Glenmere Community Primary School
Skills and Knowledge Grid: Computing & ICT

Year	Computing system and network skills	Presenting information and creating multimedia skills	Data and information skills	Programming and algorithms skills	Knowledge
6	Type efficiently using both hands Use a range of keyboard shortcuts Recognise that different devices may have different operating systems Organise files effectively using folders and file names Use the advanced search tools when using a search engine to find specific information and images Explain the basic function of an operating system Recognise common file types and extensions, e.g. jpeg, png, doc, wav	Select, combine and remix a range of media to create original content Consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share) Identify the most effective tools to present information for a specific purpose Explain the benefits of using technology to collaborate with others Evaluate existing content in terms of effectiveness and design	Recognise what a spreadsheet is and what its used for Explain the difference between physical, mobile and wireless networks Use simple formulae in a spreadsheet to find out information from a set of data Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae Produce graphs from data in a spreadsheet to answer a question Analyse and evaluate data and information in a spreadsheet, chart or database Recognise that poor quality data leads to unreliable results	Design and program a physical computing system that uses sensors Recognise and use procedures (sub-routines) in a program Plan out a program to detail, including task, algorithm, code and execution level Explain common errors in programs and how to fix them Use nested selection statements in a program or algorithm effectively Combine a variable with relational operators (< = >) to determine when a program changes, e.g. if score > 5 say “Well done” Recognise key concepts (sequence, selection, repetition and variables) in a range of languages and contexts	Understand that programs can be “chunked” using procedures and that this is a form of abstraction. Understand that variables can be used to store data of different types. E.g. The score within a game usually consists of name and value. Understand that the content found has ownership and is protected by copyright. Understand and use the internet safely and respectfully. Understand how to be a good digital citizen and where to go for help and support. Understand data and information.
5	Type using fingers on both hands Use common keyboard shortcuts, e.g. ctrl C (copy) ctrl V (paste) Explain what makes a strong password Use folders to organise files Know how to mute and unmute on a computer or tablet Recognise that there is more than one search engine and they may produce different results Use a search engine effectively to find information and images Know how to search for an application on a computer/tablet	Identify and use appropriate hardware and software to fulfil a specific task Remix and edit a range of existing and their own media to create content Consider the audience when designing and creating digital content Recognise the benefits of using technology to collaborate with others Identify success criteria for creating digital content for a given purpose and audience Evaluate their own content against success criteria and make improvements accordingly	Explain the difference between data and information stored in a database, chart or table Appreciate that different programs work with different types of data, e.g. text, number, video, paper database Explain the difference between the Internet and the World Wide Web Know the difference between a search engine and a web browser Explain the basics of how search engines work Perform searches for information using advanced settings in search engines Recognise the benefits and risks of sharing data online Use, create and compare visual databases	Name a range of sensors in physical systems Recognise the different solutions may exist for the same problem Predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event) Use two-way selection in programs and algorithms, i.e. if …then … else Recognise variables in a program and what they do Create programs including repeat until loops Create and use simple variables, e.g. to keep score Evaluate a program and make improvements to the code or design accordingly Create an algorithm for a physical system containing a sensor	Understand and apply the three main programming constructs, sequence, repetition and selection. Understand how to plan out a program in detail, including task, algorithm, code and execution level. (levels of abstraction) Understand how files can be created and stored in the cloud and shared with others in real time so that they can be worked on collaboratively Understand how to communicate effectively in the digital world Understand how the internet works and the different services it provides. Understand how to find relevant, reliable content and be discerning about that content

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4	Recognise that you can organise files using folders Explain what a good file name would look like Delete and move files Use key parts of a keyboard effectively (e.g. shift, arrows keys, delete) Know how to copy/paste text into a document Crop an image and apply simple filters Use a search engine to find specific information Recognise that school computers are connected on a network	Collect, organise and present information using a range of media Design and create digital content for a specific purpose, e.g. poster, animation Edit digital content to improve it according to feedback Identify the features of a good piece of digital content and apply these in own design Explain the benefit of using technology to present information Know where to find copyright-free content, e.g. creative commons images Collaborate with peers using online tools e.g. blogs, Google Drive, Office365,	Draw conclusions from information stored in a database, chart or table Design a questionnaire and collect a range of data on a theme Choose appropriate formats to present data to convey information Recognise that data can be collected on digital devices and sensors automatically Use a computer program to sort data by attributes Present the same data in a graph and in a chart Know that you use a web browser to access information stored on the internet Appreciate that you need to use specific software to work with video, images, audio, etc.	Create a program using a range of events/inputs to control what happens Recognise that we can decompose a problem into smaller parts to help solve it Explain when to use forever loops and count-controlled loops, and use them in programs Recognise selection in a program or algorithm Use selection in algorithms in programs to alter what happens when a condition changes e.g. if … then Design a program for a purpose Recognise common mistakes in programs and how to correct them	Understand sequence and repetition programming constructs. Understand that algorithms are implemented as code and must be precise. Understand input and output (events and actions). Understand how to debug algorithms and programs Understand how to use digital devices to present information and data purposefully. Understand how to use multiple apps to create multimedia content for a purpose

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3	Recognise what a computer is (input>process>output) Explain the difference between input/output devices on a computer Know where to save and open files (e.g. in shared folder) Save files with appropriate names Use a keyboard effectively to type in text Use left, right and double-click on the mouse Add an image to a document from the Internet. Resize and move an image in a document Use a search engine to find simple information Recognise that school computers are connected	Present ideas and information by combining media independently, e.g. text, images Design and create simple digital content for a purpose/audience, e.g. poster Edit digital content to improve it, e.g. resize text Identify the features of a good piece of digital content Recognise why we use different types of media to convey information, e.g. text, image, audio, video	Recognise charts, pictograms, branching databases and why we use them Present information using a suitable chart Explore a record card database to find out information Use filters in a database to find specific information Name the key parts of a database, e.g. record, field, search Answer questions about information in a database. Create questions using yes or no Name some benefits of using a computer to create charts and databases Recognise that search engines store information in databases Compare databases and branching databases to pictograms	Predict the outcome of a block or text-based program (Scratch, discover Y coding) Modify an existing program e.g. change background, number of times things happen Identify repeated steps in a program or algorithm Create examples of algorithms containing count controlled loops Use a count controlled loop to make a program more efficient Recognise that we can create an algorithm to help plan out a program Recognise and use a forever loop in a program or algorithm Identify errors in a block or text-based program and correct them Recognise that different inputs can be used to control a program	Understand that we create algorithms to help plan and design a program Understand the processes involved in creating algorithms and then implementing them as a program. Understand decomposition Understand and use digital devices to capture and store content. Understand how text and images can be formatted Understand that information is data that has been processed.

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2	Recognise what a computer is (input>process>output) Recognise that a range of digital devices contain computers, e.g. laptop, tablet, phone, games console, smart speaker Explain what the basic parts of a computer are used for Identify and use input devices, e.g. muse, keyboard and output devices, e.g. speakers, screen Save and open files to/from a given folder Resize an image in a document, highlight text and use arrow keys Capture media independently (e.g. take a photo, record audio)	Create simple digital content for a purpose, e.g. digital art, poster Recognise that we can use technology to record and playback audio or take and view photographs Apply edits to digital content to achieve a particular effect, e.g. emphasise part of a text Present ideas and information by combining media, e.g. text and images Explain that you can search for information on the Internet Plan out digital content, e.g. a simple sketch or storyboard Identify the common features of digital content, e.g. title/images Recognise that we can use different types of media to convey information, e.g. text, image, audio, video	Recognise tally charts, pictograms, branching databases, and why we use them Explain information shown in a simple chart or pictogram Identify the key features of a chart or pictogram Collect data on a topic (eye colour, pets, etc.) and present in a pictogram or chart Modify simple charts/pictograms, e.g. add title, item, or labels	Explain that computers have no intelligence and we have to program them to do things Create a program with multiple steps, e.g to control a floor robot Predict the outcome of an algorithm or program with multiple steps Recognise that the instructions in an algorithm need to be clear and unambiguous Identify and correct errors in each algorithm or program and recognise the term debugging Explain what an algorithm is, and that when inputted on a computer it is called a program Plan out a program by creating an algorithm and evaluate its success	Understand that algorithms and programs are different Understand that when an algorithm is inputted into a computer it's called a program. Understand that programs execute by following precise and unambiguous instructions Use logical reasoning to predict the outcome of a program or an algorithm. E.g. Where will the programmable toy or on-screen sprite end up? Understand that computing devices can be used for creating different media Understand that computing devices have a memory and can store the media that is created. Understand that computing devices can be used to store and process data and information. Understand that IT is everywhere and plays a role in all our lives. Understand that there are many different types of computers Understand that many everyday devices and toys have computers or are controlled by computers.

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1	Name a range of digital devices, e.g. laptop, tablet, phone, games console Log onto the school computer, unlock the school tablet with support Identify the basic parts of a computer e.g. mouse, screen, keyboard Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer Open key applications independently Save and open files with support Add an image to a document from a given folder/source with support	Create digital content, e.g. digital art Choose media from a selection (e.g. images, video, sound) to present information on a topic Recognise that you can find out information from a website Recognise that you can edit digital content, e.g. filter on an image/font/size of paintbrush Combine media with support to present information, e.g. text and images	Recognise different digital forms of content. i.e, text, image, video, audio Collect simple data, (e.g. likes/dislikes) on a topic Present simple data using images, e.g. number of animals Recognise tally charts and pictograms and why we use them	Recognise that computers don't have a brain Explain that we control computers by giving them instructions Create a simple program, e.g. to control a floor robot, - create a simple algorithm Predict the outcome of a simple algorithm or program Explain what an algorithm is – a sequence of instructions to make something happen Recognise that the order of instructions in an algorithm is important Debug an error in a simple algorithm or program, e.g. a floor robot	Understand that an algorithm are precise step by step set of instructions to do something Understand the programming construct of sequence Understand the term debug and how to do simple debugging e.g for a bee-bot Understand input Understand that controls can be different depending on the device we are using. Understand that there is a range of computing devices Understand that many everyday devices and toys have computers or are controlled by computers
EYFS	Recognise and use different digital devices Recognise that you can access content on a digital device Use a mouse, touchscreen or appropriate access device to target and select options on a screen Recognise the basic parts of a computer e.g. mouse, screen, keyboard Select a digital device to fulfil a specific task, e.g. to take a photo	Use technology to explore and access digital content Operate a digital device with support to fulfil a task, e.g. marking making on a tablet Create simple digital content, e.g. art/patterns Choose media to convey information, e.g. image for a poster	Access content in a range of formats. E.g. image, video audio Answer basic questions about information displayed in images	Explore technology Repeat an action with technology to trigger a specific reaction Recognise the success or failure of an action Follow simple instructions to control a digital device Recognise that we control computers Input a short sequence of instructions to control a device	Understand that a keyboard and mouse is used to control a computer Understand that there is a range of computing devices Understand how to access computing devices Understand how to use basic tools of a simple program Understand how to sort objects (data sorting Understand that programming is a set of instructions