Computing Policy

Unity
Trust
Courage
Curiosity
Respect
Kindness

A community for learning. Raising expectations. Fulfilling high standards.

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Philosophy

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.

Computing, previously known as ICT, is a cross-curricular subject that has a critical role in enhancing the learning process at all levels of the curriculum and across a broad range of subjects and activities. Used correctly, the subject prepares today's children for tomorrow's technological future. The advances made in the world of technology during recent years have had a significant impact on our everyday lives. Already, in today's world, computers and information technology form an essential part of everyday life. Now, with the growth of the Internet and the easy accessibility of home computers, we must encourage pupils to gain confidence and capability in the use of ICT to prepare them for adult life.

Our main aim is to make all children 'ICT literate', defined in the National Curriculum as "…characterised by an ability to effectively use ICT tools and information sources to analyse, process and present information to model, measure and control external events".

Intent

When planning the Widmer End CC School computing curriculum, the first step was to consider how the National Curriculum objectives would relate to our school and our philosophies and local society and history. We wanted to ensure diversity and equality were considered a feature of our teaching. We considered the importance of showing equality in gender, race and ability throughout the computing world.

Online safety was also a high priority within our computing curriculum. Children's knowledge and capability when using the Internet have significantly increased when compared to the same time five years ago; however, this also means children's understanding and vulnerability have become greater considerations, and it has never been more important to ensure they are fully prepared to tackle the virtual world.

At Widmer End CC School, we believe 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.

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Our main aim is to make all children 'ICT literate', defined in the National Curriculum as "…characterised by an ability to effectively use ICT tools and information sources to analyse, process and present information to model, measure and control external events".

Children will attain the necessary breadth of study by being given opportunities to work with a range of information, explore with a variety of tools and devices, and compare the different uses of ICT.

To ensure that the ICT programmes of study and attainment targets are translated into practical and manageable teaching plans, children will be taught in line with the agreed focus materials.

Kapow Computing's Progression of Skills page is the suggested teaching sequence of our activity packs and the skills within them. The page also includes how the activities meet the expectations of the national curriculum programmes of study for Key Stages 1 and 2. It has been designed to make sure pupils learn computing skills from the three recognised strands of computing (below) within each year of their primary education. This means that pupils will build upon skills and concepts they established from the previous year and develop them further in the current and subsequent years.

The three strands are:

1. **Information Technology**
   - Use search technologies effectively.
   - Select, use, and combine a variety of software on a range of digital devices to design, create, and present data,
   - systems, and content.
   - Acquire techniques such as saving, copying, and checking accuracy.
   - Apply mathematical skills using ICT.
   - Collect, analyse, evaluate, and present first-hand data effectively.
2. **Computer Science**
   - Design, write, and debug programs to accomplish goals, including controlling or simulating physical systems.
   - Use sequence, selection, and repetition, variables, and various forms of input/output.
   - Apply logical reasoning to explain algorithms and correct errors.
   - Understand computer networks, including the internet and services like the World Wide Web.
3. **Online Safety / Digital Literacy**
   - Use networks for communication and collaboration.
   - Evaluate and present digital data responsibly.
   - Use technology safely, respectfully, and responsibly, including understanding acceptable behaviour and how to report concerns.

Key Stage 1 objectives

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 objectives

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

Computing in the Curriculum

Computing and computing skills are embedded into the Curriculum to give children the opportunity to use computing alongside other subjects, working to their own specified requirements to research information. This allows children to:

- build creativity opportunities into planning for the class based on skills-based objectives
- devise activities that allow children to pursue their particular interests
- plan learning opportunities with a cross-curricular approach
- plan for a range of teaching and learning styles so children have the opportunity to show their creativity, e.g. role play, hands-on experimentation, problem solving, discussion, collaborative work
- give children clear but challenging and achievable goals
- share objectives with the children and give them opportunities to choose ways of working and how to shape the direction of work
- use stimulating starting points to capture interest and fire imagination
- actively encourage questioning

Teaching Approaches

At Widmer End CC School, all teachers share responsibility for making their pupils computer literate. This means that all teachers themselves will need to become 'computing' literate to an appropriate level – acting as role models with their use of computing. The computing co-ordinator will provide support and assistance for this and is responsible for monitoring computing throughout the school.

Class teachers are responsible for their own class organisation and teaching style in relation to the teaching of computing, but at the same time must ensure these reflect the overall aims and philosophy of this policy. Due to the varied nature of computing, direct teaching will be carried out either in pairs, small groups or a whole class situation. Children will sometimes be grouped by ability (mixed or similar), age (in mixed age classes) or in mixed friendship groups. There may be occasions when software or a specific skill might need to be introduced to an individual child, depending on the specific task. This will allow children to work on individually prepared tasks with work matched to each child's own development needs.

Pupils should experience the frequent use of computer technology, readily increasing their independence and ability to choose the appropriate software for a given curriculum activity. Computing should be embedded in all other subjects, with Smart Televisions, iPads, class laptops and whiteboards being used to enhance lessons in an exciting, interactive, stimulating way wherever appropriate. ICT should incorporate the multi-sensory approach to learning (VAK). Appropriate classroom strategies should be adopted to ensure equal access to all aspects of computing for all children. Teachers, above all, need to praise and value children's computing achievements, however big or small, to develop their confidence and self-esteem in computer science.

The range of software and planned activities should provide for the progression of skills and concepts, and the practical application of these. Where activities are lengthy, rotas may need to be used to record individual pupils' access to computers, using a flexible timetable where necessary.

Planning and Implementation

Each lesson contains revision, analysis and problem-solving. Through the sequence of lessons, we intend to inspire pupils to develop a love of the digital world, see its place in their future and give teachers confidence. Cross-curricular links are also important in supporting other areas of learning.
Our curriculum is organised into key areas, creating a cyclical route through which pupils can develop their computing knowledge and skills by revisiting and building on previous learning. By categorising lessons into the five key areas below, it is clear to see prior and future learning for our pupils and how what we are teaching fits into their wider learning journey:

Provided lesson plans and resources help children to build on prior knowledge at the same time as introducing new skills and challenges.
Data Handling is featured more heavily in UKS2. Skills learnt through KS1 and LKS2 are used to support data presentation. Adult video guides are offered, knowledge sheets, as well as end-of-unit assessments, enabling staff to feel confident in the progression of skills and knowledge and that outcomes are to be met. Key vocabulary has been identified, showing the progression of specific language involved in children's learning so that teachers can also assess understanding and progress through vocabulary. A specific sequence of lessons is given for each year group, offering structure and narrative. These are not to be used exclusively but will support teachers' planning.
Both substantive knowledge and disciplinary knowledge are addressed at age-related levels throughout the academic year. Teachers use year-group specific 'knowledge sheets' and given lesson plans, to plan activities and assess pupil progress linked to the key skills taught. Furthermore, at Widmer End CC School, we strive to incorporate teaching and learning of Computing within other areas of the curriculum.
The implementation of the Computing curriculum allows children to show characteristics of effective learning as they are provided with ample opportunity to; play, explore, create, make links and build resilience. All classes have weekly timetabled slots for them to access laptops and iPads. Teachers and children also have access to programmable toys and equipment, such as BeeBots and Microbits provide further enriching learning experiences in computing lessons and crosscurricular. Opportunities to further enrich the children's computing journey are provided through trips, clubs, workshops and/or visitors in school.

Resources

A variety of computing resources are available in the school.

In the Foundation Stage, there are iPads and Smartboards in Reception and Pre-School classes. In Key Stage 1, there are Smart Boards in every classroom, and they access 32x Chromebooks. Years 3, 4, 5 and 6 have shared access to Chromebooks and Smartboards too. All devices are networked to link up to the main server.

There are also 30 iPads distributed across the school to aid with media creation and evidencing through Class Dojo, as well as music and PE recording facilities, and transition to high school, as well as many apps that relate directly to the new computing curriculum.

Each member of staff has been allocated their own school Chromebook. All devices are accessed through the central network with a specific username and password, and all documents are saved on a cloud-based server and work account.

Maintenance of all resources is the responsibility of everyone. Teachers are responsible for the day-to-day care of their classroom computers and for the software that they use. Any problems must be logged on the Trailblaze team fault log as soon as the problem arises, indicating the problem, location and person it is connected to.

Teachers are also responsible for ensuring that all children know where resources are kept and the rules governing their access and use, particularly with regard to safety and privacy. The Computing co-ordinator, in consultation with the teachers, will review the allocation of hardware and software annually.

Assessment and reporting

Given the rapid changes in the world of computing, it will be necessary to monitor the effectiveness of this policy annually and make any necessary amendments. Monitoring will take place through:

- Learning walks and lesson observations
- Discussing with teachers the effectiveness of software and computing activities
- Looking at the assessment checklists of knowledge and skills attained by the children
- Review of the Computing Development/Action Plan

Children's work will be assessed by either the class teacher or teaching assistant during each major experience in line with the programmes of study.

Assessment of computing as its own subject will follow the sequences provided in connection with the Computing Curriculum Map and through Kapow Computing objectives. Assessment should be built into computing lessons at the planning stage, e.g. teachers should have a clear idea of what and who (individuals, pairs or groups) they want to assess, and what their focus will be.

Computing should be assessed in a variety of ways:

- Observation of a child or group during a task
- Discussion with children about their activity
- Scrutiny of saved work in Google Classroom folders
- Children's own evaluation of their work
- Recording pupils' progress and achievements by keeping a checklist of the knowledge and skills attained by each child in their class, as and when they are achieved in the provided Kapow Computing assessment grids

These assessments should then be used to inform future planning and provide information about individuals and groups, as well as provide information for parents. The assessments should be undertaken throughout the Key

Stages and are the responsibility of the class teacher. Teachers should also carry out evaluations in order to form the basis for future planning, both long-term and short-term.

These evaluations should focus on:

- Children's progress and achievements
- Appropriate use of hardware and software
- Coverage of the National Curriculum

As part of the annual 'report to parents', comments should be made referring to a child's capability in Computing.

Impact

Children who leave Widmer End CC Primary School and transition to KS3 leave with competent skills underpinned by a body of knowledge. Through regular meetings with teaching staff and pupil voice, we generate a good understanding of current knowledge within the school.
Children screenshot work which is stored on their private Google Classroom folders and save documents within their private 'documents' folder to provide evidence of skills they have developed in each unit.

Computing is delivered in accordance with the statutory entitlement as specified in the National Curriculum (September 2014).

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 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

Children will attain the necessary breadth of study by being given opportunities to work with a range of information, explore with a variety of tools and devices, and compare the different uses of computing.

Early Years Foundation Stage (Reception and Pre-School)

Sequenced across Pre-School and Reception, the EYFS curriculum has been formed from the statement of the statutory educational programme of Knowledge and Understanding of the World, which states "listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. (EYS Framework - Understanding the World)"

EYFS - Precomputing skills

The skills and experiences taught below will feed into the National Curriculum objectives the children will encounter in KS1. They will give them the necessary knowledge and processes to generate the first steps on the progression ladder towards the National Curriculum computing end points.

Children will enter the early years setting with varying levels of experience in using computers. Some children will have considerable experience with the use of computers and remote-control type toys. However, there will still be a need to direct these skills into more focused learning. In addition, there will be children who will be using the computer or other computing equipment for the first time. Computing can be an exciting and motivating activity used to develop many important areas of learning.
Children in the Foundation stage have computing opportunities available freely on continuous provision.
Teachers need to encourage children to observe and talk about the use of computing in the environment and to encourage children to show each other how to use computer-based equipment.

Role of an adult with Foundation Stage computing:

- Support and extend the skills children develop as they become familiar with simple equipment, such as twisting or turning a knob.
- Draw young children's attention to pieces of apparatus they see or that they use with adult supervision.
- When out in the locality, ask children to help press the button at the pelican crossing, or speak into an intercom to tell somebody you are there.
- In CP, pupils can explore how programmable devices work, such as washing machines, mobile phones, etc. Model this technology, pretending to send messages across the world to people we know, giving an opportunity to talk about how devices are connected and how to stay safe on the internet.
- Help pupils develop an understanding that computers in their school are connected together and to computers in the outside world.
- Encourage children to speculate on the reasons why things happen or how things work.
- Support children to coordinate actions to use technology, for example, dial a telephone number.

- Provide a range of materials and objects to play with that work in different ways for different purposes, for example, egg whisk, torch, other household implements, pulleys, construction kits and tablets.
- Provide a range of programmable toys, as well as equipment involving computing, such as computers.

Related Issues

Maintenance

In order to keep maintenance to a minimum, any faults should be reported to Trailblaze via the WE bookmark tab as soon as the problem arises to log an issue. All equipment should be shut down when finished. Programmes should be closed down correctly, and computers should be shut down in a controlled manner.

Health and Safety

To minimise the likelihood of accidents, the children will be advised on the correct use of computing equipment, such as:

- Pupils should not spend more than 40 minutes out of every hour in front of the screen
- Computers should be stored safely in the classrooms so that their cables are not easily accessible or hanging dangerously
- Children will not be allowed to use the main electrical socket connected to computers and Smart TVs. Smart TVs should be placed at an appropriate height for the year/group using them, or where this is not the case, a specially designed box/step should be used

Special Educational Needs / Gifted

All children should have access to a broad, balanced curriculum, which includes computing. Support for individual children will be provided whenever possible and is the responsibility of the class teacher, support staff or SEN co-ordinators as appropriate. Children will be encouraged to develop at their own pace, and equipment will be provided at an appropriate level. At Widmer End CC School, we recognise that computing can provide an important motivational tool for SEN pupils. With specialised software and small group work, learning opportunities for SEN children can be increased. Familiarity gives confidence, and this breeds enjoyment and motivation. This has been demonstrated to be particularly evident for children with special educational needs.

All children will be monitored for specific computing skills and talents in this subject area and recruited into clubs and activities to promote and encourage that talent.

As computing lead, a list is created of all children who have an EHCP or specific computing need across the school. The computing lead will work with class teachers and SENCo (and, through parental discussions where appropriate) to be aware of and provide for any specific needs these children will need with regard to accessing the computing curriculum.

Equal Opportunities

Every pupil, regardless of gender, race, cultural background, ability, or any sensory or physical ability, should receive equal access to develop their computing capability. Computing is an area of the curriculum where, because of its unique nature in requiring specific equipment, equal access needs to be planned and monitored very carefully. It is the responsibility of the individual teacher to plan their pairs and groupings so that this is

achieved. Computers can play an important role in language development, topic work, problem solving and investigations. Therefore, it is important that we move away from the image of computers as complicated pieces of technology and look towards using them as a resource that is familiar to every child in the class.

Artificial intelligence (AI) in teaching and learning

The school recognises the increasing presence of AI in society and education. AI refers to computer systems or tools that can perform tasks which typically require human intelligence, such as recognising patterns, processing language, generating content or making predictions.

Our aim is to ensure pupils and staff engage with AI in a safe, ethical and educationally beneficial manner, aligned with our school's values and safeguarding principles.

Our pupils will be introduced to age-appropriate concepts of AI through the Computing curriculum and cross-curricular opportunities. Teaching will help children understand that AI systems use data to make decisions and that outputs may not always be accurate, complete or fair. AI tools may be used to support learning, to inspire creativity or to generate examples. The use of AI will always be guided by the teacher to ensure it supports rather than replaces human thinking, discussion, and creativity.

Our pupils will be taught to use AI responsibly, understanding that it should not be used to produce or share inappropriate, offensive or misleading material. AI-generated work must be acknowledged appropriately where used, and pupils should understand the importance of producing their own ideas and original work.

Staff may use AI tools to assist with planning, resource development, assessment and administrative tasks. Staff are responsible for ensuring the accuracy, appropriateness and fairness of all AI-generated materials before use in the classroom. Staff must not input or share personal, pupil or sensitive information with AI tools unless the system has been approved by the school and complies fully with data protection legislation (GDPR).

The school is committed to ensuring equitable access to AI-enchanced learning experiences for all pupils. AI will be used to support differentiation and inclusion where appropriate, but it will not replace direct teacher interaction, feedback or professional judgement.

Staff Development

Teachers need to become familiar with the educational uses of computing as well as the hardware and software that support it. This will constantly change as teaching and learning methodologies evolve and technical developments allow computing to be used in curriculum applications. One of the greatest investments must be in the training and familiarisation of teachers and support staff. All teaching staff have had previous access to training and other software/hardware training opportunities through school staff meetings and outside agencies.

Future inset needs must be identified through:

- School development planning
- Curriculum review and evaluation
- Co-ordinator needs Individual needs

Important people/events to cover in assemblies:

- Alan Turing
- Ada Lovelace
- Steve Jobs
- Bill Gates
- Charles Babbage
- James Gosling
- Philip Don Estridge
- Mark Zuckerberg
- Grace Hopper

Also see influential people and texts for computing, divided up into half terms and year groups for children to review within computing lessons.