

Providing the keys to success for every child

# Whole School Policy on:

# Computing (Teaching and Learning)

Acting Head Teacher: Mrs J Ross Kent County Council

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#### 1 Introduction

#### 1.1 Vision for Computing

We will develop our pupil's experience of Computing in a fun, safe and secure way so that they are able to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technology. The school community will promote technology use, across the curriculum, which is a natural as talking or writing and will strive to harbour good home-school computing links wherever appropriate.

#### 1.2 Aims

We aim to develop within the children:

- Confidence and proficiency in the key computing capabilities through explicit teaching of key computing capabilities, which are then embedded across the curriculum
- An appreciation and proficiency in the use of computing in the context of the wider world through the use of 'real' contexts of computing and home-school computing links
- To promote both autonomous study and collaborative group work through the provision of broad ranging computing activities and tasks
- To develop the ability to use computing appropriately and to choose software suitable for a particular task by providing the children with key capabilities and skills in the key strands of the National Curriculum for computing
- To continue to investigate and implement innovative resources that will appropriately enhance the pupil's experiences of computing and teacher's use of computing to support all of their teaching

#### 1.3 Responsibility for the Policy

Computing Co-ordinator: Mrs V Solly

The implementation of this policy is the responsibility of all teaching staff.

# 2 Roles and Responsibilities

All stakeholders will work together to ensure the implementation of the computing policy.

The Subject Co-ordinator is responsible for monitoring curriculum coverage and the impact of teaching and learning.

# 3 Curriculum Coverage and Progression

Long term planning demonstrates coverage and progression of the key objectives for computing. The teaching and learning of computing is planned from the National Curriculum Program of Study for Computing.

Opportunities for embedding technology as a tool to support teaching and learning are identified in both computing planning and the planning of other curriculum subjects.

#### 3.1 Skills

All pupils from the EYFS through to KS2 will be taught key computing skills through 3 key strands:

- Computer Science
- Information Technology
- Digital Literacy

### 3.2 Learning Styles and the Learning Environment

All learning styles will be considered when planning for computing.

From the moment that children enter school they will have access to a computer technology rich learning environment where they will be encouraged to use technology in a variety of ways to support their learning across the curriculum.

Open questions will be developed to challenge children's thinking and learning.

Independent learners will have access to a variety of resources and be encouraged to reflect on the choices that they have made.

#### 3.3 Planning

Staff will plan for the delivery of computing predominantly through other curriculum areas. There will of course be the need to deliver aspects of computing discreetly; however the school recognises the importance of ensuring that pupils are able to apply their computing skills in a broad range of contexts, including those that reflect real life experiences and contexts.

Computing is delivered through a variety of teaching and learning methods e.g. whole class, group and individual work. Differentiation and progression are ensured by a variety of approaches such as:

- Same activity but different expectations of outcome
- Same theme but different levels of input
- Allowing for different pace of working
- Developing different modules of work at different times of the year for different abilities

Pupils will have the opportunity to participate in a variety of activities to learn to use computing skills and apply these in a meaningful context. They will also evaluate how computing is used in everyday life and compare this with the way they use it in school through:

- Short directed activities to practise a specific skill
- Activities within a subject context to practise and develop skills acquired
- Open-ended activities that allow pupils to choose which tools to use or to select from a variety of media
- Whole class discussion to allow reflection on the use of computing

#### 3.4 Cross Curricular Skills and Links

The nature of computing as a tool means that there will be many opportunities for links with other subjects. Teachers will plan some activities that emphasise the development of computing capability and others which support the subject being taught. They must refer to subject schemes of work when planning for computing.

#### 3.5 Time Allocation

There is an expectation that, where appropriate, computing will be used frequently across the curriculum to support the delivery of all curricular subjects. In addition, each class from the EYFS through to Year 6 will have two timetabled sessions within the computer suite per week. There is sufficient time for additional sessions to be booked, as each class teacher deems necessary.

#### 4 Assessment

Teachers will apply the principles of assessment for learning wherever possible in the children's learning of computing. Practitioner observations, summative and formative assessment fully informs future planning and progress is assessed using the key objectives for computing. Practitioner judgements are supported through agreement trialling and a portfolio of evidence. Children are encouraged to evaluate their own and other's work in a positive manner and with supportive evidence.

At the time of writing the school is developing the use of new assessment materials in order to ensure that there is consistency in the assessment and tracking of pupil's attainment in computing.

#### 5 AEN and Inclusion

Positive use of technology will be promoted by all and the school recognises that pupils with AEN will be entitled to the same access to computing as their peers. In planning lessons, teachers will identify the learning goals for the majority of children as well as extension activities for the more able. Consideration will be given to modifying the task, or providing peer or adult support for children will difficulties.

The school recognises the possible advantages and benefits of the use of computer technology by children with special educational needs. Using computer technology can:

- Address children's individual needs
- Increase access to the curriculum
- Enhance language skills

# 6 Equal Opportunities

We ensure computing is accessible to all children in full accordance with the school's Equal Opportunities Policy.

# 7 Home, School and Community Links

Computing developments and achievements are shared and a positive relationship fostered with home, school and the wider community. The continued development of the school's online presence, including the school website and further use of shared online resources, will play a large role in harbouring these links.

The school will develop the ways in which computing is used to support learning beyond the classroom, including supporting parent/carer and pupil's awareness of safe and appropriate online behaviour (this is covered in the separate e-Safety Policy).

The school will continue to work with local schools to ensure good practice in computing, both sharing practice and learning from others.

# 8 Liaison and Transfer Between Settings

Children's attainment in computing is shared with practitioners/teachers in each setting involved in the transition of pupils to and from our setting.

The school will continue to work with the local Partnership to develop effective ways of transferring information about our pupil's computing experiences.

#### 9 Provision and Resources

The school has a computer suite, consisting of a curriculum server, one printer and thirty-three workstations. There is also an Interactive whiteboard and data projector. Each class has provision of networked computers in addition to an interactive whiteboard and laptop for each staff member.

The school has a range of other computer technology equipment that supports learning across the Computing Curriculum and includes robotic toys, cameras, video recorders, CD players and scientific data sensing and logging equipment.

Additional resources are purchased and deployed effectively to meet the requirements of the Foundation Stage Curriculum and National Curriculum.

An asset register is maintained and any purchases are dealt with in accordance with the Asset Management Policy.

# 10 Health and Safety

(Relevant acts - The Health & Safety Act 1974; Directives from the EEC notably EC 90/270; General Product Safety Act 1974; Environmental Protection Act 1995)

Much of the equipment is electrically driven. The relevant Health & Safety implications are covered in them school's Health & Safety Policy. The school meets all compulsory Health & Safety requirements.

Faulty equipment must be brought to the attention of the co-ordinator or the Headteacher.

Equipment that is no longer functional is reported and disposed of using the mechanisms outlined within the school's Asset Management Policy.

# 11 Security

The school has an alarm system installed throughout. The computer suite has an added security feature comprising lockable metal grills, which can be secured across the windows and exterior doors.

All equipment is security marked and registered as per the Asset Management Policy.

The network server and stations are secure against unauthorised access to both the management system and users' files. All the files on the network are backed up each weekday night. Our access to the Internet uses a filtering mechanism by our broadband provider. This screens out any web pages that are unsuitable for children and filters e-mail traffic for offensive language.

All laptops that are taken off-site are secure against unauthorised access and staff assume responsibility for ensuring that they are kept safe.

Data that is transferred via the use of memory sticks or other portable devices should be kept to an absolute minimum and the use of encrypted devices is essential. Staff are advised that any data that is of a confidential nature should be stored and accessed via KLZ.

# 12 Continued Professional Development

Opportunities for training are offered wherever possible; to meet whole school needs as well as those of individual teachers. Specialist training is provided to match specific needs; alternatively the co-ordinator facilitates provision for general training and support. Where appropriate the school accesses the Hands On Support and Advisory Service training and development opportunities.

# 13 Monitoring

Regular monitoring of all aspects of computing informs the subject co-ordinator and school development plan and SEF.

The coordinator will undertake a range of monitoring activities including:

- Work sampling
- Lesson observations
- Moderation of work
- Pupil voice questionnaires
- Audit of staff knowledge
- Audit of resources

# 14 Policy Review

This policy will normally be reviewed annually during Summer Term 6, by the Computing Co-ordinator and leadership team and shared with all stakeholders.

The next review of this policy is due: Summer Term 6, 2015.

# Appendix 1 – Key Software Used in School

EYFS/KS1	KS2
Internet safe searches	Internet safe searches
Topic Based software/DVDs	Topic Based software/DVDs
BBC website	BBC website
CEOP e-safety materials	Webquests
	CEOP e-safety materials
2Simple software – 2count and 2graph	2Simple software – 2count and 2graph 2Simple software – 2Question Branching Databases Excel
2Simple software – 2DIY, 2Paint, 2Animate	2Simple software – 2DIY, 2Paint, 2Animate, 2Control NXT, Web based control programmes
2Simple software – 2DIY, 2Paint, 2Animate Logo	2Simple software – 2DIY, 2Paint, 2Animate Scratch Pivotstick animator Logo
2Simple software 2Publish, 2 paint, Clicker	Word, Email Clicker 2Publish

# Appendix 2 – National Curriculum 2014 Computing Curriculum Initial Draft



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National Curriculum 2014
Computing Curriculum Initial Draft

Acting Head Teacher: Mrs J Ross Kent County Council

Computing Curriculum Initial Draft
PBS - CC - V1 - June 2014
V Solly, ICT Co-ordinator
N/A In-house policy



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# 1 Summary of National Curriculum: Computing

#### Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures 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.

#### **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.

#### **Attainment targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. Please see following page for the statements for the programme of study for Computing.

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#### Key stage 1

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

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.

#### Key stage 2

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
- 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.

# 2 Further Explanation from CAS / NAACE

The introduction of the new curriculum also makes clear the three aspects of the computing curriculum: computer science (CS), information technology (IT) and digital literacy (DL).

One way of thinking about these aspects is as the foundations, applications and implications of computing. The aims for the subject as a whole reflect this distinction.

[All pupils] can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. **(CS)** 

[All pupils] can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. **(CS)** 

[All pupils] can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. (IT)

[All pupils] are responsible, competent, confident and creative users of information and communication technology. (DL)

#### The Content of the Curriculum can be broken down into three sub-sections reflecting the three aspects:

	KS1	KS2
	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and	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
	unambiguous instructions  Create and debug simple programs	with variables and various forms of input and output
Computer Science	Use logical reasoning to predict the behaviour of simple programs	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
		Appreciate how [search] results are selected and ranked
	Use technology purposefully to create,	Use search technologies effectively
Information Technology	organise, store, manipulate and retrieve 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
	Recognise common uses of information technology beyond school	Understand the opportunities [networks] offer for communication and collaboration
	Use technology safely and respectfully,	Be discerning in evaluating digital content
Digital Literacy	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	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

# 3 Key Stage 1 Programme of Study (Strands, Explanations and Examples)

Strand	Programme of Study Statements	Explanation	Year Group	Examples of how this may be delivered
	Understand what algorithms are;	Children need to be able to know that an algorithm is a sequence of instructions, or a set of rules for performing a specific task.	1	Beebots 2Go Logo
	how they are implemented as programs on digital devices; and that programs execute by following precise and	Children need to know that computer programs need to be written in a precise language that a computer can 'understand'. This is machine code, but computer scientists have developed programming languages which sit between the ideas in the algorithm and the machine code. There are many different programming languages, for primary schools, Scratch and Logo are most commonly used.	2	Probots Logo 2Code Scratch
Computer	unambiguous instructions	Programs are made up of statements in a limited but precisely understood vocabulary, with each statement having one particular meaning.		
Science	Create and debug simple programs	Children learn what algorithms are by writing their own programs. When writing a program, you need to have a clear idea of what it will do and how it should do it. Most programs don't work as they should first time round and mistakes have to be found and fixed – this is called debugging. This involves identifying the fault, working out which bit of the program has caused it and then thinking logically about how to fix it This is a good opportunity for collaborative work. Debugging code develops valuable learning skills that are transferable across the whole curriculum: independence, resilience and persistence.		
	Use logical reasoning to predict the behaviour of simple programs	Giving children opportunities to 'step through' programmes, role play a floor turtle or screen sprite or predict what will happen before they press return or click a button will develop their logical reasoning skills.		
Information Technology	Content. Additionally they need to be able to manipulate their work by going back and earting		1 and 2	All Purple Mash Tools
Digital Literacy	Recognise common uses of information technology beyond school	Children need to be able to identify how technology is used in their day to day lives.		
Digital Literacy	Use technology safely and respectfully, keeping personal information private; identify where to go for help and	Children should have an understanding of e-Safety.	1 and 2	e-safety modules – separate whole



support when they have concerns about content or	school planning
contact on the internet or other online technologies	

# 4 Key Stage 2 Programme of Study (Strands, Explanations and Examples)

Strand	Programme of Study Statements	Explanation	Year Group	Examples of how this may be delivered
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	begin to split problems into smaller parts eg: designing a game in Scratch will involve algorithms, programming, drawing sprites, backgrounds, making animations, and even composing music or recording sound effects.		Probots Logo 2Code Scratch Lego Mindstorms
Computer Science	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output			Logo 2Code Scratch  Lego Mindstorms Magic Forest 2Code Scratch Kodu
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Children should be able to confidently talk about their algorithms and programming. They should be able to look at a programming project and be able to say what is going on. They should be able to look at each other's work and explain how it does what it does.	6	Lego Mindstorms Magic Forest 2Code Scratch Kodu
	Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web		All Year Groups	Purple Mash are developing some resources

	Use search technologies effectively, appreciate how [search] results are selected and ranked  Use search technologies effectively			
Information Technology	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	Progression should be demonstrated by: children using software under the control of the teacher, then using software with growing independence, then combining software, then selecting software themselves Internet services could include learning platforms, blogs and cloud based tools such as google drive.  A range of digital devices encompasses fixed and mobile technologies. It also includes running software via the internet It may be helpful to think of data as numbers and information as text, images, audio, video and 3d representations, but it is worth remembering that both data and information are digitised by computers (ie stored in the form of numbers) Children should gain experience of working with data they have generated or collected themselves as well as big, public datasets.	All Year Groups	All Purple Mash tools Primaryblogger Primarypodcast Prezi
	Understand the opportunities [networks] offer for communication and collaboration		All Year Groups	Purple Mash are developing some resources
Digital Literacy	Be discerning in evaluating digital content			
	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	e-safety	All Year Groups	e-safety modules – separate whole school planning

# 5 Long Term Whole School Curriculum Plan

Year Term	1	2	3	4	5	6
Autumn Term 1	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content – Discrete teaching of creating images and text	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content — Discrete teaching of creating and manipulating images and text in addition to using digital images, sound, video and simple animations	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content — Discrete teaching of creating and manipulating images, text, digital images, sound, video and simple animations	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content – Discrete teaching of creating and manipulating images, text, digital images, sound, video and animations	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content — Discrete teaching of creating and manipulating content and combining software	Digital Literacy E-Safety Introduction  Information Technology Creating Digital Content – Independent content creation based on task specific units
Autumn Term 2	Information Technology Creating Digital Content – Photography and Video	Information Technology Creating Digital Content – Making Podcasts	Information Technology Creating Digital Content – Making Podcasts	Information Technology Creating Digital Content – Blogging / Podcasts	Information Technology Creating Digital Content – Blogging / Online Class Newspaper	Information Technology Creating Digital Content – Blogging / Online Class Newspaper / Microsite
Spring Term 1	Computer Science Algorithms – Beebots – following instructions / 2Go / Logo	Computer Science Algorithms – Probots – following instructions / 2Go / Logo	Computer Science Algorithms – Programming and debugging Probots / Scratch	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code / Kodu
Spring Term 2	Computer Science Create and Debug Programs – Role- Play / Beebots / 2Go / Logo	Computer Science Create and Debug Programs – Role-Play / Probots / 2Go / Logo	Computer Science Algorithms – Programming and debugging Probots / Scratch	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code	Computer Science Design, Write and Debug Programs – Scratch / Magic Forest / Lego Mindstorms / 2Code / Kodu

Summer Term 1	Information Technology Creating Digital Content	Information Technology Creating Digital Content	Information Technology Searching and Databases - Conducting simple internet searches and creating and using simple databases	Information Technology Searching and Databases – Conducting simple searches – including basic evaluating and creating and using databases	Information Technology Searching and Evaluating and Databases – Conducting searches and evaluating content in order to present and use. Searching Public Databases	Information Technology Searching and Evaluating and Databases – Conducting searches and evaluating content in order to present and use. Searching Public Databases	
Summer Term 2	Digital Literacy Digital Me – How do I use technology / how is it used in everyday life?	Digital Literacy Digital Me – How do I use technology / how is it used in everyday life?	Digital Litercy My Digital World – Technology in the world around me - including collaboration and networks	Digital Litercy My Digital World – Technology in the world around me - including collaboration and networks	Digital Litercy My Digital World – Technology in the world around me - including collaboration and networks	Digital Litercy My Digital World – Transition project with a focus on E-Safety– networks, collaboration and my digital footprint	
Ongoing Modules							
	INFORMATION TECHNOLOGY – Children to use a wide range of software in order to continually work towards the PoS Statements for this strand. Children should use technology to create digital content linked to topic/theme areas across the curriculum. This does not always have to be creating documents (although there are a wide range of formats within Purple Mash) and it could also be creating a game or quiz linked to a topic, making and using a database, graphing software or spreadsheet within numeracy, making an animation, creating a video diary of a project, using online presentation tools such as Prezi, making a podcast or blog. This strand should be planned for within other curriculum areas and subjects, giving children options to use technology to create digital content.						

# **Policy Review**

This is an in-house policy and will be reviewed annually/biannually during Term\*\*\*

The next review for this policy is due: \*\*\*\*\*\*