A Curriculum to Inspire @ Mountfields Lodge

CURRICULUM STATEMENT: COMPUTING

Our Curriculum Intent for COMPUTING

The 'drivers' around which our curriculum is centred, without any subject preference or bias, are:

EXPLORE PERSEVERE (BE) INDEPENDENT COMMUNICATE

We want our pupils to develop EPIC qualities and become EPIC learners.

E: We want our pupils to have a love of exploring facts, finding information and developing new skills; we want them to be inquisitive and enquiring.

P: We want them not to give up at the first hurdle (or even the second); we want them to know that effort, commitment and hard work can pay dividends; we want them to persevere.

I: We want them to learn how to learn; to learn how to pursue lines of enquiry and interest themselves; we want them to develop independence.

C: We want them to be able to tell others, with confidence and clarity, what they know, what they think, what they imagine…we want them to be good communicators.

Whilst our 'Curriculum to Inspire' is based on the EYFS Curriculum and the National Curriculum, we have been proactive in our school by developing a new curriculum which inspires our children to learn and is relevant to their needs now - and in the future. We have tried to balance the 'have to' aspects alongside the 'got to' and the 'want to' aspects.

The aim of our curriculum is for pupils to have the requisite skills to be successful, independent and motivated learners in readiness for their next stage of education.

The Key Characteristics that we have identified, and that we believe, will make a **GOOD CODER and USER OF INFORMATION TECHNOLOGY** are:

- The ability to code competently for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data and digital content effectively, and to communicate findings.
- Perseverance when faced with challenges, including detecting errors and working purposely with others to overcome them.

We believe that COMPUTING prepares pupils to participate in a rapidly changing world in which work, and other activities, are increasingly being transformed by technology. With this in mind, we encourage children to develop computational thinking, and so are better able to conceptualise, to understand and use computer-based technology for their future.

Computing is a practical subject, in which invention and resourcefulness are encouraged. At Mountfields Lodge, Computing skills enable our pupils to find, explore, create, analyse, exchange and present information responsibly, creatively and with discrimination.

Using Computing to support problem solving and enrich learning across the curriculum, ensures our children grow up prepared for a technological age.

Our Curriculum Implementation for COMPUTING

At Mountfields Lodge School, we use the National Curriculum for Computing as the basis for our teaching, although this is enhanced by additional content. A creative approach to combining the teaching of skills, projects linked to themes, and pupil-driven learning is used to encourage confidence, creativity and independence in Computing. This ensures that all pupils are equipped with Computing skills (appropriate to their age group), which they can apply across the curriculum, can use computational thinking and are also digitally literate.

Prior attainment is acknowledged and prior learning accessed so that future learning is based on knowledge and understanding that is secure and established.

Our approach to teaching Computing in the Early Years Foundation Stage is based upon children recognising the range of technology that is used at school, home and our local environment. The 7 Early Learning Goals, which summarise the knowledge, skills and understanding that all young children should have gained by the end of the Reception year, are the bedrock of our National Curriculum planning in Year 1 and beyond. Computational thinking is encouraged and they experience the necessary problem-solving skills needed for everyday life. Technology provides opportunities to enhance and extend their learning, and chances to explore, observe and find out about people, places and the environment. They learn to select and use technology for particular purposes, sometimes in guided learning and sometimes in role play situations mimicking real life.

Using technology safely and respectfully is a key principle of our teaching and learning in Computing. Pupils are taught to use technology responsibly, to know what to do when they encounter concerns, and to consider their online actions.

Our expectations for Teaching and Learning are:

- A progression map for Computing (based on the NC Programme of study), which shows a clear progression of ‘matters, skills and processes’, is covered in each key stage. Attention is given to what pupils have already experienced, and subsequent steps in learning planned.

- Computing skills and processes are taught in a Computer Suite, through apps using ipads, and using a variety of technology and peripherals.

- Application of skills and processes, and opportunities for computational thinking, are linked to themes and across the curriculum, where appropriate.

- Teachers should find ways of contextualising Computing and helping pupils relate this to real world situations.

- Pupils should be encouraged to apply skills independently in order to demonstrate and use computational thinking. They should be given opportunities to express themselves and develop their ideas through information and communication technology.

- Pupils are taught in mixed ability, and sometimes mixed-age group classes. However, those pupils identified with a higher learning potential should be challenged further and children who find aspects of their learning more difficult should be appropriately supported to experience success.

- Pupils who have a lack of access to technology at home should be considered when planning the Computing curriculum.

The Progression Map for COMPUTING is:

Progression Map for Computing

Key Stage / Milestones		Year 1 and 2	Year 3 and 4	Year 5 and 6
To code	Motion	• Control motion by specifying the number of steps to travel, direction and turn.	• Use specified screen coordinates to control movement.	• Set IF conditions for movements. Specify types of rotation giving the number of degrees.
	Looks	• Add text strings, show and hide objects and change the features of an object.	• Set the appearance of objects and create sequences of changes.	• Change the position of objects between screen layers (send to back, bring to front).
	Sound	• Select sounds and control when they are heard, their duration and volume.	• Create and edit sounds. Control when they are heard, their volume, duration and rests.	• Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.
	Draw	• Control when drawings appear and set the pen colour, size and shape.	• Control the shade of pens.	• Combine the use of pens with movement to create interesting effects.
	Events	• Specify user inputs (such as clicks) to control events.	• Specify conditions to trigger events.	• Set events to control other events by 'broadcasting' information as a trigger.
	Control	• Specify the nature of events (such as a single event or a loop). 	• Use IF THEN conditions to control events or objects. 	• Use IF THEN ELSE conditions to control events or objects. 
	Sensing	• Create conditions for actions by waiting for a user input (such as a response to a question).	• Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).	• Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
	Variables and lists		• Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables.	• Use lists to create a set of variables.
	Operators	•	• Use the Reporter operators 	As Year 3/4, plus • Use the Boolean operators to perform operations 

Key Stage / Milestones	Year 1 and 2	Year 3 and 4	Year 5 and 6
To connect	• Participate in class social media accounts. • Understand online risks and the age rules for sites. • Understand the SMART Rules for keeping safe online.	• Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term 'copyright'. • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work.	• Collaborate with others online on sites approved and moderated by teachers. • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used.
To communicate	• Use a range of applications and devices in order to communicate ideas, work and messages.	• Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	• Choose the most suitable applications and devices for the purposes of communication. • Use many of the advanced features in order to create high quality, professional or efficient communications.
To collect	• Use simple databases to record information in areas across the curriculum.	• Devise and construct databases using applications designed for this purpose in areas across the curriculum.	• Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.

The school is committed to resourcing the Computing Curriculum in terms of technology, applications and connectivity. All digital devices throughout school are linked to both the school's

network and to the Internet. This provides an accessible system, which is well protected via an efficient firewall, constantly updated anti-virus software, and a management system. All classes have an interactive whiteboard linked to the school's network and to the Internet, and pupils regularly use the Computer Suite and the school's iPads.

Through a whole school programme for PSHE ('Jigsaw') and e-safety lessons, quality teaching and learning of digital literacy promotes an understanding of the pupils' rights and responsibilities. It teaches the principles of positive relationships online, addressing online safety and appropriate behaviour in a way that is relevant to pupils' lives.

The whole school gets involved in Safer Internet Day each year. This inspires children to think and behave respectfully, critically and creatively online, whilst promoting the safe, responsible and positive use of digital technology.

Events and visits also provide opportunities to enrich and develop the children's learning, particularly regarding keeping themselves safe both on and offline when using technology. Visits, such as the annual Year 6 visit to The Warning Zone, allows pupils opportunities to develop their independence as learners and their sense of responsibility as future digital citizens.

In KS1 and KS2, pupils are given access to Seesaw, an education platform, that is used to deliver engaging digital content, including teaching videos. Pupils use creative digital tools to respond and capture their learning in an online journal. Pupils are also given the opportunity to use digital skills independently at home through Seesaw, which is used for accessing, creating and presenting their homework. Parents are given the opportunity to connect with their child's journal.

In the Early Years Foundation Stage, Tapestry, an interactive online learning journal, is used to share children's learning and experiences with parents.

The promotion of digital literacy is also shared with parents annually through leaflets, booklets and the school website.

Our Curriculum Impact for COMPUTING:

We actively involve pupils in their own learning in Computing. We aim to promote the motivation of our pupils and their desire to improve, persevere and recognise their achievement.

Curriculum Impact Statement

In our school we have a set of assessment 'tasks'/tools that we use across all Foundation subjects; tasks/tools that are widely used (by teachers) and widely known (by pupils). We use these in Computing.

We believe that they have maximum impact on T&L outcomes (learning 'stickiness' and impact on 'next lesson' content and approach) for minimum demand upon staff workload and pupil wellbeing.

In Computing we recognise that we need to:

- **Share the Curriculum 'Journey'** – *do the pupils know what they are doing and why they are doing it and where it 'fits in'?*
- **Check previous knowledge/understanding/skills** – *what can the pupils remember from previous learning? Has it stuck?*
- **Check new knowledge/understanding/skills** – *have the pupils retained the objective of the lesson? Has it stuck?*
- **Using 'the checks' to adjust T&L** and improve outcomes.

We believe that if our assessment is regular, consistent and focused in Computing it will be relevant and impactful.

Our 3 agreed approaches to assessment in Computing are

1) At the Planning Stage

CTs refer to the **Progression Map** for Computing (x-ref Curriculum Implementation statement) at the point of planning and consider not only the 'current' Yr Gp expectations but also make themselves fully aware of the 'previous' and the 'next' expectations.

CTs then reference 'prior learning' in their introductory slide(s) (ppt/flipchart) to a new theme/unit**;** i.e. 'Do you remember in Year ? when you did/learned about/found out about?'

CTs judge the 'stickiness of the prior learning' and help pupils contextualise their learning. We do this to remind our pupils of what they have already been taught/have learnt and how it fits in to previous (and possibly future) learning/knowledge and skills acquisition.

2) The Learning Journey

CTs create and share **The Learning Journey** of each unit/theme in Computing (in a ppt or flipchart slide); this includes * **Questions** (max.6) that are to be answered throughout the theme/unit, Unit-specific **vocabulary** that must be used/taught and the **Core Learning** expectations.

The slide is referred to at the beginning of each Computing lesson; the strength of this is the coming back to it regularly and making sure the questions are answered and the vocabulary is embedded.

Our school's **Core Learning** expectations in Computing map out the 'non-negotiables' along the Learning Journey of a pupil in MfL. These **Core Learning** expectations are taken from our school's **Computing Progression Map**, which itself reflects the **National Curriculum**.

They clarify **our Curriculum Intent** for Computing. They are our, ***'by the time a pupil in MfL leaves*** *(an identified Yr Gp)* ***they must know/have experience of/ learn…'***

They 'build' on previous learning/K&U/skills and are our 'points of assessment' in Computing along the Learning Journey; they are things that are assessed by CTs and their stickiness monitored by Subject Leads and the SLT. They are how we assess Computing.

Core Learning Statements for Computing

	Computing				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
To code Explain what algorithms are. Create and debug simple programs to control motion, specifying user inputs to control events.	**To code** Explain how algorithms are implemented as programs on digital devices, and that programs follow precise instructions. Create and debug simple programs, specifying the nature of events (e.g. single event, loop or speed) and conditions for actions (e.g. waiting for a user input)	**To code** Specify conditions to trigger or control events, e.g. IF THEN. Use variables to store a value. Create, edit and control sounds.	**To code** Create conditions for actions by sensing proximity or waiting for a user input. Control variables using the functions define, set, change, show and hide. Use screen co-ordinates to control movement. Use the reporter operators.	**To code** Use IF and IF THEN ELSE conditions to control events or objects. Use lists to create a set of variables. Upload and edit sound files, adding effects and controlling their implementation.	**To code** Design, write and debug programs to create an app. Control events using a range of sensing tools, and 'broadcasting' information as a trigger. Use the Boolean operators.
To communicate Use a range of applications and devices to retrieve and present digital information, including sound and images.	**To communicate** Use a range of applications and devices to retrieve, record and manipulate digital information, including video.	**To communicate** Use some of the advanced features of applications and devices to communicate ideas, through text and images.	**To communicate** Use some of the advanced features of applications and devices (e.g. green screen) to communicate ideas, through text, images, video or messages.	**To communicate** Choose and use the most suitable advanced features of applications to communicate ideas, e.g. through web development and making movies.	**To communicate** Choose, use and combine the most suitable advanced features of applications to communicate ideas, e.g. through animation and CAD design.
To collect Use simple databases to record, store and present information.	**To collect** Use simple databases to classify, question and manipulate information.	**To collect** Devise and construct a database using applications, which can be searched.	**To collect** Devise and construct a spreadsheet to make calculations or solve problems. Use search technologies, and appreciate how results are selected and ranked.	**To collect** Select appropriate applications to devise, construct and manipulate data, and present it effectively. Use search technologies, and appreciate how results are selected and ranked; be discerning in evaluating digital content.	**To collect** Devise, construct, manipulate and combine a variety of appropriate applications to collect, analyse, evaluate and present data and information.
To connect Participate in class social media accounts, e.g. comments/bloggin g on Seesaw.	**To connect** Use communication software or applications to create and reply to messages.	**To connect** Explain how online services work, (e.g. email) and create and send appropriate messages.	**To connect** Contribute to blogs that are moderated by teachers.	**To connect** Understand how simple networks are set up and used. Understand the effect of online comments, and show responsibility and sensitivity when online.	**To connect** Collaborate with others online on approved and moderated sites, showing responsibility and sensitivity. Understand and demonstrate knowledge of copyright rules.
Use technology safely and respectfully, keeping personal information private; identifying 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) Photo Books

Each class has a **Photo Book;** it is used to 'capture the active learning' that the pupils have undertaken'.

We know that **our pupils** are more able to recall previous learning when they have a photo/picture/artefact prompt - a class photobook enables that. The Photo Book is referred to in class to bring prior learning to the fore, i.e. 'Do you remember when…?'

The aim is to ultimately produce QR codes for any videos/pieces of evidence of active/inspiring/engaging T&L that would be saved in our Shared Drive.

Our 3 agreed assessment tools in 'SUBJECT' are:

A) Flashcards:

We use these to engage 'active recall' through securing memory connections.

We believe that comparing recalled answers with correct /given answers, strengthens self-reflection (or metacognition).

B) Quizzes

These are short and focused; they can be online, self-quizzes, group quizzes or class 'team' quizzes. They are 'low stake' i.e. they are not considered to be the 'be all and end all' of assessment; there is no scoring, marking, recording or ranking of classmates etc.

We believe that frequent no- or low-stakes - quizzes help cement long-term learning as they require pupils to bring previously acquired information to mind. By retrieving information, they organise it and create cues and connections. We believe that quizzing enables pupils to interact with the learning content; to think, dig deep and be an active participant.

C) Exit Tickets

These are used at the end of a T&L session; again they are 'low stake'. Questions are posed to each individual on 'exit' from the lesson, or random individuals are selected, or table groups are questioned etc. We use these to consolidate, embed and check understanding; 'tickets' can be based on 'current'/recent learning OR can reference prior but linked learning.

We understand that the assessments made in Computing must be

- Utilitarian – seeking the greatest good for the greatest number
- Opportunist – picking up ideas and misconceptions as you find them
- Efficient – keeping things simple and brief
- Mastery-oriented – seeking to get every pupil to a key level of understanding

We believe it is extremely important that pupils do not see going back to the previous lesson as a punishment, for the teacher or for them – the culture in the classroom has to be that it is a chance to improve and to understand fully.

We do not forget that Marking and Feedback of our pupils' learning also enables us to provide effective feedback to pupils on their learning performance. We can give recognition and

appropriate praise for achievement. It helps us identify effective strategies and 'next steps' for improvement; it helps inform future planning. (x-ref. Marking and Feedback Policy).

Using the 3 agreed 'tools' for assessment in Computing and ensuring we deliver on our 3 agreed 'assessment approaches', we believe we are well placed to confidently report to pupils and parents in the statutory end-of-year Individual Pupil Reports in terms of Core Learning attainment.

We do not believe that in Computing there is any value, or need, to have a complex method of capturing attainment 'data' that, on first glance, might look good (i.e. a class list against a range of objectives, all annotated with colours/lines/marks that mean something once the coding is understood) but has little to no impact on T&L outcomes; i.e. 67% of Class 'B' attained at the expected standard in Music. Such data, in our experience, has little value, or impact on the 33% who didn't make the grade? Does it mean the learning was too hard for them? Does it mean the teaching didn't engage them? Does it mean they have failed? Does it mean they have missed that learning opportunity and won't revisit it for 2 more years?

We believe, that our considered method of assessment in Computing does everything we need it to do.