



Computing

Progression of Skills

National Curriculum Content

Purpose of Study & Aims

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world.

The National Curriculum for Computing aims to ensure that all pupils:

- Understand and apply the principles of computer science.
- Analyse problems in computational terms.
- Evaluate and apply information technology.
- Become responsible, competent, confident and creative users of information and communication technology.

Key Stage 1

- Understand algorithms.
- Create and debug simple programs.
- Use logical reasoning.
- Use technology purposefully.
- Use technology safely and respectfully.

Key Stage 2

- Design, write and debug programs.
- Use sequence, selection and repetition.

- Understand computer networks.
- Use search technologies effectively.
- Use technology safely, respectfully and responsibly.

Computing at Newport

At Newport the teaching of Computing inspires children to become confident, creative and responsible users of technology. Children develop computational thinking, problem-solving skills and digital literacy whilst learning how technology shapes the modern world.

Teaching of Computing follows the following sequence at Newport:

Knowledge, Skills and Understanding breakdown for Computing

EYFS		
Algorithms and Programs	Data Retrieving and Organising	Communicating
Can children find out about and use a range of everyday technology?	• Can they select and use technology for particular purposes?	• Can children recognise that a range of technology is used in places such as homes and schools?

Year 1		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they create a simple series of instructions - left and right? • Can they record their routes? • Do they understand forwards, backwards, up and down? • Can they put two instructions together to control a programmable toy? • Can they begin to plan and test a Bee-bot (or similar) journey?	• Can they capture images with a camera? • Can they enter information into a template to make a graph? • Can they talk about the results shown on a graph?	• Can they word process ideas using a keyboard? • Can they use the spacebar, back space, enter, shift and arrow keys?

Year 2		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they write a simple algorithm? • Can they predict the outcomes of a set of instructions? • Can they use right angle turns? • Can they test and amend a set of instructions? • Can they write a simple program and debug (test) it?	• Can they find information on a website? • Can they click links in a website? • Can they experiment with text, pictures and sounds to make a simple slide show? • Can they use the shape tools to draw?	• Can they word process a piece of text? • Can they insert/delete a word using the mouse and arrow keys? • Can they highlight text to change its format (B, U, I)? Can they create a presentation in a small group?

Digital Resilience in Key Stage 1	
Knowledge & understanding	Skills
• Understand the different methods of communication • Know that bookmarking is a way to find safe sites again quickly. • Begin to understand that not everything on the internet is true. • Know that it is not always possible to copy some text and pictures from the internet. • Know that personal information should not be shared online. • Know they must tell a trusted adult immediately if anyone tries to contact or meet them, or if they feel uncomfortable about content they may be exposed to when online	• Follow the school's Acceptable Use Policy. • Use the search engines agreed by the school. • Report appropriately if they find something inappropriate online or something they are unsure of • Use the internet for learning and communicating with others, making choices when navigating through sites. • Use a login and password to access the secure network.

Year 3		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they design and write simple programs that achieve specific goals? • Can they make accurate predictions about the outcome of a program they have written? • Can they test an algorithm and correct simple mistakes? • Can they experiment with variables to control outcomes?	• Can they review images on a camera and delete unwanted images? • Can they save files/images to appropriate locations from a range of digital devices? • Can they use photo editing software to crop photos and add effects? • Can they find relevant information by browsing a webpage? • Can they copy and paste relevant text into a document?	• Do they know how to manipulate text, underline text, centre text, change font and size • Can they use the automatic spell checker to edit spellings? • Can they access a specific website using a given URI? • Can they use different search methods when searching for information on the web? • Can they bookmark a page into your favourites? • Can they copy and paste the graph/bar chart and use it in another document?

Year 4		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they use repeat instructions to carry out specified operations? • Can they experiment with variables to control outcomes? • Can they give an on-screen robot specific directional instructions that takes them from x to y?	• Can they search for an image, copy and paste it into a document? • Can they use 'Save picture as' to save an image to the computer? • Can they create a simple spreadsheet? • Can they use the terms cells, rows and columns? • Can they enter data and use the templates within the program to create bar charts, line graphs and pie charts?	• Can they use electronic communication? • Can they open and send an attachment? • Can they combine text, images and sounds and show awareness of audience? • Can they begin to create a presentation that moves from slide to slide and is aimed at a specific audience? Can they use different search methods when searching for information on the web? • Can they bookmark a page into your favourites? • Can they copy and paste the graph/bar chart and use it in another document?

Digital Resilience in Lower Key Stage 2

Knowledge & understanding

- Understand the need for rules to keep them safe when exchanging learning and ideas online.
- Recognise that information on the internet may not be accurate or reliable.
- Understand that the internet contains fact and opinion and begin to distinguish between them.
- Understand the need for caution when using an internet search for images and other content and what to do if they find unsuitable material
- Understand that copyright exists on most digital images, video and recorded music.
- Understand the need to keep personal information and passwords private.
- Understand that if they make personal information available online it may be seen and used by others.
- Know how to respond if asked for personal information or feel unsafe about content of a message.
- Recognise that cyber bullying is unacceptable and will be sanctioned.
- Know how to report an incident of cyber bullying.
- Know difference between online communication tools used in school and those used at home
- Understand that there may be a difference in outcomes of internet searches at home and school.

Skills

- Follow the school's Acceptable Use Policy.
- Begin to identify when communications should not be opened and when an attachment may not be safe.

Year 5		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they explain how an algorithm works? • Can they write programs that have sequences and repetitions? • Can they detect and correct errors in algorithms and programs they have written? • Can they check and refine a series of instructions? • Can they explore 'what if' questions by planning different scenarios?	• Can they create a simple formula in a spreadsheet and then check for accuracy and plausibility? • Can they create more complex graphs and tables to be copied and pasted into other documents? • Can they explore how to edit and manipulate digital images? • Can they use compression techniques to make digital file sizes smaller ? • Can they competently use the internet as a search tool?	• Can they use the word count tool to check the length of a document? • Can they use bullets and numbering tools? • Can they use digital devices to record sounds and capture both still and video images? • Can they use a range of presentation applications for a specific purpose and audience? • Can they use a range of different methods when using search engines? • Can they compare the results of different searches?

Year 6		
Algorithms and Programs	Data Retrieving and Organising	Communicating
• Can they combine sequences of instructions and procedures to turn devices on or off? • Do they understand input and output? • Can they use an ICT program to control an external device that is electrical and/or mechanical? • Can they use an ICT program to control a number of events for an external device? • Can they use ICT to measure sound, light or temperature using sensors and interpret the data? • Can they use input from sensors to trigger events?	• Can they produce and upload a podcast? • Can they record, edit and apply filters to sounds using sound recording software?	• Can they be discerning in evaluating digital content which they find online? • Can they understand how, why and when you would collaborate using a range of digital devices? Can they create a sophisticated multimedia presentation?

Digital Resilience in Upper Key Stage 2	
Knowledge & understanding	Skills
• Discuss the positive and negative impacts of the use of digital communication in their own lives and those of their peers and family. • Understand the potential risk of providing personal information online. • Recognise why people may publish content that is not accurate and identify where content may be false or biased. • Recognise the potential risks of using internet communication tools and understand how to minimise those risks (including scams and phishing). • Understand that some material on the internet is copyrighted and may not be copied or downloaded. • Understand that some messages may be malicious and know how to deal with this. • Understand that online environments have security settings, which can be altered, to protect the user. • Understand that some malicious people may use various techniques to make contact and elicit personal information. • Know that it is unsafe to arrange to meet unknown people online. • Understand they should not publish other people's pictures or tag them without permission. • Know that all online activity leaves a digital footprint which is extremely difficult to remove. • Know what to do and how to report appropriately if they discover something malicious, suspicious or inappropriate.	• Follow the school's Acceptable Use Policy. • Make safe choices about use of technology and use technology in ways which minimises risk • Create strong passwords and manage them so that they remain strong. • With regard to digital resilience, begin to select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school.