocabulary:** Survey, tally, information, data, pictogram, graph, select, click, classify.	**Block 5** **Subject/Conceptual knowledge/skills:** iSafety LEAPS: • I can understand what being online may look like, the different feelings we can experience online and how to identify adults who can help. • I can understand that people online may try to manipulate others, how this can make someone feel and how to identify and approach adults who can help. • I can understand that photos can be shared online • To understand the importance of seeking permission before being on internet. Vocabulary: Online, feelings, experience, identify, manipulate, approach, safety, safe, shared, permission, internet.	**Block 6** **Subject/Conceptual knowledge/skills:** iModel LEAPS: • I can understand that computers can show real events and things. • I can use a mouse to move things accurately on screen. • I can understand that computers can be used to make choices. • I can understand that a computer can be used to model and environment where choices can be made. • I can understand that a computer model is not exactly the same as real life. • I can create a representation of a real or fantasy game or story. Vocabulary: Mouse, point, click, drag, choice, decision, adventure, imaginary, model.

Year 2:

Computing – Year 2		
Block 1 **Subject/Conceptual knowledge/skills:** iSafe **LEAPS:** • I can understand the meaning of personal information, how it is unique to a person and when it should be given to trusted adults. • I can identify characteristics of people that are trustworthy in my life. • I can identify a risky situation when a trusted adult's help may be needed. • I know that my emotions can help me stay alert to unsafe situations. • I can understand when to discuss online experiences with a trusted adult. **Vocabulary:** Personal information, trusted adults, trustworthy, help, emotions, alert, safe, unsafe, online, internet	**Block 2** **Subject/Conceptual knowledge/skills:** iPub – gaps in digital device knowledge **LEAPS:** • I know about the world wide web and how it has developed throughout time • I can consider how technology changes with time. • I can share knowledge through media presentations. **Vocabulary:** Past, present, future, similar, different, input, devices, microchip, computer, storage, keyboard, internet, world wide web, email, ebook, audio, images, text, links.	**Block 3** **Subject/Conceptual knowledge/skills:** iPub – gaps in digital device knowledge **LEAPS:** • I can plan/produce a presentation of research findings. • I can create an interactive book. **Vocabulary:** Past, present, future, similar, different, input, devices, microchip, computer, storage, keyboard, internet, world wide web, email, ebook, audio, images, text, links.
Block 4 **Subject/Conceptual knowledge/skills:** iProgram - algorithms and sequencing **LEAPS:**	**Block 5** **Subject/Conceptual knowledge/skills:** iProgram - algorithms and sequencing **LEAPS:**	**Block 6** N/A

• I can understand that an algorithm is a process that consists of a series of steps to achieve a goal. • I know that algorithms can describe everyday activities and can be followed by humans and computers. • I know that algorithms are made up of steps. • I know that steps can be repeated. • I know that computers need more precise instructions than humans do. **Vocabulary:** Algorithm, instructions, sequence, input, output, order, repeat, back, left, right, forward, cut, paste, redo, undo, sprite, copy, statement, negative, steps, duplicate, wait.	• I can use digital drawing tools (Scratch) to create images. • I can program a simple animation involving movement. • I can write a simple program that produces an output (text) • I can combine images and text to create a simple animation. **Vocabulary:** Algorithm, instructions, sequence, input, output, order, repeat, back, left, right, forward, cut, paste, redo, undo, sprite, copy, statement, negative, steps, duplicate, wait	

Computing – Year 3		
Block 1 **Subject/Conceptual knowledge/skills:** iSafe	**Block 2** **Subject/Conceptual knowledge/skills:** iProgram	**Block 3** **Subject/Conceptual knowledge/skills:** iSimulate

LEAPS: I can recognise the risks of sharing publicly online and what to do when something does not feel safe. I can understand consent and when it is appropriate to share something online. I can understand some of the ways we can protect ourselves online against manipulation. I can understand the misconceptions that the internet sometimes conveys (lifestyle, self-esteem etc). I can understand the need for strong passwords. I can identify forms of advertising online. Vocabulary: Online Privacy Passwords, Network, world wide web, email, communicate, connected, home, router, data, images, text, video,	LEAPS: I know that a program is a sequence of statements written in a programming language (scratch). I can program an animation that executes a sequence of statements. I know that computer programs containing graphics use x y coordinates and turns are measured in degrees. I can program a sequence of instructions that create visuals effects. I know that algorithms and programs can involve repetition. I can predict the outcome of a simple algorithm. I can use the repeat function to draw 2D shape. I can import and combine images to create personal animations. Vocabulary: Program, Sequence, Graphics, X and y co-ordinates, Degrees, Sequence of instructions, Visual effects, Algorithms, Animations, Robot, Repetition	LEAPS: I can explore the effect of changing variables in a simulation using them to make and test predictions. I know that computer simulations can represent real or imaginary situations. I understand that simulations can help people try and understand things. I can design and produce a computer simulation or adventure game. Vocabulary: Simulation, Imagery, Computer, Adventure game, Debugging
Block 4 **Subject/Conceptual knowledge/skills:** iData LEAPS: I know how information in a database is organised. I can identify the advantages of a computer database over a paper one.	**Block 5** **Subject/Conceptual knowledge/skills:** iConnect LEAPS: I know that the internet is many computers that are connected. I know what services the internet provides. I can move around the internet using basic navigation skills including hyperlinks.	**Block 6** iAlgorithm LEAPS: I know the best method of sorting a group of unknown weights into order. To understand that information is easier to find in a sorted order. I know that splitting problems up and solving parts at the same time can speed up finding a solution.

To find and enter information to create additional records in the database. Vocabulary: Data, database, information, record, fields.	I know the main features of web browsers. I know how to use and find information on a search engine. I know that not all information on the web is reliable. I know that copyright is an author's right of ownership and it is illegal to steal other people's material. Vocabulary: Internet, computer, connect, internet providers, hyperlinks, web browser, search engine, copyright.	I know that algorithms are a set of instructions that complete a task. I know that computers work by following a set of instructions – called a program. Vocabulary: Method, order, information, splitting problems, algorithms, program.

Computing – Year 4		
Block 1 **Subject/Conceptual knowledge/skills:** Internet Safety LEAPS: **iSafe** • I know the types of information that can put me at risk if it is shared online. • I can protect my private and personal information from identify theft and other scams. • I know what plagiarism is and I can describe its consequences. • I can create a strong password using characteristics of a secure password. • I can identify spam and explore ways of safely managing unwanted messages.	**Block 2** **Subject/Conceptual knowledge/skills:** Computer Science LEAPS: **iProgram Unit 1** • I can understand that a program is a sequence of statements written in a programming language. • I can program a turtle to execute a sequence of statements. • I know that statements can be altered. • I can amend and algorithm to change the size of a shape. • I can program a virtual robot to move and draw.	**Block 3** **Subject/Conceptual knowledge/skills:** Information Technology LEAPS: **iMail** • **I know that messages can be used to communicate over a distance.** • **I know how email travels and how to retrieve it.** • **I can send and reply to emails.** • **I can attach a file to an email.** Vocabulary:

• I can analyse why private information should now be given to anyone online without a trusted adult's permission. • I know how to respond to online information requests. • I know the key similarities and differences between in person bullying and cyber bullying. • I know key strategies for dealing with cyber bullying. Vocabulary: Sprite, blocks, programming, coordinates, up, down, right, left, if (conditional statement), x, y, axis, sequence animate, loop, repeat, import, record, condition, robot, execute, if, then, else, true, false,	• I can design a program to make choices using commands and actions. • I can develop algorithms using repetition Vocabulary: Binary, series, base, on, off, data, digital. Record, field, file, database, search, chart.	Message, privacy, security, email, send, receive, inbox, log out, server, address, attachment, forward, reply
Block 4 - **Subject/Conceptual knowledge/skills:** Computer Science and Digital Literacy **LEAPS: <u>IAnimate</u>** • **I can identify what an animation is.** • **I can create a scene for an animation** • **I can understand that animations can be created using digital tools.** • **I can create an animated short story using a storyboard** **Vocabulary:** Image, camera, animation, stop, motion, illusion, onion, skin, effects, onion skinning, frame rate, FPS, CGI, GIF, 3D, design, plan, animate, test, debug	**Block 5 -** **Subject/Conceptual knowledge/skills:** Computer Science LEAPS: **<u>iProgram Unit 2</u>** • I know that robots have moving parts and can be programmed to follow instructions. • I know that sequences of commands can be replaced with repeats. • I know that robots can be programmed to respond to sensory data. Vocabulary: Sprite, blocks, programming, coordinates, up, down, right, left, if (conditional statement), x, y, axis,	**Block 6 -** **Subject/Conceptual knowledge/skills:** Information Technology LEAPS: **<u>Data</u>** • I know that computers represent data as numbers and count using switches of 'on' and 'off' (0 and 1). • I can understand the information that can be stored as numbers, text and choices. • I can search a database for answers. • I can create a simple chart. Vocabulary: binary, on, off, database, storage, text, charts, numbers, display, communication

	sequence animate, loop, repeat, import, record, condition, robot, execute, if, then, else, true, false,	

Computing – Year 5		
Block 1 **Subject/Conceptual knowledge/skills:** Isafe Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. LEAPS: • I know the benefits and risks of various modes of communication. • I know the safety rules and responsible behaviour when using new technologies. • I know the SMART rules for when using the internet. • I can understand the difference between communicating face-to-face and online. • I can explore the validity of online content and identify trustworthy sources. • I can understand cyberbullying and know what to do if confronted with cyberbullying. **Vocabulary:** E-safety, SMART rules, modes of communication, safety, technology, trustworthy sources, cyberbullying.	**Block 2** **Subject/Conceptual knowledge/skills:** Icrypto 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 **LEAPS:** • I know that messages can be sent and received secretly using encryption. • I can understand decrypt signalling messages. **Vocabulary:** Cipher, code, encrypt, decrypt, cryptography, key, signalling, semaphore, down, low, out, high, up, across, data, binary, dots, dashes, mores, dit, dah, on, off.	**Block 3** **Subject/Conceptual knowledge/skills**: IWeb 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 **LEAPS:** • I can explain the world wide web. • I know that information can be edited and changed on the web. **Vocabulary:** Internet, world wide web, email, instant messaging, skype, facetime, HTM code, hacking, remis, webpage, copyright, hyperlink, syntax, url, element. CSS.
Block 4 **Subject/Conceptual knowledge/skills:** IAlgorithm	**Block 5** **Subject/Conceptual knowledge/skills:** IProgram 1 Design, write and debug programs that accomplish specific goals, including controlling or simulating	**Block 6** **Subject/Conceptual knowledge/skills:** IProgram 2

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **LEAPS:** • I know that networks connect a group of things (systems). **Vocabulary:** Greater than, less than, equal to, linear, search, algorithm, network, connect, route, strategy, cooperation, algorithm, direction, navigate.	physical systems; solve problems by decomposing them into smaller parts **LEAPS:** • I know that computer programs using graphics use x y coordinates. **Vocabulary:** Sprite, up, down, left, right, xy coordinates, condition, if, boolean, true, false, variable, sense, change, type, string, number, store, memory.	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output **LEAPS:** • I know how to create a world and control a character using the Kodu programming environment. • I can use conditional statements such as when and do. • I can program an object to move towards another by sequencing statements. • I can amend a computer program to accept user input. • I can program objects to move along paths. • I know how to create 'levels' in a game. • I know that computer programs require a design before creation. • I can program a computer game using a design and a plan as a basis. **Vocabulary:** Sprite, up, down, left, right, xy coordinates, condition, if, boolean, true, false, variable, sense, change, type, string, number, store, memory.

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I can explore the validity of online content and identify trustworthy sources.
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Vocabulary:
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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

LEAPS:
I know that messages can be sent and received secretly using encryption.
I can understand decrypt signalling messages.
Vocabulary:
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