

St Peter's Catholic Primary School
Computing Curriculum
Progression of Skills

Progression of Skills

Nursery/Reception

Explore software further e.g. picking an app for art, creating pictures or writing their name.

Develop children's social and collaborative skills using technology e.g. shared video making.

Support children to use the camera and then save or print photos taken.

Follow adult directions e.g. going on a treasure hunt. Make up instructions for a partner to follow.

Begin to use a simple robot e.g. Robo Mouse.

Use a microphone to record children's voices and support them to play these back.

Begin to explore the keys on a keyboard and find the letters to type their name.

information such as pictures and words.

Move objects on a screen.

Continuous Provision – available throughout the day for both focussed and self-chosen learning – computer and tablets/cameras for recording learning.

A range of technology will be explored continuously throughout the year for the children to access, both independently and with an adult.

- Tablets

- Remote control toys – cars.

- Battery operated toys

- CD players

- Interactive white boards – Phonics Play / Top marks / Google Earth / Digi map. sorting, information gathering.

- exploring old typewriters / computers / mechanical toys.

Children will talk about different kinds of

Progression of Skills

Year 1

Using Technology	Uses of IT Beyond School	E-Safety
<p><i>Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital</i></p>	<p><i>Pupils should be taught to recognise common uses of information technology beyond school</i></p>	<p><i>Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify to go for help and support when they have concerns about content or contact on the internet or other online technology</i></p>
<p>Digital painting I can describe what different freehand tools do I can use the shape tool and the line tools CHALLENGE: I can use a range of shape tools. I can make careful choices when painting a digital picture I can explain why I chose the tools I used I can use a computer on my own to paint a picture I can compare painting a picture on a computer and on paper CHALLENGE: I can offer reasons why technology can be helpful for a given job.</p> <p>Digital writing I can use a computer to write CHALLENGE: I can type a sentence independent. I can add and remove text on a computer I can identify that the look of text can be changed on a computer I can make careful choices when changing text CHALLENGE: I can change the font type, size and colour. I can explain why I used the tools that I chose I can compare writing on a computer with writing on paper</p> <p>Grouping data I can label objects I can identify that objects can be counted I can describe objects in different ways I can count objects with the same properties I can compare groups of objects CHALLENGE: To create a pictogram. I can answer questions about groups of objects</p>	<p>Technology around us I can identify technology I can identify a computer and its main parts CHALLENGE: I can discuss the purpose of different components I can use a mouse in different ways I can use a keyboard to type I can use the keyboard to edit text I can create rules for using technology responsibly CHALLENGE: I can describe the SMART internet safety rules and their importance.</p>	<p>See e-safety progression based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:</p> <ul style="list-style-type: none"> • Self-Image and identity • Online relationships • Online reputation • Online bullying • Managing online information • Health, well-being and lifestyle • Privacy and security • Copyright and ownership
Algorithms	Create Programs	Reasoning
<p><i>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</i></p>	<p><i>Pupils should be taught to create and debug simple programs</i></p>	<p><i>Pupils should be taught to use logical reasoning to predict the behaviour of simple programs</i></p>
<p>Moving a robot I can explain what a given command will do I can act out a given word I can combine forwards and backwards commands to make a sequence I can combine four direction commands to make sequences I can plan a simple program CHALLENGE: I can create a multi-step sequence combining directions. I can find more than one solution to a problem</p>	<p>Introduction to animation I can choose a command for a given purpose I can show that a series of commands can be joined together I can identify the effect of changing a value I can explain that each sprite has its own instructions CHALLENGE: I can predict what a sprite will do. I can design the parts of a project I can use my own algorithm to create a program</p>	<p>I can explain what a given command will do</p>

Progression of Skills

Year 2

Using Technology

Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital

Digital photography

I know what devices can be used to take photographs

I can use a digital device to take a photograph

I can describe what makes a good photograph

I can decide how photographs can be improved

CHALLENGE: I can describe what several photo enhancing effects do

I can use tools to change an image

I can recognise that images can be changed

Making music

I can say how music can make us feel

I can identify that there are patterns in music

I can describe how music can be used in different ways

I can show how music is made from a series of notes

I can create music for a purpose

CHALLENGE: I can create different genres of music and discuss this.

I can review and refine our computer work

Pictograms

I can recognise that we can count and compare objects using tally charts

I can recognise that objects can be represented as pictures

I can create a pictogram

CHALLENGE: I can describe and create a different computerised graph.

I can select objects by attribute and make comparisons

I can recognise that people can be described by attributes

I can explain that we can present information using a computer

Uses of IT Beyond School

Pupils should be taught to recognise common uses of information technology beyond school

Information technology around us

I can recognise the uses and features of information technology

I can identify information technology in the home

I can identify information technology beyond school

CHALLENGE: I can compare tasks using technology and not using technology and describe the advantages and disadvantages

I can explain how information technology benefits us

I can show how to use information technology safely

CHALLENGE: I can describe the SMART rules and discuss their importance.

I can recognise that choices are made when using information technology

E-Safety

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 or contact on the internet or other online technologies

See **e-safety progression** based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:

- Self-Image and identity
- Online relationships
- Online reputation
- Online bullying
- Managing online information
- Health, well-being and lifestyle
- Privacy and security
- Copyright and ownership

Algorithms

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

Robot algorithms

I can describe a series of instructions as a sequence

I can explain what happens when we change the order of instructions

I can use logical reasoning to predict the outcome of a program (series of commands)

I can explain that programming projects can have code and artwork

I can design an algorithm

I can create and debug a program that I have written

CHALLENGE: I can debug a program and justify why the original program was incorrect.

Create Programs

Pupils should be taught to create and debug simple programs

Introduction to quizzes

I can explain that a sequence of commands has a start

I can explain that a sequence of commands has an outcome

I can create a program using a given design

I can change a given design

I can create a program using my own design

CHALLENGE: I can design a program to meet a given specification

I can decide how my project can be improved

Reasoning

Pupils should be taught to use logical reasoning to predict the behaviour of simple programs

Robot algorithms

I can predict the outcomes of a set of instructions

I can predict what the outcome of a simple program will be

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Year 3

Create Programs	Develop Programs	Reasoning	Networks
<p><i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i></p>	<p><i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p>	<p><i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p>	<p><i>Pupils should be taught to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</i></p>
<p>Desktop publishing I can recognise how text and images convey information I can recognise that text and layout can be edited I can choose appropriate page settings CHALLENGE: I can alter the page margins and orientation I can add content to a desktop publishing publication I can consider how different layouts can suit different purposes I can consider the benefits of desktop publishing CHALLENGE: I can offer several reasons why desktop publishing is beneficial for given jobs</p>	<p>Stop-frame animation I can explain that animation is a sequence of drawings or photographs I can relate animated movement with a sequence of images I can plan an animation I can identify the need to work consistently and carefully I can review and improve an animation I can evaluate the impact of adding other media to an animation CHALLENGE: I can use the repeat command to create a pattern</p> <p>Sequence in music I can explore a new programming environment I can identify that each sprite is controlled by the commands I choose I can explain that a program has a start I can recognise that a sequence of commands can have an order I can change the appearance of my project I can create a project from a task description</p>	<p>I can discern when it is best to use technology and where it adds little or no value</p> <p>I can justify when I am going to use technology to help me with a task</p>	<p>Connecting computers I can explain how digital devices function I can identify input and output devices I can recognise how digital devices can change the way we work I can explain how a computer network can be used to share information I can explore how digital devices can be connected I can recognise the physical components of a network CHALLENGE: I can contribute to a class blog.</p>
Search Engines	Using Programs		E-Safety
<p><i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p>	<p><i>Pupils should be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</i></p>		<p><i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p>
<p>Cross-curricular: Navigate the web to complete simple searches I can search for information on the web in different ways I can find relevant information by browsing a menu CHALLENGE: I can bookmark a page into my favourites I can search for an image, then copy and paste it into a document I can use 'save picture as' to save an image I can copy and paste text into a document I can begin to use note making skills to decide what text to copy CHALLENGE: I can search using a keyword using a child friendly search engine</p>	<p>Branching databases I can create questions with yes/no answers I can identify the object attributes needed to collect relevant data I can create a branching database I can identify objects using a branching database CHALLENGE: I can explain why it is helpful for a database to be well structured I can compare the information shown in a pictogram with a branching database</p> <p>Events and actions I can explain how a sprite moves in an existing project I can create a program to move a sprite in four directions I can adapt a program to a new context I can develop my program by adding features I can identify and fix bugs in a program I can design and create a maze-based challenge</p>		<p>See e-safety progression based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:</p> <ul style="list-style-type: none"> • Self-Image and identity • Online relationships • Online reputation • Online bullying • Managing online information • Health, well-being and lifestyle • Privacy and security • Copyright and ownership

Progression of Skills

Year 4

Create Programs	Develop Programs	Reasoning	Networks
<p><i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i></p>	<p><i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p>	<p><i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p>	<p><i>Pupils should be taught to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</i></p>
<p>Repetition in shapes I can identify that accuracy in programming is important I can create a program in a text-based language I can explain what 'repeat' means CHALLENGE: To use repeat in my own program I can modify a count-controlled loop to produce a given outcome I can decompose a program into parts I can create a program that uses count-controlled loops to produce a given outcome</p>	<p>Repetition in games I can develop the use of count-controlled loops in a different programming environment I can develop a design which includes two loops which run at the same time CHALLENGE: I can develop a design which includes two or more loops which run at the same time I can design a project that includes repetition I can create a project that includes repetition</p>	<p>Repetition in games I can explain that in programming there are infinite loops and count controlled loops I can modify an infinite loop in a given program</p>	<p>The internet I can describe how networks physically connect to other networks I can recognise how networked devices make up the internet I can outline how websites can be shared via the World Wide Web I can describe how content can be added and accessed on the World Wide Web CHALLENGE: I can produce content for a class page or blog. I recognise how the content of the WWW is created by people I can evaluate the consequences of unreliable content CHALLENGE: I can discuss why some sources may be unreliable and what a reliable source may be</p>
Search Engines	Using Programs		E-Safety
<p><i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p>	<p><i>Pupils should be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</i></p>		<p><i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p>
<p>Linked with the 'Internet unit plus cross-curricular links: I can use a search engine to find a specific website I can use tabbed browsing to open two or more web pages at the same time I can open a link in a new window I can open a document / PDF and view it</p>	<p>Audio editing I can identify that sound can be digitally recorded I can use a digital device to record sound I can explain that a digital recording is stored as a file I can explain that audio can be changed through editing CHALLENGE: I can edit my own audio files I can show that different types of audio can be combined and played together I can evaluate editing choices made</p> <p>Photo editing I can explain that digital images can be changed I can change the composition of an image CHALLENGE: I can use photo editing software to crop photographs and add effects I can describe how images can be changed for different uses I can make good choices when selecting different tools CHALLENGE: I can use animation in a presentation I can recognise that not all images are real I can evaluate how changes can improve an image</p> <p>Data logging I can explain that data gathered over time can be used to answer questions I can use a digital device to collect data automatically I can explain that a data logger collects 'data points' from sensors over time I can use data collected over a long duration to find information CHALLENGE: I can discuss the information gathered and its reliability I can identify the data needed to answer questions I can use collected data to answer questions</p>		<p>See e-safety progression based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:</p> <ul style="list-style-type: none"> • Self-Image and identity • Online relationships • Online reputation • Online bullying • Managing online information • Health, well-being and lifestyle • Privacy and security • Copyright and ownership

Progression of Skills

Year 5

Create Programs	Develop Programs	Reasoning	Networks
<p><i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i></p>	<p><i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p>	<p><i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p>	<p><i>Pupils should be taught to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</i></p>
<p>Selection in physical computing I can control a simple circuit connected to a computer I can write a program that includes count-controlled loops I can explain that a loop can stop when a condition is met, e.g. number of times I can conclude that a loop can be used to repeatedly check whether a condition has been met CHALLENGE: I can offer a reason why a loop doesn't work and debug it I can design a physical project that includes selection I can create a controllable system that includes selection</p>	<p>Selection in quizzes I can explain how selection is used in computer programs I can relate that a conditional statement connects a condition to an outcome CHALLENGE: I can predict what an outcome may be I can design a program which uses selection I can create a program which uses selection</p>	<p>Selection in games I can explain how selection directs the flow of a program I can evaluate my program I can analyse and evaluate information reaching a conclusion that helps with future developments</p>	<p>Sharing information I can explain that computers can be connected together to form systems I can recognise the role of computer systems in our lives I can recognise how information is transferred over the internet I can explain how sharing information online lets people in different places work together I can contribute to a shared project online I can evaluate different ways of working together online</p>
Search Engines	Using Programs		E-Safety
<p><i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p>	<p><i>Pupils should be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</i></p>		<p><i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p>
<p>Sharing information and cross-curricular links: I can use a search engine using keyword searches I can compare the results of different searches CHALLENGE: I can identify and justify why a result may not be as I have expected I can download a document and save it to the computer I can evaluate information</p>	<p>Video editing I can recognise video as moving pictures, which can include audio CHALLENGE: I can save an image document as a gif or jpeg file format I can identify digital devices that can record video I can capture video using a digital device I can recognise the features of an effective video I can identify that video can be improved through reshooting and editing CHALLENGE: I can combine a number of techniques to make a short video I can consider the impact of the choices made when making and sharing a video</p> <p>Vector drawing I can identify that drawing tools can be used to produce different outcomes CHALLENGE: I can make an information poster using graphics skills to good effect I can create a vector drawing by combining shapes I can use tools to achieve a desired effect I can recognise that vector drawings consist of layers I can group objects to make them easier to work with I can evaluate my vector drawing</p> <p>Flat-file databases I can use a form to record information I can compare paper and computer-based databases I can outline how grouping and then sorting data allows us to answer questions I can explain that tools can be used to select specific data I can explain that computer programs can be used to compare data visually I can apply my knowledge of a database to ask and answer real-world questions</p>		<p>See e-safety progression based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:</p> <ul style="list-style-type: none"> • Self-Image and identity • Online relationships • Online reputation • Online bullying • Managing online information • Health, well-being and lifestyle • Privacy and security • Copyright and ownership

Progression of Skills

Year 6

Create Programs	Develop Programs	Reasoning	Networks
<p><i>Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</i></p> <p>Variables in games I can define a 'variable' as something that is changeable I can explain why a variable is used in a program I can choose how to improve a game by using variables CHALLENGE: I can justify any changes I make I can design a project that builds on a given example I can use my design to create a project CHALLENGE: I can meet a design brief with more than three specification points I can evaluate my project</p>	<p><i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i></p> <p>Sensing I can create a program to run on a controllable device I can explain that selection can control the flow of a program I can update a variable with a user input I can use a conditional statement to compare a variable to a value I can design a project that uses inputs and outputs on a controllable device I can develop a program to use inputs and outputs on a controllable device</p>	<p><i>Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</i></p> <p>Sensing I can detect errors in a program and correct them CHALLENGE: I can use logical reasoning to detect errors in algorithms I can check and refine a series of instructions</p>	<p><i>Pupils should be taught to understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration</i></p> <p>Communication I can recognise how we communicate using technology I can evaluate different methods of online communication CHALLENGE: I can conduct a video chat with more than one person at a time</p>
Search Engines	Using Programs		E-Safety
<p><i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p> <p>Communication I can identify how to use a search engine I can describe how search engines select results I can describe how search engines select results provided on two tabbed websites looking for bias and perspective I can explain how search results are ranked I can recognise why the order of results is important, and to whom</p>	<p><i>Pupils should be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</i></p> <p>Web page creation I can review an existing website and consider its structure I can plan the features of a web page I can consider the ownership and use of images (copyright) CHALLENGE: I can describe what copywrite means and how it might impact my work To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people</p> <p>3D modelling I can use a computer to create and manipulate three-dimensional (3D) digital objects I can compare working digitally with 2D and 3D graphics CHALLENGE: I can explain the benefits of computer modelling I can construct a digital 3D model of a physical object I can identify that physical objects can be broken down into a collection of 3D shapes I can design a digital model by combining 3D objects I can develop and improve a digital 3D model</p> <p>Spreadsheets I can identify questions which can be answered using data I can explain that objects can be described using data I can explain that formula can be used to produce calculated data I can apply formulas to data, including duplicating CHALLENGE: I can justify why a formula will or will not work I can create a spreadsheet to plan an event I can choose suitable ways to present data</p>		<p><i>Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</i></p> <p>See e-safety progression based on the Education for a Connected World Framework. This focuses on eight key aspects of online education:</p> <ul style="list-style-type: none"> • Self-Image and identity • Online relationships • Online reputation • Online bullying • Managing online information • Health, well-being and lifestyle • Privacy and security • Copyright and ownership