Computing Long Term Plan

Archbishop Runcie CE First School

Vision

The school first existed as a force for social change and we remember this within our historic original mission as we continue to inspire and transform the minds and hearts of everyone we serve today and, thus, the wider world. Everyone associated with our school will experience life in all its fullness, as promised by Jesus. We do so with Love and Determination.

Our original Mission

"A school for the education of children only of the labouring mining and manufacturing and other poorer classes in the Parish of Gosforth and for no other purpose."

Mission Statement:

At ARFS, we promote educational excellence, for everyone. Our purpose in education is to enable the children, families, staff, Governors and the wider community we serve to flourish. The Christian values of Love and Determination are at the core of teaching and culture within the school. We believe this makes us distinctive in the learning experience on offer. This is firmly rooted in the following epistle:

Be on your guard; stand firm in the faith; be courageous; be strong.
Do everything in love.
1 Corinthians 16:13-14

<table>
<tr><th>Intent</th><th>Implementation</th><th>Impact and Next Steps</th></tr>
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<td>At Archbishop Runcie Church of England First School, we recognise that technology is a central aspect of life today and that it has changed the world irrevocably and it will continue to do so over the course of our pupils' lives in ways that adults today cannot begin to adequately predict.

As such, the Computing offer at our school has a difficult balance to make: it must prepare children for the realities of technology use today, particularly in relation to staying safe online, whilst also preparing children for the future when current technologies will change even further. This means ensuring a knowledge-rich curriculum that gives children the means to think like computer scientists, something that is relatively timeless, is not limited to specific apps and links closely with mathematics and logic, whilst also ensuring that children can be appropriate technology users now.

We recognise that, as per the National Curriculum, 'a high-quality computing education equips pupils to use computational thinking and creativity</td>
<td>Because of these ambitious aims, it is essential that Computing is taught discretely and regularly from Reception upwards. Whilst there may be relevant cross curricular links (e.g. using knowledge of internet searching to find information for History), research suggests that there are weaknesses in an entirely cross-curricular approach (see Ofsted Research Review).

However, whilst it is limited to (a minimum of) one hour a week as a foundation subject, it means that the time given to Computing is even more precious and that there is even less time to 'waste'. As such, we use a tightly-organised curriculum that maximises teaching time.

Children begin their Computing journey in Nursery, noticing cause and effect, understanding how to use technology safely, and embedding some of the early knowledge required for Reception and beyond e.g. sequencing in order to program, and understanding that technology is a central aspect of life today. Even though the latest EYFS Framework does not mention technology, Computing is still 'taught' as part of the continuous provision and staff in Nursery make conscious Computing decisions.

In line with the National Curriculum and Ofsted Research Review, the school teaches Computing through three main content areas which act as 'pillars of progression':
- Computer Science
- Information Technology
- Digital Literacy
Within these subjects, however, there is a mixture of 'declarative' and 'procedural knowledge' – examples of this include the following:

<table>
<tr><th>Form of knowledge</th><th>Computer Science</th><th>Information technology</th><th>Digital literacy</th></tr>
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<td>The impact will be that children will be:
- Confident users of technology, able to use it for a wide variety of purposes.
- They will do so safely, knowing their obligations as digital citizens.
- They will see Computing as an exciting subject and one that they may wish to pursue as a career.
- Progress is evident both in terms of the curriculum but also the work produced which is assessed by class teacher and these results are analysed by the Computing lead</td>
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to understand and change the world' – this means going beyond (whilst still teaching) Information Technology and ensuring children have the complex knowledge required to think computationally.

Because of this, we believe that Computing is not a vocational subject but an academic one that happens to have real-life applications, but that such real-life applications currently have risks that children need to be made aware of in an age-appropriate manner. This means appropriate teaching of e-safety not just in Computing but also in PSHE and in how adults model computer usage.

A successful Computing education will not just create future billionaires (although we wish the best to our entrepreneurial pupils for the future!) but prepares children to think in a logical way, having applications in Mathematics, Philosophy, everyday rhetoric and myriad other subjects and which will be used to shape the world not just in terms of technology but in terms of thinking more broadly.

Declarative	What a loop is or how a conditional works	How information is best presented How formulae work on a spreadsheet	How to tell information may be false How to create a good password
Procedural	Implementing a repeat or conditional on a Microbit	Setting up an effective slide show Applying conditional formatting to make data clear	Performing an advanced web search and sifting information Using passwords

Whilst these pillars are not entirely discrete from one another, it does create a way of organising the learning effectively, both to maximise time and also to aid both inter-teacher and inter-class discussion as all children will tackle the same aspect at mainly the same time of year.

We begin the academic year with digital literacy and citizenship, focused not just on understanding the principles of safe computer usage but ensuring children are effective digital citizens – this is placed first due to its safeguarding importance. Where appropriate, some 'basic skills' are implemented alongside this, so that not all digital literacy lessons are 'unplugged'. Digital Literacy is informed by resources from Project Evolve (previously South West Grid for Learning) which is in line with the UK Council for Internet Safety's framework and is written by experts from the UK Safer Internet Centre. Some concepts are repeated deliberately (e.g. when to ask for help online) but taught in progressively more age-appropriate ways; others are sequenced due to being more apt for older pupils, with Reception largely focused on being kind online, Year 1 starting to think about ownership of items and early aspects of copyright, Year 2 focuses on safe searching, Year 3 on the nature of online data collection and privacy as well as online personalities, and Year 4 more complex ideas around 'fake news'.

The school strongly believes that the knowledge to use a keyboard, mouse and computer (as opposed to exclusively tablet) is crucial, alongside other devices. This is both due to the fine motor skills opportunities of keyboard and mouse usage and the

	continued ubiquity of computers. However, we recognise that previous curricula sometimes over-focused on how to use specific applications (e.g. Microsoft Office) thus any knowledge is designed to be broader than merely the procedural knowledge specific to the current version of, for example, PowerPoint – instead, it is about what it means to produce a good presentation, knowledge that is required in almost all fields and which is good in and of itself. Due to the importance of learning this knowledge early as a foundation, this forms the largest part of Reception's first year of Computing. Computer Science, due to the complexity of the learning and its academic importance, forms the bulk of learning from Year 1 upwards. This is through Code.org for discrete programming knowledge (which also provides links to digital literacy and information technology). From Year 2 upwards, there is an applied element in each year group to a physical object so that knowledge learnt through Code.org can be seen in a physical setting. Information technology units then form the remainder – this is sequentially planned to ensure that there is an appropriate degree of challenge. The curriculum has been and will continue to be refined both from practical use within school and external advice, including our computing consultants GEM Education and local networks in both Gosforth and Newcastle. In addition, the curriculum has also been discussed and agreed with our feeder middle school with close links continually built, particularly for our Year 4s. *Support: Screenshot coding images previous to the lesson as a 'cheat sheet' to be handed out during lesson for scaffolding*	

Nursery	Autumn Term	Spring Term	Summer Term
Continuous Provision throughout year	Use and operate simple technological toys in everyday life. Using technology in the role play area e.g. mobile phone, lap top, remote control, kettle, till. Using an iPad to compete a set program/activity. Using the interactive whiteboard to complete a set program/activity. Other Early computing skills such as algorithms and decomposition completed by responding to instruction, ordering and sequencing, working out different ways to do things and breaking problems down into smaller steps. This could be via creating/following a recipe, creating a treasure map and following daily routines.		
Computing focus	Cause and effect	Using technology safely	Computer Science – Algorithms and Decomposition
Activities to support	Children are introduced to simple technological toys such as mobile phones, remote controls and battery operated toys within the role ply area. Children are exposed to torches within the dark tent. (Autumn 2 – Dark nights, bright lights)	Children are taught how to remain safe when online via stories and activities (Clicking Chicken story, Traditional Tales internet safety)	Children are introduced to remote control vehicles, coding caterpillar, then Bee Bots.
Specific vocabulary to teach	Device, mobile phone, remote control, battery opersted, torch.	Internet, safety, iPad.	Remote control, Program, coding, direction (left, right, forward, backwards)
Why this? Why now?	Children are new to Nursery and exploring new play equipment. Cause and effect is an introduction to how when children complete an input (e.g. pressing a button) there is an output (e.g. turning on and off). This is the most simple concept and one children will likely understand from their own use of technology.	Links to introducing continued use of iPads to complete different programs and safer Internet day.	Progression of skills taught - Children have used positional language in maths and also been taught skills linked to algorithms and decomposition such and ordering and sequencing etc. Summer term topics are linked to travel.

Reception	Autumn Term		Spring Term			Summer Term	
Computing Focus	**Digital Literacy**		**Information Technology**			**IT and Computer Science**	**Computer Science**
Devices used	Mixture of unplugged and iPads	iPads		iPads and Computers Children visit IT suite in small groups		Children visit IT suite in groups of 15	iPads and computers
Computing concept (procedural knowledge)	**What do we do if we see something that makes us unhappy?**	**How can we use iPads to help us learn?**		**How can we use computers?**			**What is coding?**
	E-Safety	Continued E-Safety applied for iPads	BookCreator	Mouse skills Use of Paint		Keyboard	Coding – Code.org
National Curriculum Coverage (substantive knowledge)	**(Previous ELGs) ELG 15: Technology**: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes. **KS1 NC (preparation thereof)** Co2/1.5 recognise common uses of information technology beyond school Co2/1.6 use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies.		**(Previous ELGs) ELG 15: Technology**: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes. **KS1 NC (preparation thereof)** Co2/1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Co2/1.2 create and debug simple programs Co2/1.3 use logical reasoning to predict the behaviour of simple programs				
Specific vocabulary to teach	Safe Private Devices (phones, tablets, iPads, computers, laptops etc. – any term that a child may use to describe an internet connected device) Home button Lock button Mute		BookCreator Pages	Computer Mouse Keyboard Log in Username Password Colours	Fill Drag Drop Undo Redo	(As per Spring 1 plus…) Browser Internet Explorer/Chrome Address Bar	Debug Algorithm
Why this? Why now?	E-Safety initial focus as many of our children come to school already with independent access to tablets and phones		Children get to use their iPad and skills learnt in A1.	Preparation for KS1 and fine motor skill links.			Preparation for KS1 coding and introduction to basics of coding
Continuous Provision	iPad games to consolidate iPad usage			Beebot games e.g. Snakes and Ladders, mazes etc.			Microbits (programming name)
Possible lesson progression/ activities	Initial lessons follow Project Evolve sequences – these provide a good framework to begin lessons and discussions.		Children should consolidate the skills from Autumn's sequence within a BookCreator project linked to a topic.	This will be the children's first introduction to using computers. This sequence is deliberately *slow*. Note the significantly large amount of content in Summer 1 –		Children continue to consolidate their computer skills by working on their keyboard skills and begin	This will be the children's first introduction to coding bar first experimenting with

	The priority for Autumn term's focus is *safe* use of iPads and the continual reinforcement that children must seek an adult if they are unsure about anything they see on electronic devices. This sequence of lessons will be taught in small groups and fit in according to the Reception teacher's other priorities. E-Safety will be a conversation throughout the term. The Autumn 1 lessons are entirely focused on the basics of e-safety whilst Autumn 2 applies this in the context of iPad usage. Staff may wish to supplement this with continuous provision with appropriate apps once they are confident that Autumn 1's e-safety provision is clearly understood.		This sequence can be expanded and broken up further as the class teacher wishes. The sequence is broken up into the component parts of BookCreator. This sequence is *not* about teaching children to use BookCreator itself but is about applying simple concepts of Information Technology within a given context for a purpose.	the two terms may be joined together as appropriate. Paint is deliberately chosen as it is simple, fun, has potential to push more confident children who may wish to experiment more, and because the commands are applicable in many other contexts.	to be introduced to programming. Then, they look at being introduced to coding through a Beebots as a 'hook' before Summer 2.	Microbits. Teaching staff will likely want to begin to insert words like 'algorithm'
	1. Saying No and Asking for Help (Self-Image and Identity) Children should be introduced to the wonders of the internet. They should be shown things that are remarkable linked to their current learning. This could include use of Streetview to see the school or Google Earth, for instance. Children should discuss games they might play at home or have seen older siblings play (especially online games that involve communication, e.g. Among Us, Fortnite, Minecraft etc.) They should then discuss how to deal with when things go wrong, such as finding things they don't like. This lesson focuses on being able to say no and ask for help.	1. Using a tablet (Partially based on Health, Well-being and Lifestyle) Children should be introduced to what iPads are and label different parts verbally. They should be taught how to lock the screen and behaviour routines for correct iPad usage. You could then combine this with the Project Evolve lesson on creating rules for safe usage, recapping Autumn 1's learning.	1. Presenting information using Information Technology Children should be introduced to different books. They should then be shown ebooks and say they are going to make their own. Show your own WAGOLL BookCreator. Say you are going to create this over the term. Unpick what the components of the book are (the contents, the (limited) text, pictures etc.)	1. Logging into the computer and following ICT suite rules Focus initially on how to log in, as well as the Computer Suite rules. You will have to go into *lots* of detail – consider even where the keys are to type. When children are logged in, they can be shown to log off – consider using an additional staff member to then move them back to continuous provision.	1. Use the computer in order to access the internet and to use search Link to e-safety. Have children go to 'Dance Mat Typing' themselves through a desktop shortcut, explaining how this works. You can then, separately, show them how to access it through search – you will have to model this *very closely* as, for most children, it will be copying letter by letter…!	See Code.Org Course A. This includes basic programming concepts, such as loops and events. Lessons teach children to work collaboratively – the teacher should check each lesson beforehand and see where partner work may work well (ensuring that children are paired with someone similar in terms of computing confidence). This is a 12 lesson sequence. L1-6 should be covered and then can be picked up by the Y1 teacher in Autumn 1.

	2. Communicating online (Online Relationships) This lesson combines both Project Evolve resources on using technology to communicate. It begins by exploring ways that people communicate and then talks about communication in different ways on the internet. It builds on themes from the previous lesson in more detail.	2. Saving work Using a chosen app, you should create something with the children whole-group. You should be very proud of it (!) before you then 'forget' to save it and lose it. You should then discuss about how important it is to save what we do online and how even adults can forget to do this.	2.Creating a new book and saving it correctly. Begin by reconsolidating ideas around iPad usage. Go over instructions on correct usage and how to follow instructions. Experiment with creating a book and allow children to play with features.	2.Following instructions to open programs Practise the children following a set of instructions. Show before allowing children. Children are aiming to open and find Paint. This lesson will allow consolidation of L1.	2. Dancemat typing: Stage 1 and Stage 2	L1: Safety in my online neighbourhood (unplugged) L2: Puzzles involving dragging and dropping L3: Following precise instructions (unplugged)
	3. Personal Information (Privacy and Security) This lesson examines what we mean by personal information and looks at what is special to them (e.g. name, address etc.)	3. Work that belongs to me (Copyright and Ownership) Building on the lesson about saving, this lesson is about making sure children say who made online work. Combine both these simple lessons into understanding that all items they create need a name on, even virtual ones, whilst talking about the idea of ownership and how we respect the ownership of others. Discuss how they would feel if someone pretended someone else's work was theirs.	3.Insert pen drawing Children experiment with drawing, drawing something related to their chosen topic. Children select different colours and begin to experiment with different pens for different drawings.	3. Use fill and shapes on paint, dragging and dropping Introduce children to different shapes and the idea of filling. Children should continue to work on their mouse skills in this lesson as part of it.	3. Dancemat typing: Stage 2 and 3	L4: Sequencing with Scrat (Ice Age) – forming linear sequences. L5: Programming with Scrat (three parts – consider breaking up) L6: Programming with Rey and BB-8 – more complex application of L5
	4. Who to trust with information (Privacy and Security) This follows the previous lesson in examining who children can trust with their private, personal information.	4.Finding information online (Managing Online Information) This lesson sets the foundation for the next lesson. It explores where common information can be found online and how	4. Adding pages and pictures. Adding pages is a simple addition but pictures will require re-going over the contents of the safe searching.	4.Producing a picture Children should use the shapes and fill to produce a picture on Paint for a chosen purpose, simple purpose. *Remember to go back over saving!*	4.Typing in Word Children should then be asked to produce a simple Word document typing their name. You may wish to play with font colours and sizes but the main focus is on children being	

		different device scan use it.			confident in opening the application and typing.	
	5. Being Kind Online (Online Bullying) This is a very simple understanding of what it means to be kind in person and online and gives some examples of what this might mean.	5. Searching online Children should be shown *how* to search online. This will be built on later on in the year but it should be modelled then have children experiment with given keywords. Use Kiddle or other appropriate simple search engine and search for simple CVC words like dog, cat. Ensure that children are shown *how* to use it (e.g. not clicking the sponsored links – you may even explain what they're there for.)	5. Adding sound and beginning project. Children should then start to put together their project and add their own recordings.	5.Use undo, redo and text Teach children about the undo and redo buttons as well as how to add text within the classroom.	5.Use undo and redo within Word Children should go back to their document from L4 – if they didn't save it properly, then use that as a teaching moment! This then reteaches the knowledge from Paint and points out that the same buttons for undo and redo exist in Word too, as well as other applications.	
	6. Understanding how what we do online affects people (Online Bullying) This lesson is about how kind and unkind things online can affect others.	6. Searching online to answer questions This lesson should involve answering very simple questions using online searching. This will likely need to be heavily guided.	6. Produce short, multi-page book related to topic. This is a 'wrapping up' of the above and then children can present it to other children and potentially families too.	6. Create a finished item (e.g. a drawing of a house) Children can then go back to their initial picture in L5 and edit it to improve it.	6. Insert a picture Children should insert the picture they completed from Paint last term.	

Year 1	Autumn Term		Spring Term	Summer Term	
Computing Focus	**Digital Literacy and IT (Basic Skills)**	**Computer Science**		**Information Technology**	
Devices used	Unplugged, supplemented by computers (in groups of 15)	Computers (both in groups and paired as appropriate)	iPads and Microbits	iPads	Computers
Computing concept (procedural knowledge)	**Typing an email and sending it safely**	**Coding, using loops**	**Coding, using sequences**	**Use iPads to create a multimedia book**	**Use PowerPoint to create a guide to how Gosforth has changed over time**
	Keyboard skills (Dance Mat Typing) What an email is	Using algorithms in order to loop	Further looping and sequencing within Computing	Using BookCreator to create a book	Using PowerPoint and a range of file types (using file explorer to find and sort files)
National Curriculum Coverage (substantive knowledge)	Co2/1.6 use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies Co2/1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content	Co2/1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Co2/1.2 create and debug simple programs Co2/1.3 use logical reasoning to predict the behaviour of simple programs Co2/1.5 recognise common uses of information technology beyond school (specifically L10 of Course B – read below notes)		Co2/1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content Co2/1.5 recognise common uses of information technology beyond school (specifically L10 of Course B – read below notes)	
Specific vocabulary to teach	(Look at Reception units and recap these as well as…)	As per Reception Summer 2 plus… Loop	Sequencing App Events Microbits: On start / Forever	E-Book	Slide Files Jpeg
Why this? Why now?	Recap and extension of Reception learning and preparation for rest of school	Extension and continuation of Reception learning	Continued coding work – more challenging. Progression from Course A. Requires understanding of NEWS – this has been covered in Geography by this point in Autumn 1.	Extension from Reception. Specific link to Geography.	Links to History topic. Spiralling back to computer skills. PowerPoint a natural follow on from ebooks.
Possible lesson progression/ activities	This sequence is mainly e-safety but children should also have time to go to the computer suite to reconsolidate the knowledge taught in Reception. They should be reminded about ICT suite usage and logging and navigating to a website – ideally, children would complete the unplugged lessons separately and then have some	Begin by speaking with the Reception teacher about progress in Summer 2. You will want to recap considerable parts of this out of lesson – PE, for instance, will be a natural link to algorithms and loops.	Course B – Code.Org If Course A is not finished, ensure this is complete. This sequence can be completed on iPads 1:1 – you may continue to use computers for Spring 1 if you wish to still split the class but should be done on iPads by Spring 2 as iPads will be the main way Code.org will be administered. This is because iPads ensure that as much	There is some freedom in the curriculum with regards to timing as the Geography unit closely links to Science so some lessons overlap. This means that BookCreator is a natural fit for presenting findings.	This is about extending computer-based learning from Autumn 1 to ensure children are increasingly competent at PowerPoint usage. Remember that assessment isn't about

	time to do Dance Mat typing immediately afterwards.	As before, ensure that unplugged lessons are taught in full. These are essential to understand. These lessons should continue to be taught in the ICT suite – iPads can be used at a later stage. Some of these sessions do well with paired sessions.	lesson time as possible is dedicated to Computer Science rather than setting up of computers. L10 requires explicit understanding of iPads so children should be using iPads comfortably before then.	Note the initial lessons are discrete but how future lessons require links to Geography unit and consider closely where they will be placed in the curriculum.	historical inaccuracies (although these should still be addressed!) but should be focused on correct PowerPoint usage. The Gosforth link is a hook rather than an explicit part of the teaching. 'Be the teacher'-hook!
	1. Who to ask for help (Self-Image and Identity) You may wish to use both sets of resources under Self-Image and Identity for this. These lessons are focused on ensuring children know who to turn to when sad or upset and the importance of telling an adult, rather than simply 'forgetting about it' or stopping the chosen activity.	Code Course A, sessions 6-12 (Sessions which will work well if combined to ensure coverage: 8 and 9 – 11 and 12 (11 is unplugged) Sessions which will work well paired due to higher difficulty: L10 and L12 Other tips: Monitor progress closely after the session. Note any interventions related to improving Computing in the 'Rapid Response' book. Often, it will just need a small amount of guidance. This course works well for poorer readers but you may still need to be on hand for some instructions.	L1: Digital Trails (Unplugged) This is a dedicated e-safety lesson and should be carefully taught. You may wish to double it up with PSHE time. It is an extension of 'Keeping it private' from Autumn 1.	L1: Recap using BookCreator Look at Reception Spring 1 lessons. Recap this and have the children experiment initially.	L1: Experiment with PowerPoint Go over the basics of the Windows interface. Have the children experiment with PowerPoint free-form and discuss some of the basics. As a plenary, have the children open up an exemplar PowerPoint.
	2. Asking Permission (Online Relationships) This lesson looks into when and how children should ask permission to do things online.		Sequencing: L2-5 The initial unplugged session requires secure understanding of compass directions. Consider pre-teaching as necessary.	L2: (Reactive E-Safety) Either use this slot to go back over an e-safety lesson of your choice or, if unsure, 'Keep It Private'. Have the children create a Book using previously taught concepts. Show as a whole-class and evaluate (2* and a wish etc.)	L2: Place pictures and text using PowerPoint and correct saving Discuss importance of saving repeatedly and talk about ways to save (ctrl+s or File-G Save As) and where it should be saved. Have the children place a series of pictures saved on the P drive and appropriate text captions using text boxes.
	3. Personal Information (Privacy and Security) This lesson extends the work completed in Reception about which information is particularly personal and needs to be protected. You should also delve a little into the lesson about asking a trusted adult before sharing this information.				
	4. Knowing that Information online can be copied (Online Reputation) This builds on the prior lesson by exploring the idea that private		Loops: L6-9 Consider carefully about where this might fit in with regards to the end of term and ways to recap if this sequence spreads out over Spring 1 and 2.	L3-5: Create an e-book related to the best place to plant a sunflower Using the evaluations as part of a 'dry run' to	L3-5 Create a PowerPoint about how Gosforth has changed over time. You will need to create a bank of relevant pictures

	information can stay online forever. 5. Knowing that other people's work belongs to them (Copyright and Ownership) This lesson is similar to some of the Reception themes but is designed more to explicitly talk about how things belong to others. 6. Not everything on the internet is true (Managing Online Information) This lesson will explore quite a difficult concept but at an appropriate Year 1 level – the idea not just that online has things we don't like but that sometimes there are jokes and things that aren't true. If there is spare lesson time, it would be good for children to 'write up' some of the things they learnt from this lesson on a computer to further practise typing skills.		L10: The Right App (unplugged) This links to NC 1.5 (see above). In addition to the lesson plan, consider ways to discuss where computers are used beyond the classroom. L11 and 12: Events This is quite a conceptual leap as it is encouraging the children to think more about conditionals within programming. Ensure that you are very comfortable with the topic before teaching as children may require extensive prompting. Microbits 3 Lesson Sequence: Children will already have been exposed to Microbits briefly at the end of Reception. However, children should now be told they will be programming using something real. Children should first be shown Microbits and allowed to play with blocks e.g. showing name. They should then do **Rock Paper Scissors** (L2) and a **dice for a board game** (L3). This will consolidate the idea of loops within Microbits.	improve, have the children work to producing an e-book that is the best place to plant a sunflower. Children should be encouraged to use a wide variety of media types. Show how to take screen shots and how to implement these.	and sources. It will be best to use those from lessons. Have the children create a PowerPoint 'lesson' on the history of Gosforth. This could be either for Year 2 or Reception and have some present it for L6 or do it purely within the class and practise PowerPoint presentations.
Miscellaneous notes	Note that in Autumn 1 children should spend some time in Computer suite alongside unplugged e-safety. You may also wish to 'top this up' in Autumn 2 if there is adequate time.		If there is inadequate time to complete, children should be exposed to Events briefly before going onto Microbits.	Set up individual pupil folders in which all work is saved on P drive	

Year 2	Autumn Term		Spring Term	Summer Term	
Computing focus	**Digital Literacy and Information Technology**		**Computer Science**		**Information Technology**
Devices Used	**Unplugged and Computers**	**iPads**		**iPads and Microbits**	**Computers**
Computing concept (procedural knowledge)	**E-Safety and Word Processing**	**E-Safety and E-Book creation**	**Coding and debugging**	**Coding for a practical purpose**	**Using word processors (advanced)**
Skills	Keyboard skills Word processing	Safe internet searching	Coding: Problem solving and advanced debugging with loops and events	Coding and debugging using a real-life device	Saving & Retrieving own work from Network
National Curriculum Coverage (substantive knowledge)	Co2/1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content Co2/1.5 recognise common uses of information technology beyond school Co2/1.6 use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies.		Co2/1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Co2/1.2 create and debug simple programs Co2/1.3 use logical reasoning to predict the behaviour of simple programs Co2/1.6 use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies.		Co2/1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content Co2/1.5 recognise common uses of information technology beyond school
Specific vocabulary to teach	Hyperlink Microsoft Word/word processors Copy and paste Table	Embed Safe searching Search engine	Programming language	Binary Microbits: Buttons A and B	Font
Why this? Why now?	E-Safety focus to begin with before applying to practical use	Progression within BookCreator and further application of skills from A1.	Further progression of coding as part of the sequence of computer science throughout the curriculum	Coding used for practical, real-life object	Repeating link from Autumn 1 and ensuring that touch typing is still part of the focus
Possible lesson progression/ activities	This sequence uses Project Evolve as a precursor to introducing Word Processing more formally (briefly explored in prior year groups). 1. Knowing that issues online can make others sad or worried and what to do (Self-Image and Identity) This lesson is a more age-appropriate version of prior Digital Literacy lessons in Autumn 1.	Liaise closely with the Year 1 teacher to see what progress was made with BookCreator in Summer 2 before teaching this topic.	Creating programs with loops and events – children will translate their initials into bindary, investigate different problem-solving techniques and discuss how to respond to cyberbullying. At the end of the sequence, they will create their own game. Note that L1 and L2 are specifically unplugged e-safety sessions and may be expanded or joined with PSHE as necessary. These sessions *will* go over into Summer 1 but this is fine as there is also the Microbits sequence of three lessons complete.	Continue with Course C L8 Binary L17 – Picturing Data L18 – End of course project	Consider recapping dance mat typing and finishing all levels before beginning. Children will already have had a small amount of word processing experience from Autumn 1 and this is about extension thereof. *Continue to ensure saving and retrieving work is embedded.*

	2. Giving or denying permission (Online Relationships) Look at the lesson plan for both 'I can describe different ways to ask for, give or deny my permission online' and 'ask a trusted adult before saying yes, agree or accept online'.	2. Using Keywords See L4 from SWGfL. This is about safe searching. Children will use this to formulate a basic research project to learn about safe searching. This lesson is essential to embed as it forms the basis for future research lessons in other subjects.	L1 and 2: Putting a stop to online meanness + Password-Power Up Discrete e-safety lessons linked to coding topic. L3 – 7 Advanced Sequencing and Debugging Unplugged session L3 will link in well with PE. Artistic		L1: Varying font size for information. Give children a range of information linked to Grace Darling topic (child appropriate and easy to read). Have children consider different ways of presenting it for clarity and then discuss altogether. Children may wish to experiment with tables as per Aut 1. L2: Continued font size and adding pictures After peer critique, children go back to document and present information. They also add pictures, retrieving them from files within the P drive.
	3 and 4: Navigating Webpages + Using simple keywords (Managing Online Information) This lesson and the next are unplugged but then should be practised in the computer suite in preparation for the final lessons.	3. Further use of keywords in practice Link to everyday materials topic. Set the children a research-based session where they have to find specific images then specific information using vague instructions. *ENSURE THAT YOU PRACTICE ALL POSSIBLE SEARCHES BEFOREHAND OR USE SQUIGGLE*	L9 – 13 Loops They begin to look at conditionals in later sequences (particularly L12) – be mindful of this when teaching and examine closely.	Microbit lesson sequence: Creating more complex applications Begin by recapping Microbit from last year. Introduce **Pet Hamster** project – this will take one lesson but is a good way to recap previous learning whilst being more complex than previous projects (has more features).	
	5.Understanding not everything online is true (Managing Online Information) In addition to this particular lesson, children should be given a list of reputable websites – this might include institutions	4 and 5: Produce a guide for searching for information about every day materials Tell the children that Year 1 also do Everyday Materials in Science and need help researching. Have the children produce a book using BookCreator on safe searching guidance. Through liaising with Year 1 teacher, check what they managed in	L14 – 16 – Events L15 is a longer session and will likely need more time dedicated to it (Flappy Bird-style game). *Children should start to be given word passwords, rather than pictures, for their Code.org account in preparation for KS2 password use.*	Microbit L2: Countdown This ensures further understanding of loops. Children should experiment with different forms of countdown.	L3 and L4: Recognising other people's work belongs to them and attribution (Copyright and Ownership – Project Evolve) As children are going to be using other people's research and work, these are unplugged lessons designed to make sure children remember to attribute other people's work.

	like BBC and particular online encyclopaedias. 6. Creating a hyperlink table on Word Children should use websites they know are trustworthy to then create a table on Microsoft Word. They will need to be taught this explicitly before they then use the hyperlinks. This work could be done in pairs as a whole-class.	BookCreator then to add further progression.		Microbit L3: **Microchat** This project allows children to begin experimenting with communicating between Microbits.	L5 and L6: Collating pictures and research This lesson is further extension of online research from Autumn 2. Children should create a document on an animal related to their Science topic. Discuss ways of researching and recap keyword usage. Discuss how to find pictures and research. Ensure that, like with L2, peer critique occurs.

Year 3	Autumn Term		Spring Term	Summer Term	
Computing focus	**Digital Literacy and Information Technology**		**Computer Science**		**Digital Literacy and Information Technology**
Devices Used	**Mixture of unplugged and computers**		**iPads**	**Microbits and iPads**	**Computers and iPads**
Computing concept (procedural knowledge)	**E-Safety**	**E-Safety, Advanced Searching and Presenting Data**	**Coding: Debugging and the use of conditionals**	**Coding with practical systems**	**Utilising multiple programs to put together a presentation**
	More complex ideas of security and privacy applied to a presentation aspect	Searching from the internet and discerning results; presenting data clearly	Coding, developing conditionals, loops and events	Adding real-world variables and creating games	Using different programs to edit information and make it clear
National Curriculum Coverage (substantive knowledge)	Co2/1.4 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 Co2/1.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content Co2/1.6 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. Co2/1.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		Co2/1.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Co2/1.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output Co2/1.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs		Co2/1.6 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.
Specific vocabulary to teach	Two-factor authentication	Search ranking	See Code.org guidance		Branching story
Why this? Why now?	Age-appropriate progression of e-safety from prior year groups. Continued application of IT use.	Extension of searching from previous year groups appropriate to NC objectives. Application of e-safety objectives.	Continued work and progression within coding (Course D)	Progression with Microbits	Extension and collation of different activities on different programs from previous topics.
Possible lesson progression/ activities	1. Understanding different identities online (Self-Image and Identity) This lesson explores how people use different personas in different spaces e.g. social media vs an online game and why this is important, linking back to previous learning on	This sequence builds upon prior learning in Y2 to more complex searching.	This sequence builds upon prior learning and involves increasingly more complex use of conditionals (if x happens, then y). There is also an increased reliance on the children's ability to read code and an expectation that children will be used to the idea of trialling, debugging, and trying again. Especially for some of the more complex lessons as noted below, you may wish to model some of the lesson beforehand.	Begin with finishing Course D from Spring before progressing to Microbits.	Sequence that extends teaching of PowerPoint by creating a branching story.

	private and personal information.				
	2. Understanding that knowing someone online differs from offline (Online Relationships) Although this looks at potential relationships between people online (e.g. having a friend on a game), this is particularly apt for online personalities and links closely to the lesson before.	1. Using key phrases to search (Managing Online Information) Children use three keywords and note how the order changes the results. Ensure that it is applied within the computer suite.	Sequencing L1-L4 L1: Unplugged Graph Paper Programming – especially if the class is relatively less confident with Computing, go over this slowly.	Code.org L16-18 L16 and L17: Binary L18: Digital Citizenship	L1: Plan a branching story Show children a range of branching, choose-your-own-adventure type stories. Show a simple ready made example – this planning lesson should be unplugged but ensure children keep a simple story. Show how complex it can get the more choices you give. Present it akin to programming and show how this is just like creating a game.
	3. Understand how connected devices collect and share data (Privacy and Security) This lesson looks specifically at how devices can collect data and its implications – have children consider closely how many devices have their data.	2. Understanding autocomplete (Managing Online Information) After teaching the unplugged aspect, have children build upon this lesson and the last when searching.	L5-L7: Events	4 Lesson Sequence Microbits Creating games with Microbits. This sequence has children create two simple games then experiment by making one of their own.	L2: Creating slides First part should be checking and planning story. The second part should be recapping prior PowerPoint learning and ensure children are comfortable with creating and using slides.
	4. Understand why online activities have different age limits (Health, Well-Being and Lifestyle) This looks at age-restrictions in different contexts and	3. Understanding search ranking This lesson is not on Project Evolve and will require separate planning and resourcing. Building upon L1 and 2, examine how searches are ranked in particular ways –	L8-10: Loops	**L1: Creating a pedomenter** **L2: 7 Second game** **L3: Tug-of-LED**	L3: Slide transitions Show how you can add transitions in different ways – children will love many of the more dramatic sequences which may work better with the stories.

	reiterates key ideas of who to talk to if uncertain.	discussion of advertised links begins back in previous years but there should be examination in how search ranking can be used when trying to identify items.		The pedometer creates a new variable before creating two games. These two games are two quite different types of game that children can play on the Microbit and make easily. It gives them the building blocks to create their own game.	L4-L5: Adding audio and picture Children to use audio and pictures from both the internet and of their own creation using iPads. Discuss how to port files over and how to do so safely. Ensure a close e-safety link (e.g. not using pictures of other children without their permission)
	5. Appropriate online behaviour towards others (Online Bullying) 6. Produce a presentation for younger children outlining all of the above learning In preparation for the more complex presentation work in Summer 2, children should produce a detailed PowerPoint that they could present to Years 1 and 2 (as it also links to their own learning thus far).	L4-L6: Presenting research Related to the History topic, children should research a specific aspect and put together a simple information resource using Word. As part of this, you should teach basic keyboard commands such as CTRL+Z +Y +C +P etc. Discrete lesson: Green screen Christmas cards	L11-15 Conditionals This is perhaps the most challenging material the children will have experienced. Review the material closely before teaching.	**L4: Create own game** This may need some careful plotting and design outside the classroom prior to coding. Children should use the tools to create their own game – simple ideas may be variations of the two games prior, but children should be allowed time to experiment. They may wish to use the pedometer feature.	L6: Finishing the story and presenting to others Similar to in Autumn 1, it may be good for children to show off their work to other year groups.
	Children should have their own unique logins given to them for Y3. They should be given a simple password to remember (see Autumn 1 Y4 for further password teaching).		*BookCreator is no longer taught as an explicit unit within KS2, but revisiting its use through other subjects should be considered closely.*		

Year 4	Autumn Term		Spring Term	Summer Term	
Computing focus	**Digital Literacy Information Technology**		**Computer Science**		**Information Technology**
Devices Used	**Mostly unplugged with some computers**	**Mostly unplugged with some iPad (green screen)**	**iPads/GCMS Computers**	**Microbits**	**Computers in IT Suite**
Computing concept (procedural knowledge)	**E-Safety**		**Coding: Functions (programs within programs)**	**Self-directed projects within coding**	**Using a variety of programs including spreadsheets to produce a database**
	Understanding more about personal information	Understanding about fake news	Coding, with further use of conditionals, loops and events and introduction to functions	Practical coding	Cross-curricular maths link – presenting data including graphs
National Curriculum Coverage (substantive knowledge)	Co2/1.4 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 Co2/1.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content Co2/1.6 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. Co2/1.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		Co2/1.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Co2/1.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output Co2/1.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs		Co2/1.6 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.
Specific vocabulary to teach	Plagiarism Social networking Cyberbullying		Sprites	Accessibility	
Why this? Why now?	Age-appropriate progression of e-safety from prior year groups. This explores more complex topics of e-safety in further depth due to the children's age and about getting them ready for middle school – contextually, it is often middle school where children are given more independence e.g. their own personal mobile phones.		Continued progression within Coding (Course E)	Capstone project from Code.org introduces children to the idea of self-ownership and picking their own project before doing the same for Microbits	Children apply their logical reasoning to a different program, Excel, first by collating data then presenting it (graphs).
Possible lesson progression/ activities	Children should be confident at computer usage by now but this may need further revisiting at the end of unplugged lessons as necessary. You may wish to drip feed aspects of Excel in for L6.	1. Understanding that lots of people having an opinion online does not make it trust (Managing Online Information)	Continues in Summer 1 L1-4 Review of conditionals and 'if' statements	Initially finishing Course E before progressing to Microbits Course E L18: Designing for Accessibility (PSHE link)	Children to create a spreadsheet for an end of year party. 1. Re-introduction to Excel

	1. Being respectful online (Online Relationships) This lesson includes quite complex scenarios where multiple people are at fault and it requires more detailed thinking about *where* disrespect was shown through device misuse.				Who uses spreadsheets? Why are they important? Ensure children are confident with cells, rows, columns, the formula bar and identifying the names of each cell. This lesson should build upon the initial work in Autumn 1.
	2. Creating effective passwords (Privacy and security) This lesson has a range of different passwords for children to consider. They should then create their own and have this as part of their own school login.	2. Understanding how to search for information from a wide variety of sources (Managing Online Information)			
	3. Recognising how bullying can look different in different media (Online Bullying) Begin first with exploring what bullying means again. Then, explore how different media might lead to different negative behaviour and how to counteract that.	3. Understand how websites encourage you to buy things (Managing Online Information)	L5-7 Sprites	L19 (Three/four lesson capstone project) – children pick their own project to begin and evaluate together.	1. Inputting simple data Give children simple data to input (data for food costs related to party). Encourage children to use the number pad for speed. Show children how to use the sum.
	4. Understand that internet use is never private (Privacy and Security)	4. Understand how websites can impersonate people using bots (Managing Online Information)			
	5. Understand what the digital age of consent is (Privacy and Security)	5. Explain what fake news is (Managing Online Information)	L8-10 (2x Unplugged) Digital Citizenship This focuses on what to share online and whatnot to.		2. Presenting information more clearly, including

					conditional formatting Show children how to use conditional formatting. This is focused on making information easier to read – consider how easy it is to read the spreadsheet produced in L2 compared to when it is presented in a clearer fashion with conditional formatting.
		6. Create fake news using green screen To progress from Y3, this should also include some computer usage highlighting fake news. Consider presenting it to the school.			
	6. Complete a spreadsheet detailing the sites that school may share your data with		L11-13 Nested Loops	3 Lesson Microbit sequence: Robot Wars	3. Tallying choices, including =COUNT Children should be asked on their food choices and made to complete more complex
			L14 -17 Functions		5+6 Putting a spreadsheet together
	Note that L2 has password creation – children should put this into effect afterwards.		BookCreator is no longer taught as an explicit unit within KS2, but revisiting its use through other subjects should be considered closely.	**Work with GCMS to ensure handover including use of Google Suite**	

Appendix - Useful Links

Website	Context	Additional Information
Project Evolve https://projectevolve.co.uk/	Used for Autumn 1 Digital Literacy lessons.	Use this as directed above. It can also be used to supplement PSHE and for reactive issues – search by 'strand' to find specific lessons.
Microsoft Microbit https://makecode.microbit.org	Used for Microbit sequences	This isn't the only site available for Microbits but it has the resources required for each project in the LTP.
Squiggle https://swiggle.org.uk	Safer internet search engine	This is a safer internet search engine that should be encouraged to be used, particularly for KS1. However, given the ubiquity of Google, children should be exposed to safer use of Google at KS2.
Kiddle https://www.kiddle.co	Another safer internet engine	As above
Code.org www.code.org	Coding resource This forms the backbone of the coding curriculum.	Username: admin@archbishop.newcastle.sch.uk Password: Archbishop!2020
Scratch https://scratch.mit.edu	Scratch is a powerful coding resource that is a simplified version of Javascript which is used across the internet.	For children who need significant extension, examine some of the projects on Scratch in consultation with the Computing lead.