Computing

Overview and Progression Maps

Computing Curriculum

Computing Curriculum Intent

At Saxon Primary School, we aim to provide children with a high-quality and creative computing curriculum which enables all pupils to flourish and succeed in a digital world. We believe it is our responsibility to prepare our pupils to be safe, responsible and independent when using technology, enabling them to communicate effectively across a range of media. The computing curriculum at Saxon aims to develop the knowledge and skills needed to equip the children to be proficient, creative and responsible users of technology, across the curriculum. The children are encouraged to use computational thinking, to problem-solve and to make meaningful connections with their learning enabling them to develop independence and creative thinking. We intend for children to value and enjoy their computing experience at Saxon by including memorable and immersive learning experiences so that they are able to use technology in their future as resilient, confident and informed global citizens.

The core concepts for Computing

Core Concepts in Computing			
E-safety	Information Technology	Digital Literacy	Computer Science

Computing Overview

	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn I	E-safety ***How to use technology safely with the support of trusted adults***	E-safety ***Using technology safely***	E-safety ***Understanding how to keep personal information private***	E-safety ***Recognising acceptable and unacceptable behaviours online***	E-safety ***How to report concerns about content and contact***	E-safety ***How to be a responsible user of the internet***	E-safety ***Understanding how to be a confident, competent and responsible user of information and communication technology***
Autumn II	Exploration Technology - Programming Toys e.g. Beebots. ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***	Information Technology – Multimedia Text and Images ***(+1 lesson of e-safety—Managing online information, copyright and ownership.)***
Spring I	Use Technology to find out about different people. ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***	Information and Technology – Multimedia Sound and Motion ***(+1 lesson of e-safety-Health, Wellbeing and Lifestyle).***
Spring II	Use Technology to find out about different palces. ***(+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy - Handling Data ***(+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy - Handling Data ***((+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy - Handling Data ***(+1 lesson of e-safety -Self-image, identity and online reputation).***	Digital Literacy - Handling Data ***(+1 lesson of e-safety -Self-image, identity and online reputation).***
Summer I	Use Technology to find out about different environments. ***(+1 lesson of e-safety – Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety – Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety – Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety – Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety – Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety– Privacy and security)***	Digital Literacy – Technology in our Lives ***(+1 lesson of e-safety– Privacy and security)***
Summer II	**Using Technology to make sense of the physical world.** ***(+1 lesson of e-safety - Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety -Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety -Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety - Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety - Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety - Online relationships)***	**Computer Science – Coding and Programming** ***(+1 lesson of e-safety - Online relationships)***

COMPUTING LEARNING MAP

Year 1

Develop an understanding of how to use technology safely.

Know where to go for help/support when they have concerns about content/contact on the internet.

Year 2

Use technology safely and respectfully, keeping personal information private.

Year 3

Use technology safely, respectfully and responsibly.

Year 4

Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact.

Year 5

Confidently, competently and responsibly use information and communication technology.

Year 6

Confidently, competently and responsibly use information and communication technology.

E– Safety

Skills Progression Map

COMPUTING LEARNING MAP

E– Safety

Knowledge Progression Map

Year 1

Confidently, competently and responsibly use information and communication technology.

Year 2

Identify where to go for help/support when concerned about content/contact on internet/other online technologies

Year 3

Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact

Year 4

Understand the need for rules to keep them safe when exchanging ideas online. To recognise the need to choose age-appropriate games to play on their devices, and when to limit use. To recognise the need to protect their devices from viruses. To understand that any personal their devices from viruses. To understand that any personal information they put online can be seen and used by others .

Year 5

Understand appropriate and inappropriate use of the Internet including excessive use. To recognise the risks and rewards of using Internet communication tools and understand how to protect themselves and the devices they use.

Year 6

To understand how to use social networking websites appropriately, keeping an adult informed about their online activity. They make good choices when they present themselves online. To recognise the appropriate online tools to collaborate and communicate with others, understanding how to protect themselves from cyberbullying or causing hurt to others, especially when using social networks

Computing Curriculum

E-Safety

Vocabulary Progression Map

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Rules Online Private Information Email	Appropriate/ inappropriate sites Cyber-bullying Digital footprint Keyword search-ing	E-safety rules Secure pass-words Report abuse button Gaming Blogs	Responsible online communi-cation Informed choices Virus threats Blogs Messaging	Website Private Public Contact Acceptable Unacceptable E-safety rules Secure pass-words Report abuse button Gaming Blogs	Consequence Report Social media Concerns Responsible online communi-cation Informed choices Virus threats Messaging

COMPUTING LEARNING MAP

Year 1

Uses technology with increasing independence to purposefully organise digital content. Shares their experiences of technology in school and beyond the classroom. Talks about their work and makes improvements to solutions based on feedback

Year 2

Collects, organises and presents data and information in digital content. Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging

Year 3

Use some search technologies effectively and appreciate how results are selected

Decide which questions to ask when using search engines

Year 4

Use search technologies effectively and appreciate how results are selected and ranked

Evaluate the reliability of digital content

Begin to ask and answer questions based on the reliability of digital content

Year 5

Use a wide range of search technologies effectively and appreciate how results are selected and ranked

Be discerning in evaluating the reliability of digital content

Year 6

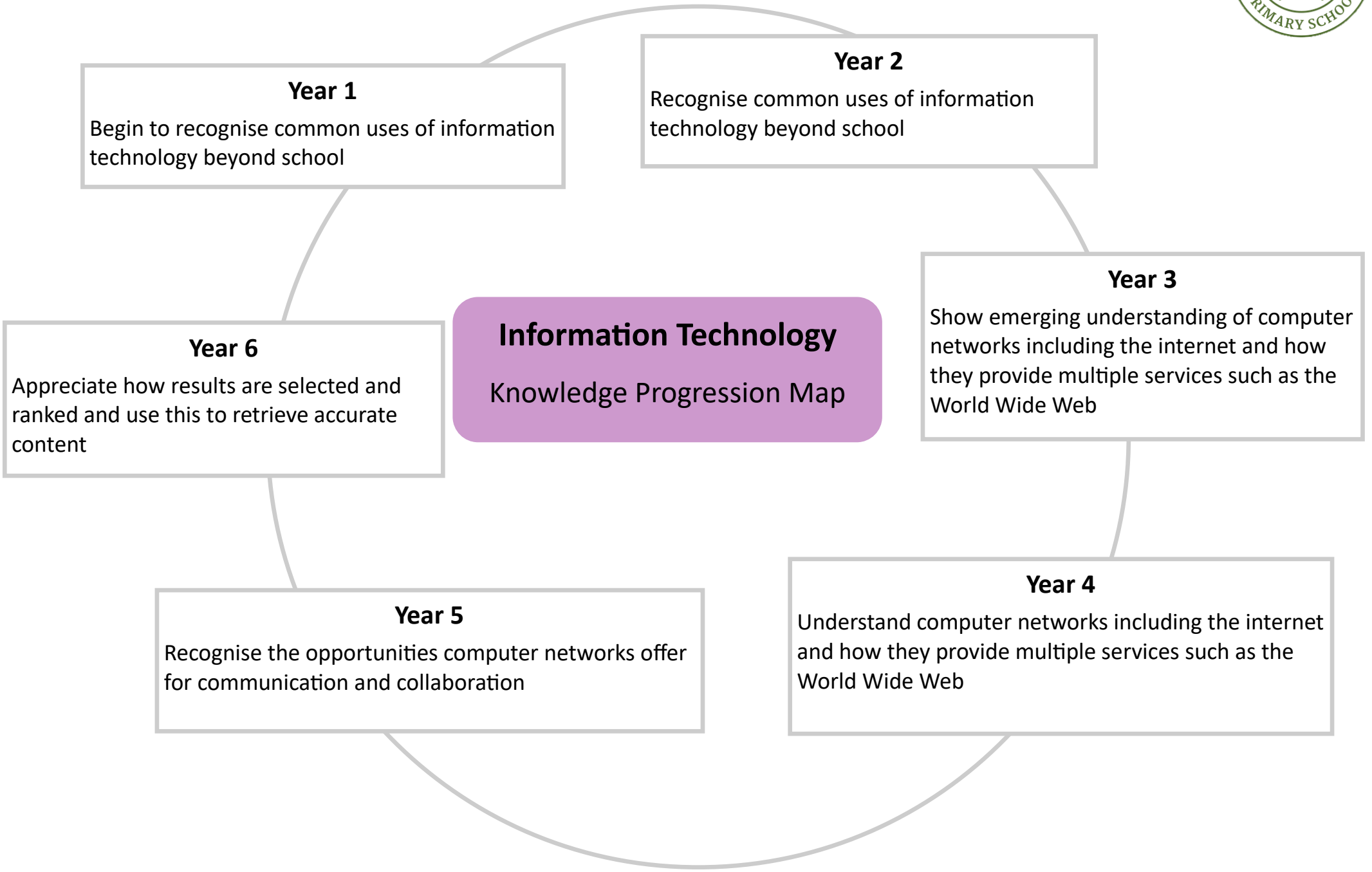
Use the opportunities computer networks offer for communication and collaboration

Be discerning in evaluating the reliability of digital content

Information Technology

Skills Progression Map

COMPUTING LEARNING MAP



Computing Curriculum

Information Technology

Vocabulary Progression Map

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technology Mouse Trackpad Keyboard Screen Double-click Typing	Information technology Barcode Scanner/scan	Connection Network Switch Server Wireless access point Digital device Input Process Output Program Digital Non-Digital Network Cables Network sockets	Router Network security Server Router Content Download Sharing Ownership Permission Information sharing Accurate Honest Adverts Network switch	Digital Protocol Packet Explore Reuse Remix Collaboration	Ranking Search engine optimisation Web crawlers Content creator Communication Internet One-way, two-way, one-to-one one-to-many Search engine Refine Index Crawler Bot SMS

COMPUTING LEARNING MAP

Digital Literacy

Skills Progression Map

Year 1

Use technology to create, store and retrieve digital content

Year 2

Use technology purposefully to create, store, retrieve, organise and manipulate digital content

Year 3

Use a variety of software on digital devices

Year 4

Select and use a variety of software on digital devices

Year 5

Express own ideas by selecting, using and combining a variety of software on a range of digital devices and create programs

Year 6

Express own ideas by selecting, using and combining a variety of software on a range of digital devices and create programs

COMPUTING LEARNING MAP

Digital Literacy

Knowledge Progression Map

Year 1

Recognises different types of data: text, number. Appreciates that programs can work with different types of data. Recognises that data can be structured in tables to make it useful.

Year 2

Understands the difference between data and information. Knows why sorting data in a flat file can improve searching for information. Uses filters or can perform single criteria searches for information.

Year 3

Performs more complex searches for information e.g. using Boolean and relational operators. Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results, and inaccurate conclusions.

Year 4

Knows that digital computers use binary to represent all data. Understands how bit patterns represent numbers and images. Knows that computers transfer data in binary. Understands the relationship between binary and file size (uncompressed). Defines data types: real numbers and Boolean. Queries data on one table using a typical query language

Year 5

Understands how numbers, images, sounds and character sets use the same bit patterns. Performs simple operations using bit patterns e.g. binary addition. Understands the relationship between resolution and colour depth, including the effect on file size. Distinguishes between data used in a simple program (a variable) and the storage structure for that data.

Year 6

Knows the relationship between data representation and data quality. Understands the relationship between binary and electrical circuits, including Boolean logic. Understands how and why values are data typed in many different languages when manipulated within programs.

Computing Curriculum

Digital Literacy

Vocabulary Progression Map

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Bold	Landscape	Search	Hue/saturation	Fake / Real / Composite	Background
Italic	Portrait	Copyright	Sepia	Cut / Copy / Paste / Alter	Foreground
Underline	Orientation Place-holder	Composition	Version Illustra-tor	Database / Data / Information	Publication
Mouse	Template	Pixels	Vignette	Record	Elements
Select	Layout	Rotate	Retouch	Field / Sort / Order / Group / Search	Original
Font	Content	Flip	Clone	Value	Font / Style / Shapes / Border
Undo	Desktop	Adjustments	Re-colour	Criteria	Spreadsheet / Data
Redo	Publishing	Effects	Magic wand	Graph	Heading
Format	Copy	Colours	Adjust	Axis	Data set
Compare	Paste		Sharpen	Compare	Cells / Columns / Rows
	Layout		Brighten	Filter	Data
	Purpose			Chart	Application
	Benefits			Presentation	Format
					Common
					Formula
					Calculation
					Input / Output

COMPUTING LEARNING MAP

Computer Science

Skills Progression Map

Year 1

Begin to develop an understanding of algorithms

Begin to understand that programs work by following instructions

Year 2

Understand what algorithms are

Understand how algorithms are implemented as programs on digital devices

Understand that programs execute by following precise and unambiguous instructions

Year 3

Begin to develop understanding of how to write and debug programs that accomplish specific goals, including controlling or simulating physical systems

Year 4

Understands that programming bridges the gap between algorithmic solutions and computers.

Has practical experience of a high-level textual language, including using standard libraries when programming.

Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. Selects the appropriate data types.

Year 5

Appreciates the need for, and writes, custom functions including use of parameters.

Knows the difference between, and uses appropriately, procedures and functions.

Understands and uses negation with operators.

Uses and manipulates one dimensional data structure. Detects and corrects syntactical errors.

Year 6

Appreciates the effect of the scope of a variable e.g. a local variable can't be accessed from outside its function. Understands and applies parameter passing. Understands the difference between, and uses, both pre-tested e.g. 'while', and post-tested e.g. 'until' loops. Applies a modular approach to error detection and correction.

COMPUTING LEARNING MAP

Computer Science

Knowledge Progression Map

Year 1

Create simple programs and begin to debug them

Develop reasoning to predict the behaviour of simple programs

Year 2

Use logical reasoning to predict the behaviour of simple programs

Create and debug simple programs

Year 3

Start to use reasoning to understand how algorithms work

Detect errors in algorithms and programs

Begin to solve problems by decomposing them into smaller parts

Start to use sequence and selection in programs

Begin to work with various forms of input/ output

Year 4

Use logical reasoning to understand how algorithms work

Detect and correct errors in algorithms and programs

Start to use sequence, selection and repetition in programs

Write and debug programs that accomplish specific goals, including controlling or simulating physical systems

Begin to solve problems by decomposing them into smaller parts

Work with variables and various forms of input/output

Year 5

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

Accurately manipulate variables and various forms of input/output

Use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs

Year 6

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 accurately in programs

Accurately manipulate a wide range of variables and various forms of input/output

Securely use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs

Computing Curriculum

Computer Science

Vocabulary Progression Map

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Algorithm Program Commands Instructions Directions Forwards Backwards Turn Clear Go Left Right Plan Route	Debugging Unambiguous Sequence Prediction Route Algorithm Program Instruction Commands	Sprite Event Scratch Motion Blocks Costume Stage Backdrop Point in direction Go to Glide Task Run the code Note Chord Algorithm Debug Programming Sequence Turn Design Order	Count - controlled loop Decompose Procedure Turtle Code Snippet Value Logo Pattern Repeat Repetition Program Algorithm Design Debug	Components Connection Infinite Loop Output Component Crumble Controller Switch LED Connect Condition Input / Output Selection Action Repetition Count-controlled loop Program Debug	Variable Change Name Value Set Task Project Test Improve Evaluate Share Algorithm Code Debug Event