Churchfield Primary Academy Computing Long Term Plan 2020-2021

EYFS	Skills
Understanding the World: Technology **30-50 months** Knows how to operate simple equipment, e.g. turns on CD player and uses remote control. • Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. • Knows that information can be retrieved from computers • Support and extend the skills children develop as they become familiar with simple equipment, such as twisting or turning a knob. • Draw young children's attention to pieces of ICT apparatus they see or that they use with adult supervision. • When out in the locality, ask children to help to press the button at the pelican crossing, or speak into an intercom to tell somebody you have come back. **40-60 months** • Completes a simple program on a computer. • Uses ICT hardware to interact with age-appropriate computer software. **Early Learning Goal** **Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.**	**Communicating** • Use a range of devices to record information in a range of formats ie text, image, sound. • Interact with multimedia software. Make marks on a digital device to communicate their ideas ie art package, IWB, painting app. **Finding Out** • Use a shortcut to access a website. • Explore a website. • Collect and sort information using ICT. Produce a simple pictogram. **Models, simulations, control and programming** • Interact with simulation software. • Use an art package to produce a picture on screen. • Operate basic electronic equipment. • Control a programmable toy. **E-Safety** • Tell an adult if they see something on a digital device they don't like. • Know not to give out any information about themselves. • Know that care need is needed when using technology.

Reception					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I know how to log in to a computer with my username and password • I know the rules when using computers and technology in my school • I know that I must follow rules when using the internet to keep myself safe • I know who to go to for help when I am using the computers • I know that you can use computers to find information and to create exciting things • I know that a computer is not just for games • I know that a computer can help me to learn • I know that some information should be kept private and not shared with people I don't know		• I know that some devices need instructions to work • I know that instructions need to be given in the correct order • I know that devices may not work if the instructions are wrong • I can recognise devices that need instructions • I can follow instructions • I can follow a sequence of instructions in the correct order • I can recognise when I haven't followed the instructions correctly • I can give accurate instructions for others to follow • I can program the floor turtle to move from one place to another • I can sequence events in the correct order • I can recognise where the mistake is in a sequence • I can tinker and play with the floor turtle to discover what it can do • I can program the turtle to follow a given set of instructions		• I can recognise and name different types of technology • I can log on and off from a computer correctly • I can use a mouse to navigate around a screen and select options • I can print my work • I can talk about how devices can record both still and moving images	

Skills		
Communicating • Use a range of devices to record information in a range of formats ie text, image, sound. • Interact with multimedia software. • Make marks on a digital device to communicate their ideas ie art package, IWB, painting app. **Finding Out** • Use a shortcut to access a website. • Explore a website. • Collect and sort information using ICT. • Produce a simple pictogram. **Models, simulations, control and programming** • Interact with simulation software. • Use an art package to produce a picture on screen. • Operate basic electronic equipment. • Control a programmable toy. **E-Safety** • Tell an adult if they see something on a digital device they don't like. • Know not to give out any information about themselves. • Know that care need is needed when using technology.		

Year 1					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I know that everything on the internet is safe to visit and that I should only use websites I know are age appropriate • I know that if I am unsure of a website that I should check with an adult • I know that information stored online can easily found • I know that any information I share online about myself can be found by others • I understand what a digital footprint is • I understand what a cyberbully is • I know what to do if I feel I have been bullied online • I know how to treat people with respect • I know how to be safe when looking for information online • I can use a search engine and understand keywords		• I can follow instructions accurately • I can give accurate instructions • I know that accurate instructions are important • I know that computers follow instructions exactly as they are given • I know that algorithms are a sequence of instructions • I can write an accurate list of instructions I can follow instructions and recognise where there are mistakes I know that recognising and correcting mistakes in an algorithm is called debugging • I can follow directional instructions accurately • I know that algorithms needed to be written accurately to work • I know that a mistake in an algorithm is called a bug • I know that algorithms can be debugged to make them work correctly • I can program an onscreen turtle to follow my instructions		• I can recognise the difference between digital and traditional art • I can identify features of digital art • I can use technology to create digital images • I can reflect on my work and make changes • I can use a digital camera to take images • I can import images into my work and record information about it • I can use a digital photo editor to make changes to an original image • I know that a digital camera can take still and moving images • I can use a digital camera to record moving images and recognise some of the skills needed • I know that data can be represented in a pictogram • I know that a pictogram can display information clearly • I can collect data to create my own pictogram	

	• I know how the onscreen turtle will behave when given different instructions • I know who to debug my program to make it work	

Skills

Communicating

- Use a keyboard to enter and edit text.
- Explore a digital text.
- Use digital effects to change the appearance of text, sound and image to suit a purpose eg font, alignment and formatting.
- Take a photograph. Video record a sound using a digital device.
- Know how to save copy and paste images from the internet with support from an adult.
- Transfer digital resources between devices.
- Interact with icons in software and apps to create musical sounds and phrases.

Finding Out

- Select programs and apps, navigate screens and menus.
- Use ICT to create pictograms and use them to answer simple questions.
- Complete a table eg a simple spreadsheet and then create a graph to answer a question.
- Search a database.
- Access information on a range of digital devices.
- Navigate through websites, apps, information on a range of devices.
- Use a search engine.

Begin to identify and talk about how everyday devices with sensors work.

Models, simulations, control and programming

- Control a digital device by giving it instructions eg a beebot.
- Use an art package on a digital device to create an image.

- Predict the behaviour of a simple set of instructions
- Write an algorithm refining the instructions to achieve a desired outcome.

E-Safety

- Know the SMART rules.
- Know what to do if they view content they think is inappropriate or upsetting (school policy) eg know how to minimise a screen if they see something inappropriate on a website and tell a trusted adult.
- Know to keep personal information private when communicating online (This could be discussed when sending a class email).
- Learn to respect the work of others that is stored on a shared drive of a network or presented online.

Year 2					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I know that I should use a username and password to login to the school computer • I understand that it is important to keep this information safe and not share it with anyone • I can recognise the features of a powerful password • I understand the difference between communication in person and online • I know that I should always try to be respectful when communicating online • I understand that sometimes messages sent online can be misunderstood • I know that the internet allows us to communicate with people all around the world		• I know how to use the shortened form of commands when writing a program • I can predict what an algorithm will do • I can spot errors in code and debug them • I can write and test and algorithm • I can test an algorithm to see if it works as I expected • I can debug an algorithm so that it works as I expected • I can use a visual programming language to make a sprite move across the screen • I can recognise how the visual blocks compared to the language I used in turtle • I can explore Scratch independently		• I know that there are many different ways to communicate information • I know that sometimes information can be lost or misunderstood • I can use a digital video to record an event • I can add detail to the video to communicate information effectively • I can use a branching database to investigate questions • I know how to formulate yes/no questions	
Skills					

Communicating

- Combine images, text and sounds to create a simple presentation using appropriate software or app on an appropriate digital device.
- Create a simple stop frame animation.
- Sequence, delete and crop images with adult help.
- Arrange a musical sequence where musical phrases are represented by icons.
- Contribute to a class email or blog

Finding Out

- Input data into a simple database program and use it to answer simple questions.
- Use a database to produce bar charts.
- Use simple navigation tools including hyperlinks, menus, index, forward and back buttons e.tc to explore pre-selected digital information sources purposefully.
- Compare photographs they have taken which show change *eg clouds on different days.*
- View data and on screen measurements *eg sound levels, temperature, precipitation* collected in school and beyond through sensors and websites and apps.

Models, simulations, control and programming

- Create and debug a simple program to control an on screen object.
- Open a digital image from a file and add effects.
- Explore the effect of changing the variables in simulations.
- Select purposefully and use a variety of tools in a painting package eg the straight line, geometric shapes and flood fill tools.

E-Safety

- Begin to evaluate web sites by giving opinions about preferred sites.
- Know that anyone can create a web site and it is sometimes difficult to know if information is true.
- Know that online communication is not always confidential and that it can be monitored.
- Identify some risks presented by new technologies inside and outside school (eg online games, mobile phone texting, cyberbullying).

Year 3					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I know that I must be responsible both online and offline • I understand what it means to be a good digital citizen • I know who I can talk to if I need help or feel unsure about something I have seen online • I understand the implications of cyberbullying • I know how to respond to hurtful messages I might receive • I understand that I must be careful about the kind of information I share online • I know that information I share online could be seen by people that don't know me		• I can predict the outcome of a given algorithm which uses the repeat command • I can write, test and debug algorithms for regular polygons • I know that the exterior angles of a regular polygons have a total of 360^0 • I can use a repeat block in Scratch to program a repeating activity • I can alter the script in Scratch to change the way the program behaves		• I can recognise how text and graphics are combined in printed media • I can talk about how the way graphics and text are arranged affect the balance of the finished product • I can combine my own text and graphics to create a pleasing product • I can talk about the variety of ways in which we can listen to sounds around us • I can record and edit sounds and combine them to make a finished audio recording • I know what data is and how it is used to combine large amounts of information • I know how to use data effectively • I can use a database to collect, organise and store information ready for sorting • I can recognise different patterns in nature • I can find and record patterns in nature on a digital camera • I can display and discuss the images I have taken • I can recognise and discuss different styles of animations	

		• I can create an animation using paper and pencil • I can create an animation using the computer

Skills

Communicating

- Create a digital text which includes making choices.
- Capture video using a range of devices.
- Create a stop frame animation which includes a soundtrack.
- Make use of effects including transitions and animations to enhance their digital texts.
- Import video and sound into editing software and combine clips to make longer sequences.
- Manage digital resources on a range of devices.
- Communicate via email.

Finding Out

- Open a prepared database, and identify the main features: records, types of fields etc.
- Use the search tool on a simple database to find out the answers to questions by ordering records by a key field.
- Find images and text relating to a specific topic by using keywords to search.
- Answers specific questions on a topic by creating a report or presentation.
- Take readings as part of a science or humanities activity using a simple sensor(s) attached to a computer or data logger.

Models, simulations, control and programming

- Create a program which includes sequence, selection and repetition.
- Create and manipulate graphics within a graphics package, move, rotate and re-size graphic elements.
- Use tools to explore the effects of cutting, copying and pasting areas of an image.
- Record the outcome of choices in a simulation systematically to help achieve an outcome.

E-Safety

- Be aware of the school Acceptable use Policy and the SMART online rules: Safe/Meeting/Accepting/Reliable/ Tell.
- Know what to do if content is inappropriate or upsetting (school policy) eg know who to report to and talk to.
- Be aware that taking text or images from some sites may be stealing other people's work.
- Know to keep personal information and passwords private when communicating online (including email, blogging and instant messaging).
- Know they can create an alias or avatar when online.
- Know when an email should not be opened or messages ignored.
- Know how to respond to unpleasant communications via mobile phone, text, IM or email, chat rooms. (Save the message and show to a trusted adult).

Year 4					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I understand that I must keep my passwords safe and not share them with others • I understand the reasons why safe passwords are important • I know how to recognise junk email and spam emails • I know how to take care when checking the authenticity of email • I can share the information I know about emails and good practice • I understand the word plagiarism • I know that I should not copy any type of work that belongs to other people • I know that not everything you find on the internet is freely available to use • I know who I can talk to if I need help or if I am worried about something I have seen online		• I know what an algorithm is • I can write an algorithm • I can use an algorithm • I can improve my algorithm • I can write a program that uses a repeat command • I can explain what the repeats do in my program • I know how to sequence a set of instructions • I know how to write a procedure to teach the computer a new word • I can write a procedure that uses a repeat command • I can explain what my procedure does • I know how to create a custom block to teach the computer a new word • I know how the use the repeat block to repeat a set of instructions • I can explain what my script does • I know how to alter the values in the script to change the output		• I can identify the features of a good presentation • I can use my knowledge to create a presentation that is clear and easy to understand • I can recognise where data is collected and used in the real world • I know how to interpret the data presented in different graphing styles • I know how to update and amend data • I can collect data and represent it in graphical form • I can present information that is easy to understand • I can use the internet to research and collect information • I can choose the best way to present data to a given audience • I can plan and storyboard a film • I can edit and combine my film clips • I can add music to my film • I can add title credits to my film • I can produce a finished film to share with others	

Skills

Communicating

- Find media and download it from the internet.
- Capture still images from video independently.
- Use simple photo and video editing tools to change the appearance of images.
- Create and edit music and sound tracks using music apps or software.
- Share digital outcomes with a wider audience on the internet through a range of methods eg learning platform, blogs, podcast.
- Use video to communicate as a class

Finding Out

- Create a simple database with different types of fields and records.
- Use a variety of graphs to display the information, including pie charts, and discuss which type of graph works best for different kinds of data.
- Realise that information needs to be collected and entered accurately.
- Access a website by typing in the url, selecting from favourites or from the history.
- Skim and scan search engine results and look at their web address for clues as to their usefulness.
- Share information on a range of devices using cloud based technologies.
- Use appropriate sensors attached to a computer or data logging device to take readings to investigate a specific question or theory.

Models, simulations, control and programming

- Create a program which responds to various forms of inputs and outputs.
- Write a program to achieve a specific goal.
- Use logical reasoning to detect and correct errors in algorithms and programs.
- Explore the effect of changing the variables in simulations and use them to make and test predictions, changing the variables in a simulation to achieve a given outcome.

E-Safety

- Understand the Internet contains fact, fiction and opinion and begin to distinguish between them.

- Know when an email should not be opened or messages ignored.
- Know that the aim of many sites is to sell something or gain personal information.
- Understand that online communication is not always confidential and that it can be monitored.
- Know that anyone can create a user showing any age or gender and people you meet online may not be who they say they are (social networking, chat rooms and instant messenger).
- Know there are writing conventions for electronic communication (language, tone, accuracy).

Year 5					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I know the things I should do to keep myself safe online • I know that not all websites keep your information private and that some will share your details with others • I can recognise a safe and secure website • I understand what is meant by cyberbullying and how it can affect people who experience it • I know what to do if I feel unsafe online or need to talk to someone about something I am worried about		• I can recognise devices in the environment that rely on precise instructions to operate correctly. • I know that devices need precise instructions to operate correctly. • I can sequence a set of instructions in the correct order. • I understand the process of a flowchart and can explain what is happening. • I understand the symbols used in a flowchart and what they mean. • I can construct a flowchart for a given set of instructions. • I can investigate a Scratch script and explain what is happening. • I can alter and adapt a Scratch script to alter the behaviour.		• I know that not all images I see in different media are necessarily true and accurate • I can manipulate digital images to make them look different from the original • I can plan, design and film 3D animation • I understand the difference between different animation types • I can investigate a spreadsheet • I understand how a spreadsheet can be used • I understand why a spreadsheet is useful	
Skills					

Communicating

- Create a digital text which includes a range of elements for a specific purpose.
- Evaluate the design and layout of digital texts and use their findings to support the planning and design in their work.
- Produce content for a web page.
- Use a range of devices to create music .

Finding Out

- Create tables and graphs with more than one variable.
- Use the features of a spreadsheet to answer questions by producing graphs using sort and filter features.
- Download files from websites.
- Refine search techniques.
- Find specific information by searching an online database.
- Analyse information by transferring it into an appropriate data handling package eg Spreadsheets.

Models, simulations, control and programming

- Solve a problem by decomposing into smaller parts.
- Enter labels, numbers & formulae into a spreadsheet.
- Change data in a spreadsheet to answer 'what if...?' questions and check predictions.
- Select appropriate graphics tools to fulfil a design brief eg create an image for an advert.

E-Safety

- Use a range of sources to evaluate information found online, consider plausibility and develop strategies to make judgements on the sources used eg cross-referencing a number of websites.
- Understand the impact of an individual sending or uploading inappropriate content to a wider audience.
- Understand wikis are multi-authored and can be hard to verify (eg Wikipedia).
- Have an awareness of the need to check a resource has copyright or can be legally downloaded free of charge from the internet and whether it can be re-used.
- Demonstrate safe practice when selecting images or content for uploading to an online space.
- Understand some malicious adults use the internet to make contact and "groom" young children. Know how to report any suspicions (Think You

Know REPORT ABUSE page).

- Know when to reply to a group email
  using 'reply all' and when to 'cc'.
- Understand the importance of appropriate online behaviour and that online bullying is unacceptable. Know to whom to report any
- incidents

Year 6					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Online Safety		**Computer Science**		**Creativity**	
• I recognise how digital media has changed the way that people consume and share information • I understand what identify theft it and how it can affect people • I understand the reasons for keeping personal information safe • I have shared the key points I have learned about online safety with my friends and family • I know who I can talk to and what to do if I feel unsure about something I have seen online or feel worried		• I can talk about how I interact with computers and understand that this is not the same as creating media with computers • I can explain what the functions of the basic blocks in Scratch do • I can use the basic blocks in Scratch to create an interactive animation • I can design and create my own project in Scratch and discuss what it does and how it could be improved • I can explain how a project in Scratch is compiled • I can remix a project in Scratch to make it behave in a different manner • I can use Scratch to create a game for others to play • I can produce associated media that explains how the game works		• I understand the difference between the internet and the world wide web (www) • I can use a search engine effectively and understand the results are determined by the search term I use • I understand what is meant by the term 'the internet' • I know how information is transferred via the internet and how this information can be found • I know how people and countries can communicate through the world wide web • I can present information about the internet and the www suitable for a young audience to understand • I can explore a spreadsheet to find answers • I know how to input formulae in a spreadsheet to calculate different values • I can use a spreadsheet to model an event	

Skills

Communicating

- Use text, sound, image, video camera angles and framing editing tools and techniques to create a desired effect.
- Work collaboratively on an online document.
- As a class make use of video technologies to work collaboratively.

Finding Out

- Choose when to search when to sort and when to use a graph to answer questions.
- Create a database using more complex setup tools (eg Keywords) to answer specific questions.
- Recognise when data is implausible by checking data for accuracy against predicted or expected outcomes.
- Use the web based tools to ask a question, find out information or submit information or opinion.
- Create a presentation for a specific audience by gathering information from a selection of websites.
- Use a moderated website, video conference, forum, or learning platform to ask a question, submit information or offer an opinion.
- Use software to analyse and interpret data collected locally and remotely to investigate specific questions or theories.
- Build up a system that controls events in response to changing conditions.

Models, simulations, control and programming

- Produce a program to accomplish a specific goal which includes variables and a range of inputs and outputs.
- Use logical reasoning to explain how a simple algorithm works.
- Design & create a simple spreadsheet model using information from experiments and real life situations eg predict shadow length at different times of the day from initial measurements, convert one value to another.
- Use the layers tool in graphics software to create a complex design with several graphical elements.

E-Safety

- Check the validity of a website, eg look for the author via the 'Contact us' or 'About us' area of the website, or through 'Who is' sites that list the author's details.
- Understand the need for privacy settings on any social networking sites (and that those privacy settings may not be observed by online 'friends' who can use/share/download your images/content).

- Know the importance of not uploading other people's images or content without their permission
- Know that many commercial providers have sophisticated ways of trying to sell on the internet (eg hoax 'You have a virus' message box to sell antivirus software).
- Understand the need for privacy settings on any social networking sites (and that those privacy settings may not be observed by online 'friends' who can use/share/download your images/content).
- Understand the different audience of a school Learning Platform and an online social network.