Corpus Christi Catholic Primary School

COMPUTING HANDBOOK

COMPUTING CURRICULUM: INTENT: All of our children will have consistent access to a broad, balanced and high quality computing curriculum which will:

- equip pupils to use computational thinking and creativity to understand and change the world.
- Link work with mathematics, science and design and technology
- provides insights into both natural and artificial systems.
- Be taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming.
- use information technology to create programs, systems and a range of content.
- ensure that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

COMPUTING Together we DREAM, together we learn

AIMS

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

At Corpus Christi, our mission statement and the teaching of Jesus is at the centre of all we do.
We intend to show this through our computing curriculum:
Give opportunities to DISCOVER new ways to use technology, programmes to aid learning and software to enhance learning in other areas.
Teach children to RESPECT each other, equipment and resources used within computing.
Provide experiences to ENTHUSE and excite and develop computational knowledge and understanding.
Encourage high ASPIRATIONS in both school and beyond, and applying those aspirations in their computing work.
Show ways our children can MAKE A DIFFERENCE to themselves, each other and outside, in big and small ways, and use technology to help them.

STRATEGIES: In order to achieve our aims our school provides:

On site facilities:

- Laptops
- iPads
- iMacs
- Desktop computers

Off site facilities:

- Access to facilities at De La Salle High School

Equipment/Resources
The school maintains a range of resources for computing – iPads, iMacs and desktop computers
Curriculum Provision
Reception: Continuous provision – Understanding the World - Technology
Y1– Y6: 60 minute computing lesson per week (every half term)
Children follow the school's scheme of work and are continuously assessed against clear learning objectives.
Extra-Curricular Provision
Computing club for both KS1 and KS2
Additional examples of our commitment to computing include:
School trips, talks from visitors
Continuing Professional Development
Teachers and support staff are encouraged to develop their skills and knowledge to enhance the teaching of computing in school.
Reporting
Verbal reports to parents take place twice a year at Parent's Evening.
Written reports are provided annually.

- **All staff are continuously trained so as to ensure that computing is taught to a high standard**

- **This high quality teaching is supported through the appropriate funding, resources, timetables and our whole school environment, which is maintained to a high standard and enhances and promotes our teaching and our children's experiences and learning**
- **Staff plan and deliver daily high quality computing lessons**
- **Staff meet regularly to review the quality of our provision and to refresh, reposition and change as appropriate**
- **Staff meet regularly to track and review the progress of our children and this high quality formative assessment contributes good rates of progress and high levels of attainment**
- **Strong parent partnerships and home/school systems contribute the quality of our provision**

OUTCOMES

The teaching of all aspects of computing are consistently good with much outstanding practice.
All of our children develop their enjoyment, knowledge, understanding and skills in computing and use these successfully across all areas of the curriculum.
All of our children make good progress from their starting point in computing.

MONITORING EVALUATION REVIEW

The school implements an annual programme of quality assurance which includes:

- Scrutiny of planning
- assessment and work books
- Lesson Observations
- Learning walks
- Conversations with children
- Consultation with parents

COMPUTING: CURRICULUM IMPLEMENTATION: PLANNING

Our long term planning ensures coverage of the National Computing Curriculum and is responsive to local influences. In order to widen and deepen pupils' essential knowledge, skills, understanding and behaviours, our children continuously return to key concepts and skills in order to gain a deeper and more insightful understanding.

Computing Long Term Planning						
RECEPTION	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	TECHNOLOGY – continuous provision throughout the year					
KEY STAGE 1						
YEAR 1	Online Safety		Computer Skills	Word Processing Skills	Painting	Programming with Scratch
YEAR 2	E Aware		Presentation Skills	Using the Internet	Computer Art	Preparing for Turtle Logo
KEY STAGE 2						
YEAR 3	Online Safety		Word Processing Skills	Presentation Skills	Drawing and Desktop Publishing	Programming Turtle Logo and Scratch
YEAR 4	E Aware		Word Processing	Internet Research and Communication	Animation	Programming Turtle Logo
YEAR 5	Online Safety		Internet Research and Webpage Design	Controlling Devises: Flowol	3D Modelling: Sketch Up	Scratch: Developing Games
YEAR 6	E Aware		Website Design	Spreadsheets	Film-Making	Scratch: Animated Stories Kodu Programming
ESAFTEY is taught throughout the year in sessions embedded in each block of learning. We also celebrate E-Safety week as a school.						

COMPUTING CURRICULUM IMPLEMENTATION: PROGRESSION

We have a clear understanding of the progression we aspire for all of our children to make in all areas of computing.

EYFS	Links to KS1 curriculum	Minimum Expectations for Reception		Minimum Expectations for Nursery	
COMPUTING LINKS	Uses various tools such as brush, pens, stamps, easer and shapes.	Uses various tools such as brush, pens, stamps, erasers and shapes with support	Selects brushes, colours and rubbers when drawing on paint software	Selects brushes, colours and rubbers when drawing on paint software	
		Children can independently change games or increase levels of difficulty on games	Can play simple games on the IWB by dragging and dropping items	Can play simple games on the IWB by dragging and dropping items	
		Erases content and understands how to charge cameras	Children can edit photos	Children can record videos on the camera	Children can take photos on the camera	Children can switch a camera on and off
	Identify which things count as personal information. Asks for help when they need it.	Children know what personal information is and know that it should not be shared online	Children know to ask for help if needed.		

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
E-SAFETY AND E-AWARE					
I can: • keep my password private. • tell you what personal information is. • tell an adult when I see something unexpected or worrying online. • talk about why it's important to be kind and polite. • recognise an age appropriate website. • agree and follow sensible e-safety rules.	**I can:** • explain why I need to keep my password and personal information private. • describe the things that happen online that I must tell an adult about. • talk about why I should go online for a short amounts of time. • talk about why it is important to be kind and polite online and in real life. • I know that not everyone is who they say they	**I can:** • talk about what makes a secure password and why they are important. • protect my personal information when I do different things online. • use the safety features of websites as well as reporting concerns to an adult. • recognise websites and games appropriate for my age. • make good choices about how long I spend online. • ask an adult before downloading files and games from the internet.	**I can:** • choose a secure password when I am using a website. • talk about the ways I can protect myself and my friends from harm online. • use the safety features of websites as well as reporting concerns to an adult. • I know that anything I post online can be seen by others. • I choose websites and games that are appropriate for my age. • help my friends make good choices about the time they spend online.	**I can:** • protect my password and other personal information. • explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. • I know that anything I post online can be seen, used and may affect others. • Talk about the dangers of spending too long online or playing a game. • explain the importance of communicating kindly and respectfully. • discuss the importance of	**I can:** • I protect my password and other personal information. • I can explain the consequences of sharing too much information about myself online. • I support my friends to protect themselves and make good choices online, including reporting concerns to an adult. • explain the consequences of spending too much time online or on a game. • explain the consequences to myself and others of not communicating

		• post positive comments online.	• talk about why I need to ask a trusted adult before downloading files and games from the internet. • Comment positively and respectfully online.	choosing an age appropriate website or game . • explain why I need to protect my computer or device from harm. • I know which resources on the internet I can download and use.	kindly and respectfully. • I protect my computer or device from harm on the internet.
PROGRAMMING					
I can: • give instructions to my friend and follow their instructions to move around. • describe what happens when I press buttons on a robot. • press the buttons in the correct order to make my robot do what I want. • describe what actions I will need to do to make something happen and begin to use the word 'algorithm'. • begin to predict what will happen for a short sequence of instructions. • begin to use software/apps to create movement and patterns on a screen. • use the word 'debug' when I correct mistakes when I Program.	I can: • give instructions to my friend (using forward, backward and turn) and physically follow their instructions. • tell you the order I need to do things to make something happen and talk about this as an algorithm. • program a robot or software to do a particular task. • look at my friend's program and tell you what will happen. • use programming software to make objects move. • watch a program execute and spot where it goes wrong.	I can: • break an open-ended problem up into smaller parts. • Put programming commands into a sequence to achieve a specific outcome. • keep testing my program and can recognise when I need to debug it. • use repeat commands. • Describe the algorithm I will need for a simple task. • detect a problem in an algorithm which could result in a bug.	I can: • use logical thinking to solve an open-ended problem by breaking it up into smaller parts. • use an efficient procedure to simplify a program. • can use a sensor to detect a change which can select an action within my program. • know that I need to keep testing my program while I am putting it together. • use a variety of tools to create a program. • recognise an error in a program and debug it. • recognise that an algorithm will help me sequence more complex programs. • recognise that using algorithms will also help solve problems in other learning such as maths, science and design technology.	I can: • decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. • refine a procedure using repeat commands to improve a program. • use a variable to increase programming possibilities. • change an input to a program to achieve a different output. • use 'if' and 'then' commands to select an action. • talk about how a computer model can provide information about a physical system. • use logical reasoning to detect and debug mistakes in a program. • use logical thinking, imagination and creativity to extend a program.	I can: • deconstruct a problem into smaller steps, recognising similarities to solutions used before. • explain and program each of the steps in my algorithm. • evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. • recognise when I need to use a variable to achieve a required output. • use a variable and operators to stop a program. • use different inputs (including sensors) to control a device or onscreen action and predict what will happen. • use logical reasoning to detect and correct errors in algorithms and programs.
HANDLING DATA					
I can:	I can:	I can:	I can:	I can:	I can:

• talk about the different ways in which information can be shown. • Use technology to collect information, including photos, video and sound.	• talk about the different ways I use technology to collect information, including a camera, microscope or sound recorder. • make and save a presentation. • tell you what kind of information I could use to help me investigate a question.	• talk about the different ways data can be organised. • search a ready-made database to answer questions. • collect data to help me answer a question. • use a internet search engine to monitor changes and can talk about the information collected.	• organise data in different ways. • collect data and identify where it could be inaccurate. • choose the best way to present data to my friends. • use a search engine to record and share my readings with my friends.	• use a spreadsheet and database to collect and record data. • choose an appropriate tool to help me collect data. • present data in an appropriate way. • search a database using different operators to refine my search. • talk about mistakes in data and suggest how it could be checked.	• plan the process needed to investigate the world around me. • select the most effective tool to collect data for my investigation. • check the data I collect for accuracy and plausibility. • Interpret the data I collect. • present the data I collect in an appropriate way. • I use the skills I have developed to interrogate a database.
MULTIMEDIA					
I can: • be creative with different technology tools. • Use technology to create and present my ideas. • use the keyboard or a word bank on my device to enter text. • save information in a special place and retrieve it again	I can: • use technology to organise and present my ideas in different ways. • use the keyboard on my device to add, delete and space text for others to read. • tell you about an online tool that will help me to share my ideas with other people. • save and open files on the device I use. • Print documents I make or need.	I can: • create different effects with different technology tools. • combine a mixture of text, graphics and sound to share my ideas and learning. • use appropriate keyboard commands to amend text on my device, including making use of a spellchecker. • evaluate my work and improve its effectiveness.	I can: • use photos, video and sound to create an atmosphere when presenting to different audiences. • change the appearance of text to increase its effectiveness. • create, modify and present documents for a particular purpose. • use a keyboard confidently and make use of a spellchecker to write and review my work. • use an appropriate tool to share my	I can: • use text, photo, sound and video editing tools to refine my work. • use the skills I have already developed to create content using unfamiliar technology. • select, use and combine the appropriate technology tools to create effects that will have an impact on others. • select an appropriate online or offline tool to create and share ideas. • review and improve my work and	I can: • talk about audience, atmosphere and structure when planning a particular outcome. • confidently identify the potential of unfamiliar technology to increase my creativity. • combine a range of media, recognising the contribution of each to achieve a particular outcome. • tell you why I select a particular online tool for a specific purpose.

			work and collaborate.	support others to improve their work.	• be digitally discerning
TECHNOLOGY IN OUR LIVES					
I can: • recognise the way we use technology in our classroom. • recognise ways that technology is used in my home and community. • begin to identify some of the benefits of using technology	I can: • tell you why I use technology in the classroom. • tell you why I use technology in my home and community. • I am starting to understand that other people have created the information I use. • use links to websites to find information. • identify benefits of using technology including finding information, creating and communicating. • talk about the differences between the internet and things in the physical world.	I can: • save and retrieve work on the internet, the school network or my own device. • talk about the parts of a computer. • tell you ways to communicate with others online. • describe the World Wide Web as the part of the internet that contains websites. • use search tools to find and use an appropriate website. • think about whether I can use images that I find online in my own work.	I can: • tell you whether a resource I am using is on the internet, the school network or my own device. • identify key words to use when searching safely on the World Wide Web. • I think about the reliability of information I read on the World Wide Web. • tell you how to check who owns photos, text and clipart.	I can: • describe different parts of the internet. • use different online communication tools for different purposes. • use a search engine to find appropriate information and check its reliability. • recognise and evaluate different types of information I find on the World Wide Web. • describe the different parts of a webpage. • find out who the information on a webpage belongs to.	I can: • tell you the internet services I need to use for different purposes. • I describe how information is transported on the internet. • select an appropriate tool to communicate and collaborate online. • talk about the way search results are selected and ranked. • check the reliability of a website. • tell you about copyright and acknowledge the sources of information that I find online.

Leading into Computing at Key Stage 3

Pupils should be taught to:

♣ design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

♣ understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem

♣ use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions

♣ understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]

♣ understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems

♣ understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

♣ undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users

♣ create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability

♣ understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

These include an expectation that a significant percentage of our children will exceed the end of KS2 expectations in computing.

EYFS	KS1	KS2
• Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	• 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 • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • 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	• 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 • 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 • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact **Children exceeding expectations will also:** • evaluate • reflect • think computationally • sort • search • reason • program • solve problems

COMPUTING CURRICULUM IMPLEMENTATION: SPIRITUAL MORAL SOCIAL AND CULTURAL DEVELOPMENT

Our computing Curriculum contributes to the spiritual, moral, social and cultural development of our children and embeds our School ethos and mission statement of, Together we DREAM, together we learn.

Spiritual Development	Moral Development	Social Development	Cultural Development
• A respect for self and others • An increasing ability to reflect • A sense of empathy with other • Concern & compassion • An awareness and understanding of their own and others beliefs • An ability to think in terms of the whole • A readiness to challenge all that would constrain the human spirit • An understanding that words can hurt people even if done through technology	• Respect for others' needs, interests and feelings as well as their own • A desire to explore their own and others' views • An ability to make responsible and reasoned judgements on moral dilemmas • A considerate style of life • An understanding of the need to review and reassess their values, codes and principles in the light of experience • Recognising that sharing items through devices can impact peoples lives	• Appreciates the right and responsibilities of individuals within the wider social setting • Adjusts to a range of social contexts by appropriate and sensitive behaviour • Challenges, when necessary and in appropriate ways, the values of a group or wider community • Understands how societies function and are organised in structures such as the family, the school and local and wider communities • Shares values and opinions with others and works towards consensus • Reflects on their own contribution to society • Understands the notion of interdependence in an increasingly complex society	• An appreciation of the diversity and interdependence of cultures • An ability to appreciate cultural diversity and accord dignity and respect to other people's values and beliefs, thereby challenging racism and valuing race equality • An ability to recognise and understand their own cultural assumptions and values • An understanding of the influences which have shaped their own cultural heritage • An understanding of the dynamic, evolutionary nature of cultures • A sense of personal enrichment through encounter with cultural media and tradition from a range of cultures • Regard for the height of human achievement in all cultures and societies • Openness to new ideas and a willingness to modify cultural values in the light of experience

COMPUTING CURRICULUM IMPLEMENTATION: EXTRA-CURRICULAR CLUBS

Being able to offer our children a wide range of diverse extra-curricular activities is very important as it encourages them to become independent, confident and successful members of the community. Some of our clubs relating to computing are run by external providers and take place after school but we also run our own clubs after school. Clubs are available for both KS1 and KS2 children.

The list of clubs is ever changing but generally includes:

- Computing

COMPUTING CURRICULUM IMPLEMENTATION: HEALTH & SAFETY AND SAFEGUARDING

Risk Assessments are completed for all off site activities.

Appropriate staff supervision ratios are ensured.

Approved venues and transport are used.

COMPUTING CURRICULUM IMPLEMENTATION: STAFF DEVELOPMENT

Key staff undertake ongoing professional development as identified through consistent, embedded monitoring and regular informal professional conversations.

COMPUTING CURRICULUM IMPACT

COMPUTING LESSONS
All children have consistent access to high quality, safe and broad history lessons which: • Benefit health and well being • Develop their knowledge, skills and experiences of geography • Build the knowledge, skills, values and confidence necessary for them to make positive, healthy decisions throughout their lives • Develop their social, moral, spiritual and cultural understanding by linking their understating and learning to their lives.
COMPUTINGEXTRA CURRICULAR CLUBS
All children have access to: • Extra–curricular opportunities such as Computing club • Opportunities to socialise with different peer groups • Opportunities to make a positive contribution to our school and community – walking to school, recycling, litter picking and supporting charities
PROFESSIONAL DEVELOPMENT & RESEARCH
• Continuous Staff development is planned annually • Staff questionnaires are completed annually to ensure suitable coverage and topic success rate