

**Miers Court
Primary School**

Computing and E-Safety

At Miers Court Primary School, we believe that all children should become confident, capable and safe users of technology. Our computing and e-safety curriculum helps pupils develop the skills and understanding needed to use technology effectively and responsibly.

It encourages them to think critically, solve problems and navigate the digital world with confidence.

Our computing curriculum aims to develop pupils' knowledge, understanding and skills in two key areas:

Computer Science - Children learn early programming skills and gain an understanding of how digital systems and devices work.

Information Technology - Pupils learn how to use a range of devices, software and apps effectively. They develop the ability to create documents, presentations, images and videos, and to use digital tools purposefully.

Our **E-safety curriculum** teaches children how to stay safe online. Pupils learn to recognise safe and unsafe behaviour on the internet, identify risks such as strangers online, scams and inappropriate content, and understand the importance of keeping personal information private. They are taught to use social media, online games and websites responsibly and respectfully, and to know what to do and who to tell if something worries them online. The curriculum also supports their wellbeing by helping them develop healthy digital habits and maintain a balanced approach to screen time.

Science & Technology curriculum comprises of:

- Science
- Design & Technology
- Computing

Shining Bright, Aiming High

Our Miers Court curriculum underpins our school values in the following way:

- Self-belief** Pupils recognise that computing is something they can be successful in.
- Togetherness** We want pupils to work collaboratively in investigating & exploring the world around them.
- Aspiration** We want to inspire our pupils to see how computing is used and developed outside our school and know how to keep themselves safe.
- Resilience** They develop the patience and understanding to explore digital devices and know how to develop their skills through repetition and patience.
- Success** Pupils are able to demonstrate their understanding and use a range of digital devices and programs successfully.

How Do We Teach **Computing**?



We have the scheme '*Teach Computing*' which supports teacher's subject knowledge and scaffolds the learning.

The Teaching of Computing follows a specific routemap which builds up the knowledge of their unit in small steps.

Science 'Route-map'

1. Re-Activating

The term will begin with the children recapping on previous knowledge, both from previous years and from previous units in this academic year. The Learning Journey Map is used to show the children where they have been and where their learning is going

2. Explore Real World Concept

The first stage is looking at computing in the real world and its applications. This allows the children to understand the concepts around the unit. It will show the pupils the fundamental groundwork of the unit and what they will be learning about. They will be introduced to the concepts and ideas.



Lead with concepts

Support pupils in the acquisition of knowledge, through the use of key concepts, terms, and vocabulary, providing opportunities to build a shared and consistent understanding. Glossaries, concept maps, and displays, along with regular recall and revision, can support this approach.



Unplug, unpack, repack

Teach new concepts by first unpacking complex terms and ideas, exploring these ideas in unplugged and familiar contexts, then repacking this new understanding into the original concept. This approach, called 'semantic waves', can help pupils develop a secure understanding of complex concepts



Model everything

Model processes or practices — everything from debugging code to binary number conversions — using techniques such as worked examples and live coding. Modelling is particularly beneficial to novices, providing scaffolding that can be gradually taken away.



Challenge misconceptions

Use formative questioning to uncover misconceptions and adapt teaching to address them as they occur. Awareness of common misconceptions alongside discussion, concept mapping, peer instruction, or simple quizzes can help identify areas of confusion



Read and explore code first

When teaching programming, focus first on code 'reading' activities, before code writing. With both block-based and text-based programming, encourage pupils to review and interpret blocks of code. Research has shown that being able to read, trace, and explain code augments pupils' ability to write code.



Add variety

Provide activities with different levels of direction, scaffolding, and support that promote learning, ranging from highly structured to more exploratory tasks. Adapting your instruction to suit different objectives will help keep all pupils engaged and encourage greater independence.



Get hands-on

Use physical computing and making activities that offer tactile and sensory experiences to enhance learning. Combining electronics and programming with arts and crafts (especially through exploratory projects) provides pupils with a creative, engaging context to explore and apply computing concepts.



Foster program comprehension

Use a variety of activities to consolidate knowledge and understanding of the function and structure of programs, including debugging, tracing, and Parson's Problems. Regular comprehension activities will help secure understanding and build connections with new knowledge



Work together

Encourage collaboration, specifically using pair programming and peer instruction, and also structured group tasks. Working together stimulates classroom dialogue, articulation of concepts, and development of shared understanding.



Structure lessons

Use supportive frameworks when planning lessons, such as PRIMM (*Predict, Run, Investigate, Modify, Make*) and (*Use-Modify-Create*). These frameworks are based on research and ensure that differentiation can be built in at various stages of the lesson.

3. Developing the Knowledge

The pupils will develop an understanding of the computing concepts and how the programming work.

The learning will be practical and allow the pupils to experiment and work together in exploring these concepts.

Over the course of the topic, they will become more familiar with the concept and how it works.



4. Design & Make Activity

At the end of the unit, the pupils will be given the opportunities to apply their knowledge to demonstrate that they have made progress in their knowledge.

As well, this, the children will be able to complete an end-of-term assessment to show their knowledge they have acquired.



Make concrete

Bring abstract concepts to life with real-world, contextual examples, and a focus on interdependencies with other curriculum subjects. T

his can be achieved through the use of unplugged activities, proposing analogies, storytelling around concepts, and finding examples of the concepts in pupils' lives.



Create projects

Use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding.

Design is an important, often overlooked aspect of computing. Pupils can consider how to develop an artefact for a particular user or function, and evaluate it against a set of criteria.

Online Safety

E-Safety is an important part of the curriculum in teaching the children how to keep themselves safe. We ensure that pupils understand their 'Digital Footprint' and that children growing up in a world saturated with technology and advertising. Even from birth, children have a digital footprint and we need to ensure that pupils are keeping yourself safe.

As part of our Safeguarding Curriculum, in the final week of every term, the classes undertake a lesson on Online safety, which looks at various aspects of the children's life in relation to the Four Cs:

- Content** being exposed to illegal, inappropriate or harmful material

- Contact** being subjected to harmful online interaction with other users

- Conduct** personal online behaviour that increases the likelihood of, or causes, harm

- Commerce** being exposed to online gambling, inappropriate advertising, phishing and or financial scams.

How Do We Adapt Learning To Support Pupils In **Computing**?

Non-Negotiables that need to be in place in all lessons/classrooms when teaching

1. Dual-coded displays/resources available to all pupils
2. Ensure outcomes are either open-ended or pupils have a choice of how to present their work within that objective
3. All pupils are given a means of expressing their views and opinions, whether written, recorded, drawn etc.
- 4.

Cognition and Learning

Subject Challenges

Accessing the programmes for the curriculum – understanding how to use them.

Processing or cognitive difficulties including literacy needs

Provision for SEND

Differentiation in action during lessons

Scaffolding or small group support with teacher/TA

Choice of programme – using Sphero for voice coding/ drawing coding.
Stem sentences / key vocabulary
Screen readers

Communication and Interaction

Subject Challenges

Understanding order to complete the task
Key vocabulary understanding and ability to process language

Provision for SEND

Visual representation of instructions/task
Opportunities to work with or ask a friend or the teacher.

Stem sentences / key vocabulary displayed clearly with dual coding
Working collaboratively across different devices

Google Translate for all websites

Screen readers

Physical and sensory

Subject Challenges

Bright lights on the computer

Noisy

websites/applications

Font and font size

Keyboard skills

Provision for SEND

Adjustable brightness

Headphones available

Individual logins with

personalised font/font size

Voice to text add-ons

Social Emotional and Mental Health

Subject Challenges

Finding things tough – particularly when error messages occur or something doesn't work
Internet safety

Provision for SEND

If unsure, always click cancel

Clear instructions to support difficult processes

Using programs that can help with mental health issues

How Is The **Computing** Sequenced Throughout The School?

The Computing knowledge for the pupil is sequenced to build up not only in year but also in four key themes over each year.



Computing systems & Networks



Creating Media



Data & Information



Programming

How is **Computing** Sequenced Over The Year?

These strands are delivered in the following terms.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 5	
R	Computing in EYFS is centred around play-based, unplugged (no computer) activities that focus on building children’s listening skills, curiosity and creativity and problem solving. Technology in the Early Years can mean: <ul style="list-style-type: none"> • searching for information on the internet with an adult • playing games on the interactive whiteboard • exploring an old typewriter/telephone and mechanical toys • using a Beebot • watching a video clip • listening to music • through role-play (home corner) Allowing children the opportunity to explore technology in a child-led way, means that not only will they develop a familiarity with equipment and vocabulary but it will also support them to have a strong start in Key Stage 1 Computing and all that it demands.						
	1	Computing systems and networks – Technology around us	<u>Creating media – Digital painting</u>	Programming A – Moving a robot	Data and information – Grouping data	Creating media – Digital writing	<u>Programming B - Programming animations</u>
	2	Computing systems and networks – what is IT?	Creating media – Digital photography	Creating media - Digital music	Programming A – Robot algorithms	Data and information – Pictograms	Programming B - Programming quizzes
	3	Creating media – Desktop publishing	Computing systems and networks – Connecting computers	Creating media - Stop-frame animation	Programming A - Sequencing sounds	Programming B - Events and actions in programs	Data and information – Branching databases
	4	Computing systems and networks – The Internet	Creating media - Audio production	Programming A – Repetition in shapes	Data and information – Data logging	Creating media – Photo editing	Programming B – Repetition in games



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5	Creating media - Video production	Computing systems and networks - Systems and searching	Creating media – Introduction to vector graphics	Data and information – Flat-file databases	Programming A – Selection in physical computing	Programming B – Selection in quizzes
6	Programming A – Variables in games	Programming B - Sensing movement	Creating media – 3D Modelling	Computing systems and networks - Communication and collaboration	Creating media – Web page creation	Data and information - Introduction to Spreadsheets

End of Year Expectations in **Computing** show pupils can

Assessment Question 3. What can the pupils apply?

Computing Systems & Networks

Creating Media

Data & Information

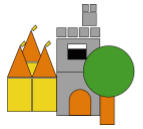
Programming

Online Safety

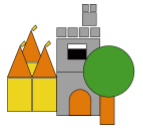
R	Throughout the terms and across the year. Year R children experience a rich range of activities and experiences incorporating the use of ICT through a play based, enquiry led curriculum. Skills that are covered include;				
	Develop confidence using age-appropriate digital devices (tablets, interactive whiteboards, simple computers) Understand how to switch devices on/off safely. Experiment with taking photos or short videos using a tablet. Use simple coding or sequencing tools (e.g., Bee-Bots, simple coding apps). Begin to understand that digital devices can be used to share information. Recognise a range of everyday technologies (phones, scanners, tills, tablets, traffic lights). Talk about how technology helps us at home, in school, and in the community. Understand simple rules for using devices safely and respectfully. Know to ask an adult for help if they see something unexpected.				
1	1.1. To identify a computer and its main parts 1.2. To create rules for using technology responsibly	1.3. To make careful choices when painting a digital picture 1.4. To use a computer on my own to paint a picture 1.5. To use a computer to write 1.6. To make careful choices when changing text	1.7. To label objects 1.8. To count objects with the same properties	1.9. To explain what a given command will do 1.10. To plan a simple program 1.11. To choose a command for a given purpose 1.12. To identify the effect of changing a value	1.13. I can recognise that there may be people online who could make someone feel sad, embarrassed or upset 1.14. I can give examples of when I should ask permission to do something online and explain why this is important. 1.15. I can recognise that information can stay online and could be copied. 1.16. I can describe how to behave online in ways that do not upset others and can give examples. 1.17. I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke. 1.18. I can explain rules to keep myself safe when using technology both in and beyond the home. 1.19. I can explain how passwords are used to protect information, accounts and devices. 1.20. I can explain why work I create using technology belongs to m



2	<p>2.1. To recognise the uses and features of information technology</p> <p>2.2. To explain how to use information technology safely</p>	<p>2.3. To use a digital device to take a photograph</p> <p>2.4. To use tools to change an image</p> <p>2.5. To show how music is made from a series of notes</p> <p>2.6. To create music for a purpose</p>	<p>2.7. To create a pictogram</p> <p>2.8. To explain that we can present information using a computer</p>	<p>2.9. To describe a series of instructions as a sequence</p> <p>2.10. To design an algorithm</p> <p>2.11. To create a program using a given design</p> <p>2.12. To decide how my project can be improved</p>	<p>2.13. I can explain how other people may look and act differently online and offline.</p> <p>2.14. I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a penpal in another school / country).</p> <p>2.15. I know who to talk to if something has been put online without consent or if it is incorrect.</p> <p>2.16. I can explain what bullying is, how people may bully others and how bullying can make someone feel</p> <p>2.17. I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).</p> <p>2.18. I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.</p> <p>2.19. I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords).</p> <p>2.20. I can recognise that content on the internet may belong to other people</p>
3	<p>3.1. To identify input and output devices</p> <p>3.2. To recognise how digital devices can change the way we work</p>	<p>3.3. To plan an animation</p> <p>3.4. To evaluate the impact of adding other media to an animation</p> <p>3.5. To recognise that text and layout can be edited</p> <p>3.6. To consider how different layouts can suit different purposes</p>	<p>3.7. To create a branching database</p> <p>3.8. To identify objects using a branching database</p>	<p>3.9. To explore a new programming environment</p> <p>3.10. To change the appearance of my project</p> <p>3.11. To create a program to move a sprite in four directions</p> <p>3.12. Suggest ways to improve</p>	<p>3.13. I can explain what is meant by the term 'identity'.</p> <p>3.14. I can explain what it means to 'know someone' online and why this might be different from knowing someone offline.</p> <p>3.15. I can explain the need to be careful before sharing anything personal.</p> <p>3.16. I can give examples of how bullying behaviour could appear online and how someone can get support.</p> <p>3.17. I can demonstrate how to use key phrases in search engines to gather accurate information online.</p> <p>3.18. I can explain why spending too much time using technology can sometimes have a negative impact on anyone;</p> <p>3.19. I can describe simple strategies for creating and keeping passwords private.</p> <p>3.20. I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.</p>



4	<p>4.1. To describe how networks physically connect to other networks</p> <p>4.2. To describe how content can be added and accessed on the World Wide Web (WWW)</p>	<p>4.3. To explain that a digital recording is stored as a file</p> <p>4.4. To show that different types of audio can be combined and played together</p> <p>4.5. To change the composition of an image</p> <p>4.6. To recognise that not all images are real</p>	<p>4.7. To explain that data gathered over time can be used to answer questions</p> <p>4.8. To use data collected over a long duration to find information</p>	<p>4.9. To create a program in a text-based language</p> <p>4.10. To create a program that uses count-controlled loops to produce a given outcome</p> <p>4.11. To develop a design that includes two or more loops which run at the same time</p> <p>4.12. To design a project that includes repetition</p>	<p>4.13. I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.</p> <p>4.14. I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.</p> <p>4.15. I can explain ways that some of the information about anyone online could have been created, copied or shared by others.</p> <p>4.16. I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).</p> <p>4.17. I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites).</p> <p>4.18. I can explain how using technology can be a distraction from other things, in both a positive and negative way.</p> <p>4.19. I can describe strategies for keeping personal information private, depending on context.</p> <p>4.20. When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.</p>
5	<p>5.1. To recognise the role of computer systems in our lives</p> <p>5.2. To explain how sharing information online lets people in different places work together</p>	<p>5.3. To capture video using a range of techniques</p> <p>5.4. To consider the impact of the choices made when making and sharing a video</p> <p>5.5. To identify that drawing tools can be used to produce different outcomes</p> <p>5.6. To use tools to achieve a desired effect</p>	<p>5.7. To compare paper and computer-based databases</p> <p>5.8. To apply my knowledge of a database to ask and answer real-world questions</p>	<p>5.9. To control a simple circuit connected to a computer</p> <p>5.10. To design a physical project that includes selection</p> <p>5.11. To explain how selection is used in computer programs</p> <p>5.12. To design a program which uses selection</p>	<p>5.13. I can demonstrate how to make responsible choices about having an online identity, depending on context</p> <p>5.14. I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.</p> <p>5.15. I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect</p> <p>5.16. I can describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying.</p> <p>5.17. I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.</p> <p>5.18. I can describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively.</p> <p>5.19. I can explain what a strong password is and demonstrate how to create one.</p> <p>5.20. I can assess and justify when it is acceptable to use the work of others</p>



6	6.1. To explain how search results are ranked 6.2. To recognise how we communicate using technology	6.3. To plan the features of a web page 6.4. To recognise the need to preview pages 6.5. To use a computer to create and manipulate three-dimensional (3D) digital objects 6.6. To design a digital model by combining 3D objects	6.7. To explain that formulas can be used to produce calculated data 6.8. To create a spreadsheet to plan an event	6.9. To explain why a variable is used in a program 6.10. To design a physical project that includes selection 6.11. To explain that selection can control the flow of a program 6.12. To design a project that uses inputs and outputs on a controllable device	6.13. I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. 6.14. I can explain how sharing something online may have an impact either positively or negatively 6.15. I can explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity. 6.16. I can describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me. 6.17. I can explain how and why some people may present 'opinions' as 'facts'; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal. 6.18. I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose 6.19. I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser). 6.20. I can demonstrate how to make references to and acknowledge sources I have used from the internet.
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