Talbot 20-20 Curriculum Computing

In our Computing curriculum, there are **key threads** that run through and across year groups. These threads will be explored across the academic journey of a Talbot Child.

Each thread is underpinned by **key concepts and vocabulary** that will be explicitly taught in Computing

The key threads are detailed below, in addition to the concepts and vocabulary that will be explicitly taught within each year group. There follows an overview organised by academic year group, which lists the area of study, an overarching question, the key concepts, a precis of the unit and the skills and knowledge from the National Curriculum.

Key Threads						
Creating content	Online safety	Communication	Programming and decoding	Computer science	Data handling and representation	Media

Key Concepts & Vocabulary	
Year Group	
1	**Communication, online safety, programming and decoding, data handling, creating content, computer science,** algorithm, program, device, e-safety, digital content, trustworthy, experiment, manipulate, information, responsible, technology.
2	**Creating content, computer science, communication, online safety, media, data handling and representation**, algorithms, sharing, manipulate, when, if, e-mail, execute, bookmark, favourite, edit.
3	**Communication, media, programming and decoding, online safety, creating content,** virus, bug, attachments, transition, debug, program, when, controlled, command, click and drag.
4	**Computer science, Data handling and representation, online safety, media, programming and decoding,** record, field, data, cyberbullying, binary, image representation, text compression, error detection and correction, and information theory
5	**Creating content, computer science, data handling and representation, programming and decoding, online safety, communication,** scale, construction, graphic design, software, network, spanning tree, routing, formula, cells, input, output, function, blogging, gaming, layered, content.
6	**Data handling and representation, online safety, computer science, media, creating content,** formula, VLookUp, if function, social media, trolling, input, output, modify, screen capture, transitions, captions, accessibility.
* Bold type indicates key concepts	

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- To create and debug simple programs.
- To use logical reasoning to predict the behaviour of simple programs.
- To use technology purposefully to create, organise, store, manipulate and retrieve digital content.
- To recognise common uses of technology beyond school.
- To 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.

Explicit vocabulary taught across all units of work: Algorithm, program, device, e-safety, digital content, trustworthy, experiment, manipulate, information, responsible, technology.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 1	Key Skills and using IT	KQ – How does technology play a part in our lives?	Evaluate unfamiliar technology. Recognise the role it plays in today's world.	What can we do with technology in school? iPads, cameras, various programmes. What can we represent? Label different examples of technology in the school. Move on to tech at home, bring in examples for discussion points. Move on to key skills, opening programs, logging on, finding information, using QR codes, creating pictures, using the mouse.
use technology purposefully to create, organise, store, manipulate and retrieve digital content				
recognise common uses of information technology beyond school				
Aut 2	e-safety	KQ – Why do we have to stay safe online?	Responsible users of IT	Introduction to e-safety – what it is, why they need to stay safe online. Look at the sharing of personal information online, creating golden rules of being on a computer. Discussions about who children need to talk to if they are worried, and the trustworthy people around them. Look at 'online life' and what the internet can be used for. Create an avatar for their 'online profile'.
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				

Spr 1	Algorithms	KQ – Why are algorithms important?	Can understand and apply the fundamental principles and concepts of computer science	Discuss what algorithms are, and look at simple instructions in day to day life (making breakfast, brushing teeth etc. Give peers instructions to follow. Children to write simple instructions alongside images for a recipe, game, app. Link to how computers use algorithms and explain they work in the exact same way as we have been, by following clear instructions. Daisy the Dino – programming characters to follow commands. Introduce debugging – what's gone wrong, how do we fix it.
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				
Spr 2	Data collecting Link to Science	KQ – How can we use technology to create data?	Competent users of technology	Children to collect data in connection with their Science lessons – display on paper. Look at the different types of graphs that can be used on computers, seeing which is the easiest to access. Children to experiment using class data uploaded by teacher to see which is their preferred method of create data.
To use technology purposefully to create, organise, store, manipulate and retrieve digital content.				
Sum 1	Creating content Link to Humanities	KQ – How can we use software to create digital content?	Competent and creative users of technology	Linked to topic lessons for the half term. Children to recap how to use paint, 2paint and other various programs. Move onto book creator. Create a book all about the humanities topic, adding images, sentences. CHALLENGE – can they create a Kahoot! Quiz?
use technology purposefully to create, organise, store, manipulate and retrieve digital content				
recognise common uses of information technology beyond school				
Sum 2	Computer Science	KQ – How can we program and debug using knowledge of algorithms?	Apply principles and concepts of Computer Science	iPad based lessons. Using 3 different app which each focus on a different area of programming and debugging. Starting with Cargo-Bot – looks at the basics of programming. Children to look at Daisy the Dinosaur, using a sprite to create unique programs.
create and debug simple programs				
use logical reasoning to predict the behaviour of simple programs				

Year 1 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year One	
Knowledge	Skills
- What is an algorithm? - How do computers use algorithms? - How do we stay safe online? Who do we talk to if we are worried? - What technology is in our lives? How do we use it?	- Create digital content e.g. an interactive book with images. - Program computers using simple algorithms e.g. program a beebot to move from one play to another. - To be able to explain the golden rules of online safety and follow them.

Year 2			
Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- To create and debug simple programs.
- To use logical reasoning to predict the behaviour of simple programs.
- To use technology purposefully to create, organise, store, manipulate and retrieve digital content.
- To recognise common uses of technology beyond school.
- To 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.

Explicit vocabulary taught across all units of work: algorithms, sharing, manipulate, when, if, e-mail, execute, bookmark, favourite, edit.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 1	Bookmarking	KQ - How does bookmarking help us when researching?	Are responsible, competent, confident and creative users of information and communication technology.	Linked to Humanities Topic – the children will be conduction some research. Each week, they will look at a different area of their topic. They need to remember what pages they looked at as they need photos to support their facts next term. Look at bookmarking, how it is used and how it is helpful when you find a good page. They can then begin to add these pages to favourites tool bar to speed things up further.

To use technology purposefully to create, **organise**, store, manipulate and **retrieve** digital content.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 2	Scratch - programming	KQ – How do game characters work?	Understand fundamentals of Computer Science and are able to solve computer program related problems.	Recap on learning from Y1 – beebots being controlled by simple instructions. Talk about how all computers are controlled by algorithms (covered in Y1). Introduce Scratch. The children will be controlling the Sprite and making it act in different ways. This will be looking at using the 'block programming' - a simple click and drag into position, making sure they understand 'when' and 'if' concepts. Each week sees the children control the sprite in a different way.

To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

Spr 1	e-mails	KQ – How do e-mails help us stay connected?	Can evaluate and apply information technology	What are e-mails? How are they used? How are they different to letters? Talk about the potential e-safety issues which may arise – also once sent they can't be taken back! Very clear rules when using. Teacher to interact with the children via e-mails. Look at logging in, keeping passwords safe, not giving out details to anyone – cover Key Rules from Autumn 1.
To recognise common uses of technology beyond school				
To use technology safely and respectfully				
Spr 2	e-safety	KQ – What are the key rules when being online?	Responsible users of ICT	Children to learn the key rules of online safety – lock it, zip it, flag it. Recite these rules so they children know them off by heart, and what they mean/how they can ensure they are following them. Look at different scenarios and discuss how the children can stay safe in those situations.
To 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.				
Sum 1	Editing Photos	KQ – Are all photos natural?	Are responsible, competent, confident and creative users of information and communication technology.	Using the bookmarked pages, the children are to be taught how to copy and paste searched images. Again, recap on e-safety issues which may arise – what to do if an image comes up which they don't like. Model pasting into a word document. Using the word tools, children manipulate images using the features on Microsoft Word. Which are the most effective? Why? What editing looks best?
To use technology purposefully to create, organise, store, manipulate and retrieve digital content.				
To use technology purposefully to create, organise, store, **manipulate** and retrieve digital content.				
Sum 2	Recording data	KQ – What way is the most effective of showing data?	Are responsible, competent, confident and creative users of information and communication technology.	How did we display data in Y1? What other ways can we think of? Children to be given data each week, and look at different tables, charts and premade tools in Word which make them based on the data inputted. Are some ways easier to show key points than others? Is a graph always the best way?
To use technology purposefully to **create**, organise, store, **manipulate** and retrieve digital content.				

Year 2 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year Two	
Knowledge	**Skills**
- What the Key Rules of e-safety are. - How bookmarking helps us research. - Images can be edited and manipulated. - How e-mails have enabled people to stay connected all over the world. - Data can be shown in a variety of ways, and for different purposes.	- Recite the Key Rules and explain what Zip it, Block it, Flag it! means. - Program a character using 'when' and 'if' concepts. - Send and receive e-mails safely. - Bookmark key pages. - Copy, paste and edit images. - Display data in a variety of ways.

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- To 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.
- To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- To 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.
- To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Explicit vocabulary taught across all units of work: Virus, bug, attachments, transition, debug, program, when, controlled, command, click and drag.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 1	e-mail - attachments	KQ – What are the positives and draw backs of e-mails?	Responsible and confident users of ICT.	Building on Year 2 e-mails – recapping lessons learnt in KS1 about this, as well as the e-safety aspects of keeping information safe. Identify uses of e-mails – attachments, editing documents, sharing ideas. *How is this a positive? How could this be problematic?* Discuss computer viruses and the dangers of unknown senders.

To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

To 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.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 2	PowerPoints – transitions, timings and animation	KQ – How can we present information in an engaging way?	Competent and creative users of ICT	Whilst this is a ICT overarching activity, the children will be programming and debugging to ensure transitions and PowerPoints are engaging. Look at how to animate images and words. *Can you have a PowerPoint use transition independently?* Focus on Romans for context.

solve problems by decomposing them into smaller parts.
detect and correct errors in algorithms and programs.

To 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**.

Spr 1	Kodu – controlling and programming	KQ – How many ways can we control computer characters?	Practical experience of writing computer programs in order to solve such problems.	Recap scratch – *how were characters controlled? What skill did we use?* Show the children how Kodu and the basics in how it works. Children to control using keyboard – *can you have two people using the same keyboard to control 2 characters? What about pre-set journey?* In created lands, children to program and set movements for a range of characters using the 'when' command.
To use sequence, selection, and repetition in programs				
To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.				
Spr 2	Online Safety	KQ – Is all information online accurate and safe?	Responsible users of ICT.	Children to become more analytical of information stored online. Look at the well-known websites which may be used for researching – Wikipedia for example – and how they operate. Discuss the themes from e-mails of bugs and how websites aren't always what they say they are. **Look for the padlock in the corner**. Lessons around being aware whilst online of what their intent is.
To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				
Sum 1	Internet searching – how it works	KQ – How do internet search engines work?	Can evaluate and apply IT.	Through the History unit of invaders and settlers, undertaking research with one key question as their focus. Look at what happens if they limit the key words searched for – *how does this change the results? Is each result relevant?* Using skills learnt in Year 2 – children to bookmark best results for future reference.
To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.				
To 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.				
Sum 2	Scratch – quiz builder	KQ – How interactive can we make quizzes?	Understand and apply the fundamental principles and concepts of computer science – algorithms.	Linked back to Scratch from Year 2 – *how does scratch work? What are the basic skills needed? Compare to Kodu – easier? Different?* Practise using the different functions of Scratch – music, sounds, background changes. *What is needed in a quiz?* Investigate which bits they think are needed to an interactive and engaging quiz. Click and drag blocks into order. Need to debug if errors.
To use sequence, selection, and repetition in programs				
To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.				

Year 3 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year Three	
Knowledge	Skills
- The positives and negatives of e-mails - How PowerPoints can be used in an engaging manner to display information. - The need to be really specific when programming and instructing computers for game buildings. - How internet searches are ranked. - Some websites aren't as safe as others. - How to tell if a website is safe. - There is more than one version of coding and can talk about the difference type of coding.	- Attached, download, edit and send attachments in e-mails. - Program images, texts and slides with transitions – in some cases setting a timed limit on each slide. - Use concise algorithms to control a character in a game – use the keyboard to move this character. - Program character to move on a set path. - Use blocks for coding. - Search specific terms in search engines and be able to return relevant pages.

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- To 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.
- To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- To 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.
- To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Explicit vocabulary taught across all units of work: record, field, data, cyberbullying, binary, image representation, text compression, error detection and correction, and information theory				
Term	**Area of focus**	**Overarching Question**	**Key Concepts**	**Precis**
Aut 1	Data handling –top trumps	KQ – What types of databases do we use?	Can understand and apply the fundamental principles and concepts of computer science - data representation.	*What is a database? How are they used? How is data stored on them? How have we showed data in previous years?* Discuss simplistic data – charts, spreadsheets. This is more raw data – statistics. Top Trumps – simple record of data. Link to Ancient Egypt – gods and goddesses Top Trumps – need to be concise, informative and data easily taken from each record (card).
To 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**				
Aut 2	E safety	KQ – What is cyberbullying and why has it increased?	Are responsible users of ICT.	Cover the Golden Rules of e-safety. *What dangers are there nowadays for children growing up that people born in 20th century won't have faced?* Link back to the e-mail units – *What challenges are faced with this?* Discussions around cyberbullying – *what is it? What happens if we are faced with it? Who do we contact? Where is it most likely to happen?* Lots of work done around being responsible online – something written is always there (footballers, MPs losing jobs over historical posts).
To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				

Spr 1 and Spr 2 <u>**Shorter term in Spring 2 coupled with a week out on residential**</u>	Movie making – Hooke Court link	KQ – What effects and techniques make movies more enjoyable?	Are competent and creative users of ICT.	Teachers to take photos, videos and any other records of the trip to Hooke Court. The children are to use 'Photos' app to create a short video of their time on the residential. These images can be supplemented uses images from online. *What transitions did we use on PowerPoint? How are they similar to Photos?* Think about timings and effectiveness of their chosen animations – *are they all necessary?*
To 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.				
Sum 1	Data – representing information	KQ – How doe computers store data?	Can understand and apply the fundamental principles and concepts of computer science - data representation.	Link back to Autumn 1 unit – *what is data? How is it stored? What examples are there?* This unit is looking in depth at exactly how data and information is stored on computers. Children will look a binary, image representation, text compression, error detection and correction, and information theory. Working from CS unplugged.
To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.				
Sum 2	Kodu – events using 'when'	KQ – How do games use cause and effect for specific outcomes?	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	*What did you cover in Y3? Can you remember the functions you had to use in order to get your character to move?* Look at the use of 'when' in more detail. This unit has a focus more on events in the game, rather than person controlled events (not just when a key is pressed). This brings in the game creation themes – when hit a start get 10 points, when hit by a rocket game over). Pupils to learn how to programme other objects and robots to act in a repeated manner – follow a path back and forth for example. *Can these be integrated into a game scenario?*
To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.				

Year 4 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year Three	
Knowledge	Skills
- What databases are and the functions of individual databases. - The definition of cyber bullying and how it is affecting young people more and more. - How images can be manipulated and linked to make an engaging movie. - How to use transitions and effects to good effect. - Computers can follow a repeated algorithm until a given point. - How computers used binary and other forms of coding to store data.	- Create an effective database which is informative and factual. - Use a range of transitions and effects to program a movie. - Use binary and other codes to represent data. - Use the when function to control robots and sprites to complete a set task.

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- To 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.
- To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- To 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.
- To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content & contact.

Explicit vocabulary taught across all units of work: scale, construction, graphic design, software, network, spanning tree, routing, formula, cells, input, output, function, blogging, gaming, layered, content.				
Term	**Area of focus**	**Overarching Question**	**Key Concepts**	**Precis**
Aut 1	Sketch up	KQ – How can we use software for graphic design?	Can evaluate and apply information technology, including new or unfamiliar technologies.	Children to familiarise themselves with a new piece of software. There are many tools to use and this isn't the same format as any other software used thus far. Look at how to use graphic design skills to create a structure – this could be linked to the History topic of the Mayans if possible. Think about scale, line types, design of the actual building in terms of materials (tile, slate). Virtual space to be created, ensuring lines structure's lines and walls are accurately constructed.
To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing into smaller parts				
Aut 2	CS unplugged unit – Putting computers to work - Algorithms	KQ – How exactly *do* algorithms work?	Can understand and apply the fundamental principles and concepts of computer science – logic and algorithms	Pupils to use algorithms to solve a variety of problems. They will look at how they are used to reach a specific goal, or can be used to complete a task (Battleships). They will look at searching and sorting algorithms, networks and spanning trees, routing in networks and network connections. This is a CS unplugged unit based in the class.
To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.				
Spr 1	Excel - formula	KQ – Does using formula speed up calculations?	Can analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems.	The pupils will be building on from the CS unplugged unit completed in Y4 which looked at databases. So far, the coverage has looked at what a database is, how they are organised and what the information they can store. This unit will look at using formula to store data on a spreadsheet, using this formula to allow data to be inputted and scores outputted. Pupils to use the =sum formula. Look linking cells, copying formula by dragging cells.
To 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.				
To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.				
Spr 2	Programming –	KQ – How can	Have repeated practical	Recap on how Kodu works – programming using 'when' and 'do' functions. Discuss

	make a game	we make games interactive, challenging and engaging?	experience of writing computer programs.	how they can build on this knowledge to create a multi layered game which achieves a certain goal. End result will be a pupil controlled game which has computer characters working on pre-determined paths. This game will have events to end the game, scores points and ultimately move on to the next level.
To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing into smaller parts.				
To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.				
To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.				
Sum 1	E-Safety – online gaming	KQ – What are the dangers of online gaming?	Are responsible users of ICT.	Moving on from the previous unit, children will talk about what they use their consoles for – *Netflix? Amazon? YouTube? Xbox live? PS Network?* Talk about the dangers which have arisen from this – build on stranger danger from KS1, cyberbullying in Y4, and think about how the children can ensure they are safe online. *Can you use your avatar and persona created in Y2?* Pupils need to be made aware that they are becoming more and more responsible as users of ICT and the need for always being alert to potential online dangers.
To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				
Sum 2	Blogging	KQ – Can we safely connect with people outside of Talbot?	Are competent and responsible users of ICT.	Continuing with a focus on the e-safety aspects covered so far in KS2, discuss the purposes of Blogs and how they can be a really useful tool – updating friends and family about holidays, educational themes, school updates etc. They will be using the platform available on the Talbot Website, making their own blogging section. They will update each week, thinking about the content they are putting on there and if this a safe and responsible way to use it.
To 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.				
To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				

Year 5 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year Three	
Knowledge	Skills
- How computers have enabled graphic designers to make plans and blueprints. - Why scaling is important in graphic design. - Specifically how algorithms are used by computers to reach a given goal. - How networks are sorted. - The role of spanning trees. - The benefit of using formula to calculate a range of data. - How to create a multi layered game with various components which provide obstacles for users. - How online gaming has created new problems for children growing up the 21st century. - Blogging journalism and its role in keeping people up to date with news.	- Use new software to create a 3D space. - Design a structure having considered the over aesthetics. - Use Computer Science networks to explain how algorithms are used by all computers for every function it provides. - Input formula to a spreadsheet to calculate a range of data for a variety of reasons. - Use shortcuts so formula doesn't have to be inputted repeatedly. - Create a game by programming a variety of objects and robots. Include a multi layered element where there are obstacles and self-controlled elements on pre-planned paths. - Use blogs to update friends and family on weekly events. - Create safe and responsible content which is appropriate for the school site.

Year 6

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.	Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.	Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.	Are responsible, competent, confident and creative users of information and communication technology.

- To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- To use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- To 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.
- To use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- To 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.
- To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content & contact.

Explicit vocabulary taught across all units of work: Formula, VLookUp, if function, social media, trolling, input, output, modify, screen capture, transitions, captions, accessibility.

Term	Area of focus	Overarching Question	Key Concepts	Precis
Aut 1	Excel – IF formula	KQ – Is there a limit to using formula?	Can understand and apply the fundamental principles and concepts of computer science.	Using KS2 data from previous years (names changed for GDPR), children are to use excel to complete a range of analysis. They will learn to use colour coding, ordering, cells rules (if cell contains character > X, < X, between etc). Children to move on to VLookup function – use a table of pre-set data (raw score to scaled score) and link to raw score cells.
To 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.				
Aut 2	e-safety – social media	KQ – Should we be using social media?	Are responsible, competent, confident and creative users of ICT.	What is social media? What social media is readily available? Spend time discussing the different social media platforms and the risks that are linked to them. Focus on the age limits for each (a lot of them are 13 so none of the children should have any form of social media. What risks are there? How can we keep ourselves safe? Link back to cyber bullying and how this is much more prevalent on social media than ever before. Think about Trolling and the legalities around this. Social Media footprint – jobs, internet history etc.
To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.				
Spr 1	LEGO – DT Link	KQ – What links are there between Computing and Design Technology?	Can analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems.	With links to DT, the children will be controlling devices through Lego WeDo software. This unit sees the children working in small groups, building various lego models. This then links to the computer, where they can programme it to do different movements and actions. The links to Scratch are clear, with block coding and programming. Modifications can be made to their model to improve, and evaluate their approach after each model made.
- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output				
- Apply their understanding of computing to program, monitor and control their products. (DT OBJECTIVE)				
Spr 2	Screen capture	KQ – How can you apply your	Apply information technology, including new or	Children will create a How to video which can be used by other members of staff when they come to a programming unit they are unsure of.

		Computing knowledge to support others?	unfamiliar technologies, analytically to solve problems.	This unit will test the children's ability to code, program and debug, as well as being able to explain Lehman's terms how to complete each step. Using Windows + G, they will record what is on their screen and complete a series of short task (e.g how to make your rover move in Kodu, how to create a sprite in Scratch). They can then save these videos with various titles and small captions into the shared area for staff and children to access.
			To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	
			To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing into smaller parts	
Sum 1	Website building	KQ – Can we ensure we adhere to online safety guidelines?	Are competent and responsible users of ICT.	Using Wix.com, the children are to build their own website. This will be linked to a topic of their choice – it can be a unit from Year 6, or even a topic they have covered in previous years which they feel they can talk about in detail. Link back to previous lessons in KS2, where they have been taught to have a discerning eye when it comes to online content. *What responsibilities do we have if we are putting content online? Why is it important to ensure all facts are accurate? How can we do this?* Discuss finding research from a range of sources to ensure its accuracy. Webpage to have subpages, a welcome page, and a blogging section so to build on Year 5's unit.
			To understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and opportunities they offer for communication & collaboration.	
Sum 2	End of year video	KQ – How can technology create lasting memories?	Application of each 4 strands	A final unit which will bring together all of the skills learnt over KS2. They are to create an end of year/end of time at Talbot video which they can take away with them. They will have access to photos and videos of school trips throughout their time at Talbot. They will use the Photos program to create an engaging and memorable video, with music, transitions, captions included. These will be written onto a DVD by the school once completed.
			- To understand computer networks including the internet; how they can provide multiple services, such as the WWW; and the opportunities they offer for communication and collaboration.	
			- To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing into smaller parts.	
			- To use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	

Year 6 Assessment Fundamentals - The following skills and knowledge should be secure for all pupils by the end of Year Three

Knowledge	Skills
- Understand how excel has a range of functions which allows them to analyse data. - Know the different formula inputs and what function they have. - Be aware of the age limits for social media platforms. - Understand that cyber bullying is more prevalent than ever. - Social Media footprint can affect future prospects. - Know how Computing can support DT development, and how this is used day to day by manufacturing companies. - Understand the importance of checking facts and information before publishing. - Be aware of responsibilities when making websites. - Be aware of how to make an engaging and informative video.	- Use the VLoopUp function to link cells to pre-set items (tables, scores etc). - Use the IF function to order and analyse data. - Give a definition of trolling and talk about its impact on society. - Be able to say the age limits on a range of social media platforms. - Discuss how social media can affect prospects in later life. - Link DT products to computer software. - Use programming to make these products move. - Create a simple, yet informative video explaining various coding programs. - Create online, accurate and responsible online content. - Apply all learnt skills into a final, one-off video.

Computing Overview All Year Groups

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Key Skills and using IT	Online-safety	Algorithms	Data collecting Link to Science	Creating content Link to Humanities	Computer Science
Year 2	Bookmarking	Scratch – programming	E-mails	Online-safety	Editing Photos	Recording data
Year 3	e-mail - attachments	PowerPoints – transitions, timings and animation	Kodu – controlling and programming	Online safety	Internet searching – how it works	Scratch – quiz builder
Year 4	Data handling – top trumps	Online safety	Movie making – Hooke Court link		Data – representing information	Kodu – events using 'when'
Year 5	Sketch up	CS unplugged unit – Putting computers to work – Algorithms	Excel – formula	Programming – make a game	Online Safety – online gaming	Blogging
Year 6	Excel – IF formula	Online-safety – social media	LEGO – DT Link	Screen capture	Website building	End of year video