



St Mary's Catholic Junior School

"I can do all things through Christ who strengthens me" Philippians 4:13



Computing Curriculum Document

INTENT

The national curriculum for computing aims to ensure that 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

This subject uses the Kapow Primary resources – all teachers have access to the detailed planning and accompanying resources to support the teaching of Computing.

Digital Literacy

Information Technology

Computer Science

Year 3

- Learning to be a responsible digital citizen; understanding their responsibilities to treat others respectfully and recognising when digital behaviour is unkind
- Learning about cyberbullying
- Learning that not all emails are genuine, recognising when an email might be fake and what to do about it
- Learning that not all information on the internet is factual
- Understanding who personal information should/ should not be shared with

Using software

- Taking photographs and recording video to tell a story.
- Using software to edit and enhance their video adding music, sounds and text on screen with transitions.

Using email and the internet

- Learning to log in and out of an email account
- Writing an email including a subject, 'to' and 'from'
- Sending an email with an attachment
- Replying to an email
- Identifying useful terms and phrases for search engines

Hardware

- Understanding what the different components of a computer do and how they work together
- Drawing comparisons across different types of computers
- Learning what a server does

Networks and data representation

- Learning what a network is and its purpose
- Identifying the key components within a network, including whether they are wired or wireless
- Recognising links between networks and the internet
- Learning how data is transferred

		<p><u>Using data</u></p> <ul style="list-style-type: none"> • Understanding the vocabulary associated with databases: field, record, data • Learning about the pros and cons of digital versus paper databases • Sorting and filtering databases to easily retrieve information • Creating and interpreting charts and graphs to understand data <p><u>Wider use of technology</u></p> <ul style="list-style-type: none"> • Understanding the purpose of emails. • Learning what a search engine is • Recognising how social media platforms are used to interact 	<p><u>Computational thinking</u></p> <ul style="list-style-type: none"> • Using decomposition to explain the parts of a laptop computer • Using decomposition to explore the code behind an animation • Using repetition in programs • Understanding that computers follow instructions • Using an algorithm to explain the roles of different parts of a computer • Using logical reasoning to explain how simple algorithms work • Explaining the purpose of an algorithm • Forming algorithms independently <p><u>Programming</u></p> <ul style="list-style-type: none"> • Using logical thinking to explore more complex software; predicting, testing and explaining what it does • Incorporating loops to make code more efficient • Remixing existing code • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected
<p>Year 4</p>	<ul style="list-style-type: none"> • Recognising what appropriate behaviour is when collaborating with others online • Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others • Learning about different forms of advertising on the internet. 	<p><u>Using software</u></p> <ul style="list-style-type: none"> • Building a web page and creating content for it • Designing and creating a webpage for a given purpose • Use Google online software for documents, presentations, forms and spreadsheets. • Work collaboratively with others <p><u>Using email and the internet</u></p>	<p><u>Hardware</u></p> <ul style="list-style-type: none"> • Learning about the purpose of routers <p><u>Networks and data representation</u></p> <ul style="list-style-type: none"> • Consolidating understanding of the key components of a network • Understanding that websites & videos are files that are shared from one computer to another • Learning about the role of packets • Understanding that computer networks provide multiple services, such as the

		<ul style="list-style-type: none"> • Understanding why some results come before others when searching • Understanding that information on the internet is not all grounded in fact <p><u>Using data</u></p> <ul style="list-style-type: none"> • Designing a weather station which gathers and records sensor data <p><u>Wider use of technology</u></p> <ul style="list-style-type: none"> • Understanding that software can be used collaboratively online to work as a team 	<p>World Wide Web, and opportunities for communication and collaboration</p> <p><u>Computational thinking</u></p> <ul style="list-style-type: none"> • Solving unplugged problems by decomposing them into smaller parts • Using decomposition to understand the purpose of a script of code • Using decomposition to help solve problems • Identifying patterns through unplugged activities • Using past experiences to help solve new problems • Using abstraction to identify the important parts when completing both plugged and unplugged activities • Creating algorithms for a specific purpose <p><u>Programming</u></p> <ul style="list-style-type: none"> • Understanding that webstes can be altered by exploring the code beneath the site • Coding a simple game • Using abstraction and pattern recognition to modify code • Incorporating variables to make code more efficient • Remixing existing code • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected
Year 5	<ul style="list-style-type: none"> • Learning about how permissions work and how to change them • Identifying possible issues with online communication • Considering the effects of screen-time on physical and mental wellbeing 	<p><u>Using software</u></p> <ul style="list-style-type: none"> • Using logical thinking to explore software more independently, making predictions based on their previous experience 	<p><u>Hardware</u></p> <ul style="list-style-type: none"> • Learning that external devices can be programmed by a separate computer • Learning the difference between ROM and RAM

	<ul style="list-style-type: none"> • Learning about online bullying and where to seek advice 	<ul style="list-style-type: none"> • Using a software programme (Sonic Pi or Scratch) to create music • Using video editing software or animation software to animate • Identify ways to improve and edit programs, videos, images etc. • Independently learning how to use 3D design software package TinkerCAD <p><u>Using email and the internet</u></p> <ul style="list-style-type: none"> • Developing searching skills to help find relevant information on the internet • Understanding how apps can access our personal information and how to alter the permissions. <p><u>Using Data</u></p> <ul style="list-style-type: none"> • Understanding how data is collected <p><u>Wider use of technology</u></p> <ul style="list-style-type: none"> • Learn about different forms of communication that have enveloped with the use of technology 	<ul style="list-style-type: none"> • Recognising how the size of RAM affects the processing of data • Understanding the fetch, decode, execute cycle <p><u>Networks and data representation</u></p> <ul style="list-style-type: none"> • Learning the vocabulary associated with data: data and transmit • Learning how the data for digital images can be compressed • Recognising that computers transfer data in binary and understanding simple binary addition • Relating binary signals (Boolean) to the simple character-based language, ASCII • Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations • Understanding how bit patterns represent images as pixels <p><u>Computational thinking</u></p> <ul style="list-style-type: none"> • Decomposing animations into a series of images • Decomposing a program without support • Decomposing a story to be able to plan a program to tell a story • Predicting how software will work based on previous experience • Writing more complex algorithms for a purpose <p><u>Programming</u></p> <ul style="list-style-type: none"> • Programming an animation • Iterating and developing their programming as they work
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<p>Year 6</p>	<ul style="list-style-type: none"> • Understanding the importance of secure passwords and how to create them, along with two-step authentication • Using search engines safely and effectively • Recognising that updated software can help to prevent data corruption and hacking • Considering their digital footprint and online reputation and future implications they may have • Learning about how to collect evidence and report online bullying concerns 	<p><u>Using software</u></p> <ul style="list-style-type: none"> • Using logical thinking to explore software independently, iterating ideas and testing continuously • Using search and word processing skills to create a presentation • Planning, recording and editing a radio play • Creating and editing sound recordings for a specific purpose • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions to create a video advert • Using design software TinkerCAD to design a product • Creating a website with embedded links and multiple pages <p><u>Using email and the internet</u></p> <ul style="list-style-type: none"> • Understanding how search engines work <p><u>Using Data</u></p> <ul style="list-style-type: none"> • Understanding how barcodes, QR codes and RFID work • Gathering and analysing data in real time • Creating formulas and sorting data within spreadsheets 	<p><u>Hardware</u></p> <ul style="list-style-type: none"> • Learning about the history of computers and how they have evolved over time • Using the understanding of historic computers to design a computer of the future • Understanding and identifying barcodes, QR codes and RFID • Identifying devices and applications that can scan or read barcodes, QR codes and RFID • Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files) <p><u>Networks and data representation</u></p> <ul style="list-style-type: none"> • Understanding that computer networks provide multiple services <p><u>Computational thinking</u></p> <ul style="list-style-type: none"> • Decomposing a program into an algorithm • Using past experiences to help solve new problems • Writing increasingly complex algorithms for a purpose <p><u>Programming</u></p>

		<p><u>Wider use of technology</u></p> <ul style="list-style-type: none">• Learning about the Internet of Things and how it has led to 'big data'.• Learning how 'big data' can be used to solve a problem or improve efficiency	<ul style="list-style-type: none">• Debugging quickly and effectively to make a program more efficient• Remixing existing code to explore a Problem• Using and adapting nested loops• Programming using the language Python• Changing a program to personalise it• Evaluating code to understand its purpose• Predicting code and adapting it to a chosen purpose• Altering a website's code to create changes
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