Computing

at

Firs Primary School

Updated January 2020

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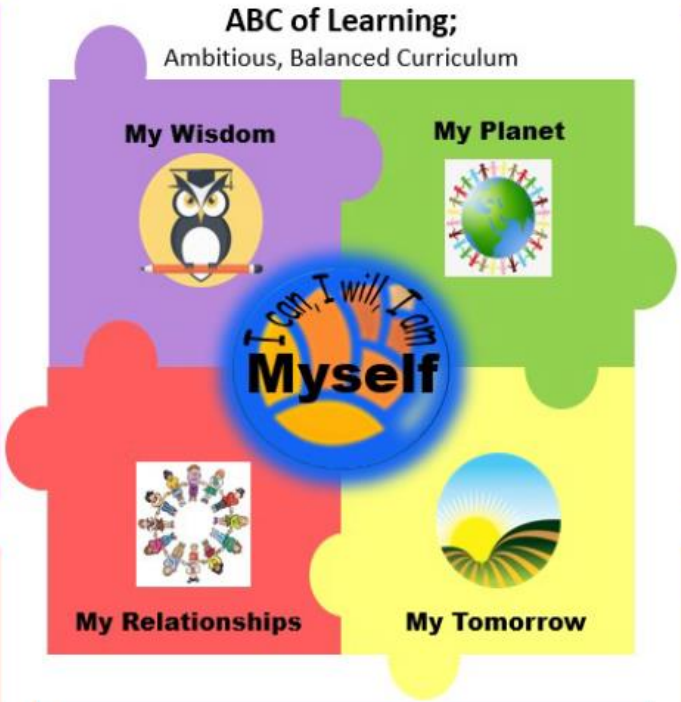
Firs Curriculum Intent

Firs Primary School Curriculum Intent

- Applying our knowledge to solve problems in new contexts.
- Recognising bias or fairness in what we read, hear and see and knowing when to trust information.
- Debating respectfully when we disagree with others, using evidence to support our ideas.



- Caring for our environment in school, locally and in the wider world.
- Understanding current affairs and global events and our part in these.
- Seeing ourselves as part of a global community.

- Showing empathy, care, concern and tolerance towards all others.
- Understanding how to have healthy and happy relationships.
- Working with others to achieve a common goal.

- Keeping myself safe and healthy, looking after my mind and body.
- Being happy with who I am, recognising my achievements and what makes me special.
- Taking responsibility for my actions and for my future.

- Aspiring to meet our full potential, understanding our strengths and meeting challenges with confidence and resilience.
- Developing the skills we need to be successful and independent adults.

Computing

Firsy Foundation

Updated: January 2020

Intent

Aims
The National Curriculum ensures all pupils:
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.

We aim for all pupils to understand how technology can enhance life and can be used in the wider world, including enabling children to understand careers in ICT. We ensure that children are exposed to a range of technology, that they may or may not be at home and that they understand how to use this safely and responsible. We aim to develop digitally responsible members of society.

Progressive Curriculum
We follow the National Curriculum which ensures that the learning is progressive between key stage 1 and key stage 2. We have also planned our curriculum in more detail and separated the National Curriculum in to 4 areas: Technology in our Lives, Programming, E-Safety and Multi-Media/Handing Data. Within each of these areas, clear objectives have been planned out that sets age-related expectations for each year group.

Vocabulary
To meet the needs of our pupils, we plan the vocabulary that we expect pupils to understand and be able to use in context, during the unit of teaching. This vocabulary is put in to three different areas: tier 1, tier 2 and tier 3.

Implementation

Sequence of Learning
The National Curriculum and our progression document is progressive and therefore prepares children successfully for their next phase in education. The EYFS framework has been mapped to the KS1 objectives to enable staff to be aware of what a child at GLD (Good Level of Development) should be at the beginning of their KS1 learning.
Revisiting Core Skills
The topic booklets outline what 'Forever Firs Pupils at Age Expected' should already be able to achieve, enabling teachers to target questions to assess retention. These skills then may be retaught/readdressed at the beginning of the unit.
Opportunities for revisiting elements of computing, such as 'Technology in our Lives' can be provided through other curriculum subjects such as researching an event in history or 'Multi-Media' can be revisited to test for retention when making a presentation on a famous person is History.
Timetabling
Computing is taught explicitly for one session per week, although this may also be supplemented with computing across the curriculum. Where possible curriculum is linked to the topic but it may also be taught discreetly. E-Safety is taught for the first half term in every year group.
Staff Knowledge
For each objective, staff have been given guidelines and ideas of how they may teach the subject. Expectations of what needs to be taught is also clearly outlined in the topic booklets which staff have to hand in advance of teaching a unit of work. This enables staff to do any self-study or seek for support from members of the STEM team for CPD.

Adapt and Tailor for Different Starting Points. SEND and Disadvantaged

Due to the flexibility within the computing curriculum, children from many different starting points will be able to access the same lesson. They may require additional support from their peers, and this may be used as a way of developing the mastery vocabulary in high attaining pupils.

All children (unless stated on their IPM/MEP) will take place in whole class learning for computing and be exposed to age-related objectives. To support children, they may work as part of a group or in partners or have adult support.

Recording Learning
Learning is either recorded in the topic books, in the whole class topic book or on the netbooks. AFL is carried out within the lesson to inform future planning.

Impact

Monitoring
Work scrutinies (topic books, whole class books, digital work), lesson walk throughs and data analysis of the topic books.

Retention
Pupil voice, opportunities to write or share with others what they have learnt (such as parental engagement opportunities)

Curriculum Design

The curriculum at Firs runs on a two year cycle, due to mixed year groups in the juniors. As the National Curriculum for Computing is split into key stages, some objectives may be revisited and extended more than others, depending on the depth of the objective.

Using the National Curriculum objectives, the computing curriculum at Firs is split into five main areas: E-Safety, Technology in our Live, Handling Data, Multimedia and Programming. Within each of these National Curriculum objectives, progressive statements have been developed for each individual year group to outline the skills and knowledge that the children must be taught. Teachers will then use these objectives to plan a series of progressive lessons which allow children to meet the ag related objectives. The lessons that the teacher plans may link in with the current topic or computing may be taught as a discreet subject.

Within the lesson, due to mixed year groups, the two progressive objectives may be used as a way to differentiate and challenge.

SEND and Higher Ability

SEND

For all pupils who are on the SEND register at Firs they will have an personalised plan. This will either be a IPM (Individual Provision Map) or MEP (Multi Element Plan). Within the plan the children will have personalised targets are provisions that are put in place to support the child in meeting targets. If the target links to foundation subjects, the provisions maybe techniques that are put in place to include children in whole class learning or interventions that support the children's learning outside of the lesson time. The IPM or MEP may also outline specific resources that the child is required to use (such as an iPad to support learning in other subjects) and therefore may also address computing objectives at the same time.

In computing most SEND children will follow the same lesson structure as others. As computing is mainly a practical subject, there is little emphasis on written work. Where written work or the reading level may not be appropriate for that child, children may work with the support of an adult or in pairs with their peers. This will take into accounnt cognitive overload such as concentrating on phonetic sounds and will allow them to still be exposed to age-realted objective for computing. All SEND children will be exposed to age-related objectives but how they attempt those objectives will differ as the class teacher scaffolds the learning for their needs.

High Attaining Pupils

Stretch and challenge will be evident for the pupils in a variety of different ways:

- ✓ Teacher questionning either during the whole class input or 1:1
- ✓ Expectations of vocabulary used within the lesson
- ✓ Use of the child to support others within their lesson, using the mastery vocabulary of 'Explain it.'

Computing in EYFS

The EYFS framework for "Understanding the World" has been used to create detailed objectives that shows clear progression between EYFS and KS1. Children in EYFS learn in variety of ways and have access to technology during continuous provision as well as in taught inputs.

Understanding the World - Technology

Intent	Foundation Stage	Year 1/2
Computer Science		Pupils should be taught to: • 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
	• Knows how to operate simple equipment e.g. turns on CD player and uses remote control. • Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. • Uses ICT hardware to interact with age-appropriate computer software. • *Children recognise that a range of technology is used in places such as homes and schools.* • *They select and use technology for particular purposes* • **Children find out about and use a range of everyday technology.**	For instance: Pupils learn to program a basic floor turtle such as a BeeBot to navigate increasingly complex routes and are able to debug their instructions when the turtle does not reach the intended destination Pupils learn to program an onscreen app such as BeeBot or Kodable to complete a set task and are able to debug their instructions when the turtle does not reach the intended destination Pupils use a more complex turtle with standard units to navigate increasingly complex routes, and are able to debug their instructions when the turtle does not reach the intended destination Extension - Pupils learn to use a simple graphical programming language such as Logo, Scratch or Turtle to navigate around the screen Extension - Pupils create a 3D environment, using a graphical language such as Kodu. They link this to a story such as an island adventure

Implementation

- Computing inputs
- IWB access daily
- Computing equipment in provision
- Home learning questionnaire about Technology use at home
- Discussions with parents
- Using the cd player during RWInc to access Environmental sounds
- Using the cd player to listen to stories and songs
- Reading stories on the computer – Goldilocks and the 3 Bears, The 3 Little Pigs

Intent	Foundation Stage	Year 1/2
Computer Science continued		Pupils should be taught to: • recognise common uses of information technology beyond school
	• Uses ICT hardware to interact with age-appropriate computer software. • Knows that information can be retrieved from computers • *Children recognise that a range of technology is used in places such as homes and schools.* • *They select and use technology for particular purposes* • **Children find out about and use a range of everyday technology.**	*Pupils learn about some of the uses of the internet*
Implementation • Computing inputs • IWB access daily • Computing equipment in provision • Home learning questionnaire about Technology use at home • Discussions with parents • Use of the internet to research footprints • Interactive traditional tales • Google Earth		

Intent	Foundation Stage	Year 1/2
Digital Literacy		Pupils should be taught to: • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content on the internet or other online technologies
	• Uses ICT hardware to interact with age-appropriate computer software. • Knows that information can be retrieved from computers • *Children recognise that a range of technology is used in places such as homes and schools.* • *They select and use technology for particular purposes* • **Children find out about and use a range of everyday technology.**	*For instance:* • *Pupils learn that the Internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information* • *Pupils are introduced to the concept that real people send messages to one another on the Internet and learn how messages are sent and received. They recognise that it may be difficult to distinguish between someone who is real and someone who is not* • *Pupils are introduced to the basics of online searching* • *Pupils learn to explore websites and to say whether they like them or not and why*
Implementation • Computing inputs • IWB access daily • Computing equipment in provision • Home learning questionnaire about Technology use at home • Discussions with parents • Use of the internet to research footprints • Interactive traditional tales • Google Earth		

Intent	Foundation Stage	Year 1/2
Digital Literacy		Pupils should be taught to: • use technology purposefully to create, organise, store, manipulate and retrieve digital content
	• Completes a simple program on a computer/ IPad • Uses ICT hardware to interact with age-appropriate computer software. • Knows that information can be retrieved from computers • *Children recognise that a range of technology is used in places such as homes and schools.* • *They select and use technology for particular purposes* • **Children find out about and use a range of everyday technology.** • **They select appropriate applications that support an identified need – for example in deciding how best to make a record of a special event in their lives, such as a journey on a steam train.**	*For instance:* • *<u>Digital Publishing:</u> Pupils learn to use basic word processing package and to write and illustrate a short story* • *<u>Presentation:</u> Pupils learn to make simple presentations* • *<u>Graphics:</u> Pupils learn to create a simple digital painting* • *<u>Animations:</u> Pupils learn to make a simple animation for instance in Puppet Pals* • *Media: Pupils learn to use digital cameras and microphones for a purpose* • *<u>Working with data:</u> Pupils learn to create and use a pictogram* • *<u>Modelling:</u> Pupils explore online simulations such as Charlie Chimp*
<u>Implementation</u> • Computing inputs • IWB access daily • Computing equipment in provision • Home learning questionnaire about Technology use at home • Discussions with parents • Use of the internet to research footprints • Interactive traditional tales • Google Earth		

Curriculum Progression

	Cycle A						Cycle B					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	Digital Literacy: E-Safety	Computer Science: Programming	Computer Science: Technology in our lives	Multimedia	Handling Data: Branching Databases		Digital Literacy: E-Safety	Computer Science: Technology in our lives	Multimedia	Computer Science: Programming		Multimedia: Animation
Year 3/4	Digital Literacy: E-Safety		Computer Science: Technology in our lives	Multimedia: Animation	Multimedia: Recording	Handling Data: Data Logging	Digital Literacy: E-Safety			Multimedia: Presentations	Computer Science: Programming	Handling Data: Branching Databases
Year 5/6	Digital Literacy: E-Safety	Handling Data: Spreadsheets	Handling Data: Databases	Computer Science: Technology in our lives (Searching)	Multimedia: Animation		Digital Literacy: E-Safety	Computer Science: Programming	Multimedia: Presentations	Multimedia: Animation	Computer Science: Technology in our lives (Collaboration)	Handling Data: Data logging

Digital Literacy: E-Safety

Discreet half-term unit in Autumn 1

KS1 Objective: 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.

KS2 Objective: use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content

Year 1

- Write rules for e-safety
- Understand the impact of unkind behaviour
- Explore what is meant by personal information
- Learn how to stay safe when playing online games
- Can identify 'people who help us' look after ourselves when using technology and know who we can tell

Year 2

- Reviewing and editing online safety rules
- Know what online bullying is and why it is wrong
- Create top tips for safe searches and knowing a website is safe
- Generate strong passwords and keeping them safe
- Solve online safety problems
- Sorting age appropriate games

Year 3

- Reviewing and editing online safety rules
- Digital friends and online bullying
- Assessing the trustworthiness of websites
- Understanding digital footprints
- Avatar creating: online identities can be misleading or false

Year 4

- Reviewing and editing online safety rules
- Dealing with peer pressure and online bullying
- Understanding information can be seen by anyone online
- Virtual friendships vs real friendship; who we can trust
- Protecting myself from harm online (website safety features, age appropriate

Year 5

- Reviewing and editing online safety rules
- Understanding advertising online
- Protecting online reputation and knowing consequences of posting inappropriate content
- Copyright rules
- Age limits on social media and why

Year 6

- Reviewing and editing online safety rules
- How images can release personal information
- Purpose of social media
- Privacy settings and reporting on social media
- Responding to online safety scenarios

Digital Literacy: E-Safety

Discreet half-term unit in Autumn 1

KS1 Objective: 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.

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 1

- Write rules for e-safety
- Understand the impact of unkind behaviour
- Learn how to stay safe when playing online games
- Explore what is meant by personal information
- Can identify 'people who help us' look after ourselves when using technology and know who we can tell

Year 2

- Reviewing and editing online safety rules
- Know what online bullying is and why it is wrong
- Solve online safety problems
- Create top tips for safe searches and knowing a website is safe
- Generate strong passwords and keeping them safe
- Sorting age appropriate games

Knowledge (DDAT Progression Guidance)

- Pupils are introduced to the concept that real people send messages to one another on the Internet and learn how messages are sent and received. They recognise that it may be difficult to distinguish between someone who is real and someone who is not
- Pupils are introduced to the basics of online searching
- Pupils learn to explore websites and to say whether they like them or not and why
- Pupils learn that the Internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information

Digital Literacy: E-Safety

Discreet half-term unit in Autumn 1

KS2 Objective: use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Learning Outcomes (Firs Progression Grid)

Year 3	Year 4	Knowledge (DDAT Progression Guidance)
• Reviewing and editing online safety rules	• Reviewing and editing online safety rules	• *Pupils learn that the Internet is a great place to develop rewarding online relationships and learn to recognise websites that are good for them to visit; but they also learn to be cautious and to check with a trusted adult before sharing private information*
• Digital friends and online bullying	• Dealing with peer pressure and online bullying	• *Pupils are introduced to their roles as digital citizens in an online community, where they reflect on how they are responsible not only for themselves but for others, in order to create a safe and comfortable environment* • *Pupils explore how they interact with others and are introduced to the concept of cyberbullying. They also learn how to communicate to be a responsible member of a connected culture effectively in order to prevent miscommunication*
• Assessing the trustworthiness of websites	• Protecting myself from harm online (website safety features, age appropriate games, privacy settings)	•
• Understanding digital footprints	• Understanding information can be seen by anyone online	• *Pupils learn to make good passwords for their accounts, learn about spam and how to deal with it. They begin to understand the implications for the information that they share online and how some websites might use that information without their knowledge* • *Pupils learn that the Internet is a public space and then develop the skills to protect their privacy and respect the privacy of others*
• Avatar creating: online identities can be misleading or false	• Virtual friendships vs real friendship; who we can trust	•

Digital Literacy: E-Safety

Discreet half-term unit in Autumn 1

KS2 Objective: use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Learning Outcomes (Firs Progression Grid)

Year 5	Year 6	Knowledge (DDAT Progression Guidance)
• Reviewing and editing online safety rules	• Reviewing and editing online safety rules • Responding to online safety scenarios	• *Pupils understand what it means to be a good digital citizen as they interact with others online by understanding how to prevent and respond to cyberbullying. They also learn how to communicate effectively to prevent miscommunication in order to be a responsible member of a connected culture* • *Pupils explore their roles as digital citizens in an online community, where they reflect on their responsibilities and learn that good digital citizens are responsible and respectful in the digital world* • *Pupils learn to create secure passwords for their accounts, learn about spam and how to deal with it, and decode website privacy policies, understanding the implications for the info that they share online* • *Pupils learn that the internet is a great place where online relationships can be developed. They compare and contrast online friends and real life, face to face friends and learn how to respond if an online friend asks them a personal question*
• Understanding advertising online	•	•
• Protecting online reputation and knowing consequences of posting inappropriate content	• Privacy settings and reporting on social media • How images can release personal information	• *Pupils begin to consider the impact of their online presence on their own self- image and the way others see them and explore how to construct a positive online profile* • *Pupils begin to explore the nature of online audiences and permanency of information online. They begin to understand the significance of published information and personal information*

• Copyright rules	•	• *Pupils learn the 'do's and don'ts' of copying and pasting information to avoid plagiarism. They learn how to avoid plagiarism by putting information in their own words, putting excerpted information into quotes, and providing citations. They learn to show respect for other people's creations by giving them credit*
• Age limits on social media and why	• Purpose of social media • Safe gaming	•

Computer Science: Programming

KS1 Objective: understand what algorithms are; how they are implemented as programs n digital devices; and that programs execute by following precise and unambiguous structions § create and debug simple programs § use logical reasoning to predict the ehaviour of simple programs

KS2 Objective: design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts § use sequence, selection, and repetition in programs; work with variables and various forms of input and output §use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Year 1

- Explore a range of control toys and devices
- Follow instructions to move around a course
- Create a series instructions to move their peers around a course
- Explore outcomes when individual buttons are pressed on a robot
- Explore an on screen turtle (or Bee BOT) navigate it around a course or grid
- Have experiences of controlling other devices such as sound recording devices, music players, video recording equipment and digital cameras
- While navigating around a course on a computer predict what will happen once the next

Year 2

- Talk about how everyday devices can be controlled
- Know that devices and actions on screen may be controlled by sequences of actions and instructions
- Create a sequence of instructions to create a right-angled shape on screen
- Create a sequence of instructions to control a programmable robot to carry out a pre-determined route to include direction, distance and turn (on screen or floor robot)

Year 3

- Explain what an algorithm will do by reading the commands.
- Test my algorithm and recognise when to change it
- Link their learning of a programmable robot to creating a set list of instructions for a on screen robot (e.g Textease turtle)
- Use an on screen robot to draw a path
- Navigate around Scratch (or similar)
- Create a repeat pattern that instructions motions by specifying the number of steps, direction and turn.
- Adds speech
- Make my sprite change colour

Year 4

- Create a list of 5 commands which involve movements and looks.
- Can talk about what everyday/real life objects uses algorithms and discuss what the algorithms will tell them to do
- Begin to break algorithms down to solve problems.
- I know an algorithm is a set of instructions.
- Draw using pen up and down linking their knowledge of properties of shapes
- Use costumes
- Use two sprites and two algorithms
- Use sound
- Begin to use sensing to create a command

Year 5

- Create movements using co-ordinates and rotations (with degrees)
- Create drawings using pen shades, directions and angles.
- Create an animation with speech and sensing between at least 2 characters.
- Use 'IF' to control objects and create variables
- Control the sprites movement using the keyboard
- Begin to think logically to analyse a simple game and discuss what the different algorithms should instruct.
- Begin to create a simple game between two sprites
- I can predict what will happen when discussing different algorithms,

Year 6

- Create a game that uses a range of commands including sensing, movement, variables and IF THEN. http://www.simonhaughton.co.uk/scratch-programming/
- Sort algorithms between what will and won't work and explain why by breaking it into smaller parts and explaining why. Test the algorithms to support this.
- Show logical thinking when creating a complication algorithm,
- Create a story or animation using a range of commands and shows creativity and imagination.

Computer Science: Programming

KS1 Objective: 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

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 1	Year 2	
• Explore a range of control toys and devices • Explore outcomes when individual buttons are pressed on a robot	• Talk about how everyday devices can be controlled	•
• Follow instructions to move around a course • Create a series instructions to move their peers around a course	• Control a floor robot using appropriate buttons, Make predictions and estimate distances and turns • Create a sequence of instructions to control a programmable robot to carry out a pre-determined route to include direction, distance and turn (on screen or floor robot)	• *Pupils learn to program a basic floor turtle such as a BeeBot to navigate increasingly complex routes and are able to debug their instructions when the turtle does not reach the intended destination*
• Explore an on screen turtle (or Bee BOT) navigate it around a course or grid • While navigating around a course on a computer predict what will happen once the next command is entered.	• Know that devices and actions on screen may be controlled by sequences of actions and instructions • Create a sequence of instructions to create a right-angled shape on screen	• *Pupils learn to program an onscreen app such as BeeBot or Kodable to complete a set task and are able to debug their instructions when the turtle does not reach the intended destination* • *Pupils use a more complex turtle with standard units to navigate increasingly complex routes, and are able to debug their instructions when the turtle does no reach the intended destination*
• Have experiences of controlling other devices such as sound recording devices, music players, video recording equipment and digital cameras	•	•

Computer Science: Programming

KS2 Objective: design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts § use sequence, selection, and repetition in programs; work with variables and various forms of input and output §use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Learning Outcomes (Firs Progression Grid)

Year 3	Year 4	Knowledge (DDAT Progression Guidance)
• Explain what an algorithm will do by reading the commands.	• Can talk about what everyday/real life objects uses algorithms and discuss what the algorithms will tell them to do	•
• Test my algorithm and recognise when to change it	• Begin to break algorithms down to solve problems. • I know an algorithm is a set of instructions.	•
• Link their learning of a programmable robot to creating a set list of instructions for a on screen robot (e.g Textease turtle) • Use an on screen robot to draw a path	•	*Pupils learn to sequence instructions, for instance to create an animation using Scratch, or by using the timing features in PowerPoint*
• Navigate around Scratch (or similar) • Create a repeat pattern that instructions motions by specifying the number of steps, direction and turn. • Adds speech • Make my sprite change colour • Control what my sprite does using specified keys.	• Create a list of 5 commands which involve movements and looks. • Draw using pen up and down linking their knowledge of properties of shapes • Use costumes • Use two sprites and two algorithms • Use sound • Begin to use sensing to create a command • Begin to use timings to control movements and speech between characters	*Pupils learn to use graphical programming language, such as Scratch or Logo to draw regular 2D shapes. Pupils add loops or procedures to create a repeating pattern* *Pupils write a simple algorithm, for instance to create a basic traffic light sequence. They then use flowcharting software (such as Go or Flowgo) to create a simple program to control an onscreen icon*

KS2 Objective: design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts § use sequence, selection, and repetition in programs; work with variables and various forms of input and output §use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Learning Outcomes (Firs Progression Grid)

Year 5	Year 6	Knowledge (DDAT Progression Guidance)
· Begin to think logically to analyse a simple game and discuss what the different algorithms should instruct.	· Show logical thinking when creating a complication algorithm,	·
· I can predict what will happen when discussing different algorithms,	·	·
· Understand how breaking things down into different events may make it easier to debug, edit and improve.	· Sort algorithms between what will and won't work and explain why by breaking it into smaller parts and explaining why. Test the algorithms to support this. · Starting to find more than 1 way to debug and solve a problem.	
· Begin to create a simple game between two sprites	· Create a game that uses a range of commands including sensing, movement, variables and IF THEN. http://www.simonhaughton.co.uk/scratch-programming/	*Pupils create a computer game, using a graphical language such as Scratch or Kodu*
· Create movements using co-ordinates and rotations (with degrees) · Create drawings using pen shades, directions and angles. · Create an animation with speech and sensing between at least 2 characters. · Use 'IF' to control objects and create variables · Control the sprites movement using the keyboard	· Create a story or animation using a range of commands and shows creativity and imagination.	*Pupils write a simple algorithm, for instance to create a basic traffic light sequence. They then use flowcharting software (such as Go or Flowgo) to create a simple program to control an onscreen icon. They are able to explain how their program works*

Computer Science: Technology in our lives

KS1 Objective: recognise common uses of information technology beyond school

KS2 Objective: 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 § use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Year 1

- Discuss where they have seen and used technology.
- Sort pictures of what is and isn't classed as technology and discuss what each one is used for
- Use given websites to answer questions
- Know how technology can be used to send messages

Year 2

- Discuss why we use technology
- Know the internet can be used for research
- Know that pages have authors just like their own work
- Send messages using the learning platform

Year 3

- Know how to create a simple search using a search engine
- Label and talk about the use of different parts of a computer (laptops and desktops) e.g. mouse, keyboard, screen, power cable.
- Navigate across websites using the buttons.

Year 4

- Create more specific searches using key words in a search engine.
- Know how to choose an appropriate website (age, look, author)
- Label and talk about the parts of a computer and products that enhance it's use (webcam, headphones, printers) and know their uses.
- Navigate across websites using the back, forward, refresh and hyperlinks.
- Begin to talk about the author of websites an how this effects it's truth.

Year 5

- Create specific searches using "" and or in a search engine
- Know how chatrooms and social media and connect people from long distances
- Take part in a forum including responding with text and media
- Discuss how results are ranked
- Begin to discuss how the internet works including networks and IP addresses
- Know how to check for reliability of a website
- Label parts of a webpage

Year 6

- Compare two websites that given information on the same topic. Which is the most reliable?
- Know how being able to connect with people from long distances can enhance collaboration
- Use other sources to check reliability of information.
- Discuss the many uses for the internet
- Know how information is transported on the internet including understanding networks and IP addresses
- Understand copyright and how this effects images and information I find on the internet

Computer Science: Technology in our lives

KS1 Objective: recognise common uses of information technology beyond school

Learning Outcomes (Firs Progression Grid)		Knowledge (DDAT Progression Guidance)
Year 1	Year 2	
• Discuss where they have seen and used technology.	• Discuss why we use technology	•
• Sort pictures of what is and isn't classed as technology and discuss what each one is used for	•	•
• Use given websites to answer questions	• Know the internet can be used for research • Know that pages have authors just like their own work	• *Pupils learn about some of the uses of the internet*
• Know how technology can be used to send messages	• Send messages using the learning platform	•

Computer Science: Technology in our lives

KS2 Objective: 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 § use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Learning Outcomes (Firs Progression Grid)

Year 3	Year 4	Knowledge (DDAT Progression Guidance)
• Know how to create a simple search using a search engine	• Create more specific searches using key words in a search engine. • Know how to choose an appropriate website (age, look, author)	• *Pupils are introduced to the basics of online searching, including how to use effective keywords. They also learn to conduct searches that provide them with the most helpful and relevant information*
• Label and talk about the use of different parts of a computer (laptops and desktops) e.g. mouse, keyboard, screen, power cable.	• Label and talk about the parts of a computer and products that enhance it's use (webcam, headphones, printers) and know their uses.	*Pupils learn to collaborate electronically by blogging, mailing and working on shared documents using the pupil sites of the DLG*
• Navigate across websites using the buttons.	• Navigate across websites using the back, forward, refresh and hyperlinks.	•
•	• Begin to talk about the author of websites an how this effects it's truth.	•

Computer Science: Technology in our lives

KS2 Objective: 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 § use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 5	Year 6	
• Create specific searches using "" and or in a search engine • Discuss how results are ranked	•	• *Pupils explore issues relating to online searching, including how to use effective keywords, using directories and subject categories, and how to analyse the usefulness and relevancy of the results. They learn to conduct searches that provide them with the most helpful and relevant information*
• Know how chatrooms and social media and connect people from long distances	• Know how being able to connect with people from long distances can enhance collaboration	• *Pupils learn to collaborate electronically by blogging -mailing and working on shared documents using the pupil sites of the DLG. This can be extended to working with other schools*
• Take part in a forum including responding with text and media	•	• *Pupils learn that connected devices exchange packets of data and this can convey a range of information from a text to a video call*
• Begin to discuss how the internet works including networks and IP addresses • Know how to check for reliability of a website • Label parts of a webpage	• Compare two websites that given information on the same topic. Which is the most reliable? • Use other sources to check reliability of information. • Discuss the many uses for the internet • Know how information is transported on the internet including understanding networks and IP addresses • Understand copyright and how this effects images and information I find on the internet	• *Pupils develop skills for evaluating websites, online information and advertising by rating the trustworthiness and usefulness of websites, and learning to identify the different types of online advertising*

ICT: Handling Data

ICT: Multimedia

KS1 Objective: use technology purposefully to create, organise, store, manipulate and retrieve digital content

KS2 Objective: 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

Year 1 —cross curricular English , art

- Develop familiarity with the keyboard – spacebar, backspace, shift, enter, to provide text on screen that is clear and error free
- Select appropriate images
- Add text to photographs, graphics (images) and sound e.g. captions, labelling and simple sentences through the use of e.g. *2create A Story*
- Use a paint package to create a picture to communicate their ideas: Explore shape, line and colour, talk about their choice of tools, talk about the differences between a graphics package and paper based art activities (undo, changes quickly and easily made)
- To print
- To save with help

Year 2 —cross curricular science, art, maths

- Develop basic editing skills including different presentational features (font size, colour and style)
- Save, print, retrieve and amend their work
- Use the mouse or arrow keys to insert words and sentences
- Use appropriate editing tools to improve their work
- Make and save a chart or graph using collected data
- Sort at least 3 pictures using a branching database

Year 3 —cross curricular English, maths, science

- Use a branch database to answer questions
- Make a branch database with at least 4 pictures.
- Combine a mixture of text and graphics to share my ideas in a presentation
- Continue to make appropriate choices about fonts, images, size through peer assessment and self evaluation, evaluate design and make suitable improvements
- Begin to use more than two fingers to enter text
- Use a database to create bar charts
- To create a stop frame animation using one drawing

Year 4 —cross curricular English, science

- Explore new media such as making videos
- Use a spell checker
- Use a data logger
- Use word art and animations when creating a presentation whilst considering the appropriate audience
- Use more than two fingers when typing
- Record using a programme
- create and use a branching database to organise, reorganise and analyse information
- To create a stop frame animation using two objects e.g. waving or walking

Year 5—cross curricular English, maths

- Choose an appropriate programme to represent information
- Design in response to a given criteria
- Create simple hyperlinks and buttons in a presentation
- Insert videos into a presentation
- Begin to use two hands when typing
- Evaluate websites and current publications in terms of colour, font, pictures and use this to inform their own work
- Understand cells in a spreadsheet
- to enter formulae for the four operations (+-x/) into a spreadsheet
- to use 'SUM' to calculate the total of a set of numbers in a range of cells
- To create a stop frame animation with two objects including movement and speech.

Year 6 —cross curricular English, maths, science

- Create a database that enables you to search through entries using fields
- To know when a database might be useful
- Create a presentation using timings, auto play and more complicated hyperlinks
- Edit their presentation in response to peer feedback and considering the audience
- Insert text boxes and use columns to create a more interesting layout
- Type confidently with two hands
- Use and interpret information from a data logger
- To create a stop frame animation with two objects and a background/set.

ICT: Multimedia

KS1 Objective: use technology purposefully to create, organise, store, manipulate and retrieve digital content

Learning Outcomes (Firs Progression Grid)

Year 1	Year 2	Knowledge (DDAT Progression Guidance)
• Develop familiarity with the keyboard – spacebar, backspace, shift, enter, to provide text on screen that is clear and error free	• Use the mouse or arrow keys to insert words and sentences	•
• Select appropriate images	•	•
• Add text to photographs, graphics (images) and sound e.g. captions, labelling and simple sentences through the use of e.g. *2create A Story*	• Develop basic editing skills including different presentational features (font size, colour and style)	*Digital Publishing: Pupils learn to use basic word processing package and to write and illustrate a short story*
• To print • To save with help	• Save, print, retrieve and amend their work	•
• Use a paint package to create a picture to communicate their ideas: Explore shape, line and colour, talk about their choice of tools, talk about the differences between a graphics package and paper based art activities (undo, changes quickly and easily made)	• Use appropriate editing tools to improve their work	*Graphics: Pupils learn to create a simple digital painting*
•	• To create a stop frame animation using split pin figures	*Animations: Pupils learn to make a simple animation for instance in Puppet Pals*

ICT: Multimedia

KS2 Objective: 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

Learning Outcomes (Firs Progression Grid)

Year 3	Year 4	Knowledge (DDAT Progression Guidance)
• Combine a mixture of text and graphics to share my ideas in a presentation	• Use word art and animations when creating a presentation whilst considering the appropriate audience	*<u>Presentations:</u> Pupils learn to write and deliver a presentation on a given subject*
• Continue to make appropriate choices about fonts, images, size through peer assessment and self evaluation, evaluate design and make suitable improvements	• Use a spell checker	•
• Begin to use more than two fingers to enter text	• Use more than two fingers when typing	•
•	• Explore new media such as making videos	*Sound and video: Pupils record and edit media to create a short sequence*
•	• Record using a programme	•
• To create a stop frame animation using one drawing	• To create a stop frame animation using two objects and one body movement e.g. waving or walking	*<u>Animations</u>: Pupils learn how to develop a storyboard and then create a simple animation using for instance 'Puppet Pals' or 'Stop Motions' Animation'*

ICT: Multimedia

KS2 Objective: 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

Learning Outcomes (Firs Progression Grid)

Year 5	Year 6	Knowledge (DDAT Progression Guidance)
• Design in response to a given criteria	•	*Presentations: Pupils learn to write and deliver a presentation, incorporating a range of media*
• Create simple hyperlinks and buttons in a presentation	• Create a presentation using timings, auto play and more complicated hyperlinks	•
• Insert videos into a presentation	•	•
• Begin to use two hands when typing	• Type confidently with two hands	•
• Evaluate websites and current publications in terms of colour, font, pictures and use this to inform their own work	• Edit their presentation in response to peer feedback and considering the audience • Insert text boxes and use columns to create a more interesting layout	•
• To create a stop frame animation with two objects including movement and speech.	• To create a stop frame animation with two objects and a background/set.	*Animations: Pupils learn how to develop a storyboard and then create a simple animation using for instance Puppet pals' or 'Stop Motions Animation' - this may be extended by editing the final product in using video editing software*

ICT: Handling Data

KS1 Objective: use technology purposefully to create, organise, store, manipulate and retrieve digital content

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 1	Year 2	
•	• Make and save a chart or graph using collected data	*Working with data: Pupils learn to create and use a pictogram*
•	• Sort at least 3 pictures using a branching database	•

ICT: Handling Data

KS2 Objective: 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

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 3	Year 4	
• Use a branch database to answer questions	•	•
• Make a branch database with at least 4 pictures.	• create and use a branching database to organise, reorganise and analyse information	•
• Use a database to create bar charts	•	• *Working with data: Pupils learn to search, sort and graph information*
•	• Use a data logger	•

ICT: Handling Data

KS2 Objective: 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

Learning Outcomes (Firs Progression Grid)

Knowledge (DDAT Progression Guidance)

Year 5	Year 6	
• Choose an appropriate programme to represent information	• To know when a database might be useful	•
•	• Use and interpret information from a data logger	•
• Understand cells in a spreadsheet • to enter formulae for the four operations (+-x/) into a spreadsheet • to use 'SUM' to calculate the total of a set of numbers in a range of cells	•	• *Modelling: Pupils learn how to use a spreadsheet to model data*
•	• Create a database that enables you to search through entries using fields	*Working with data: Pupils learn to search, sort and graph information*

Programmes and Resources

Area of Computing	Resource/Programme	Useful Links
ESafety		https://www.youtube.com/watch?v=ecr6OJmT3Mg Jigsaw https://www.youtube.com/watch?v=_o8auwnJtqE Cyberbullying https://www.youtube.com/watch?v=nbGIwCJK7FM Rules for Playing Safe Online https://staysafeonline.org/wp-content/uploads/2017/09/STOP.-THINK.-CONNECT.-Online-Gaming-Tips-for-Kids-Teens-Tweens.pdf Fake Website http://www.thedogisland.com/ http://stopabductions.com/ http://webfronter.com/rbkc/tomatospider/ Copyright https://www.bbc.co.uk/copyrightaware/what-is
Programming	BeeBots	
	Textease Turtle	
	Kodu	
	ProBots	
	Scratch	
Multimedia	PowerPoint	Touch Typing Hand Placement https://www.artypist.com/en/typing-tutor/practice/1/2 https://www.wikihow.com/Type Dance Mat Typing https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/z3c6tfr Stop Frame Animation https://www.youtube.com/watch?v=NVcpJZJ6OAo https://www.youtube.com/watch?v=sPjMI4Pk_Ls https://www.youtube.com/watch?v=6VOTkFpCAOc https://www.youtube.com/watch?v=QYOoCWP5RQk https://www.youtube.com/watch?v=8UqjYcWTYGc https://www.youtube.com/watch?v=v4lY9BLC1gI
	Audacity	
	Word	
	Textease	
	Digital Cameras	
	I can animate	
	Webcam/Built in Camera	
Handl.	Excel	Data Loggers https://www.youtube.com/watch?v=2q4cVchd3FO

	Textease Branch Textease Database Data Loggers	Database Query https://www.youtube.com/watch?v=6tTpK2tvi6w Create a Database https://www.youtube.com/watch?v=6tTpK2tvi6w Database to Bar Chart https://www.youtube.com/watch?v=_Txpfyn4ipI Branch Database https://www.youtube.com/watch?v=_HBJtrmBLgw
Technology in our lives		How a search engine works https://www.bbc.com/bitesize/clips/zwdxhyc IP Addresses https://www.bbc.com/bitesize/clips/zsyr9j6

Recording Work

Due to the practical nature of the computing curriculum, evidence may not always be written down by the children. It is expected that evidence is recorded in one of the different ways each lesson (this could be one document that shows a range of skills taught, e.g. a PowerPoint):

- In the whole class topic book
    - Ideally with an example and a short description of the activities within the lesson
- In individual topic books
    - This may be useful for peer feedback activities, planning their work, evaluating others' work.
    - It may just be a print out of the children's final piece, e.g. PowerPoint presentation.
    - It is not expected that this is marked by the teacher in detail due to this usually being the final product, rather than the process.
- On the netbook
    - Any work that is completed on the netbook needs to be saved in the correct half termly file. It is expected that children are taught to save their work under specific/clear file names so that it can be easily monitored by the co-ordinator.

Assessment

At the end of every half term when science is taught, the teacher will assess their class against the NC and progression guidance for that unit of computing. Assessment will be primarily from work that is done in class.

The teacher will assess each individual child under 4 headings:

Children working below ARE	Children working towards ARE	Children working at ARE	Children working above ARE

Monitoring

Monitoring is done both formally and informally throughout the year this may be done by SLT, MLT or a member of the STEM team
A list of different types of monitoring can be seen below, along with examples of RAG ratings and pupil voice on the following pages.

Whole Class Topic Books	
Topic Books	
Displays in classrooms and in the school halls	
Pupil Voice	
Assessment (1/2 Termly Assessment Booklets)	
Teacher Voice	
Planning	
Observations	

RAG Rating: Computing (Topic Books, Whole Class Topic Book, Netbook)

Date of Monitoring:

Who carried out the monitoring?

Books asked for:

Success Criteria:				
The task set matches the LO				
Computing vocabulary (tier 1, 2, 3) expectations for the lesson is clear (e.g. in the LO/SC, word mats, in children's work)				
There is evidence of computing in the whole class topic book				
Work is organised under the specific half termly folders on the netbook				
Progression/Curriculum Mapping				
The LO objectives match to the topic booklet objectives				
All of the objectives from the topic booklet are covered/evidenced				
R=				
A=				
G=				

Computing Pupil Voice

Carried out by: Date:	
Class: Children (initials):	
	RAG
Children could recall current learning of computing Note down the previous LO in addition to comments.	
Children could recall prior learning Note down the date the discussion went back to	
Children could talk about why they were learning certain things (link to real life, topic etc.)	
Children could use computing vocabulary	

Other

Children's thoughts on computing (likes and dislikes). Memorable computing lessons.	

Ideas for questions

1. What have you been learning today?
2. Can you remember how to do/what is? (Going back through the book an asking about prior learning.)
3. Can you find a piece of work in your book that you found tricky? Why was it tricky? What can you rememberabout it now?
4. Was there something in your book that you found really easy? Why did you find it easy?
5. Have you done ____ before?
6. What have you been learning in the lesson today?
7. Why were you learning this today?
8. When do you have the opportunity to revisit learning?

Further questions/ future actions