

Limitless Dreams,
Endless Opportunities



**Manor Park School
& Nursery**

Computing Curriculum September 2022



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Computing Intent

At Manor Park we intend to prepare children to fulfil their potential with a high-quality computing education. This will equip 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. 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 Implementation

Our curriculum is implemented through discreet weekly lessons alongside an expectation and opportunity for pupils to use and apply their knowledge and skills in other curriculum areas, such as data collection or developing fluency using Times Tables Rock Stars in Maths. In Key Stage 1 the children will learn to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. They will be taught to create and debug simple programs and use logical reasoning to predict the behaviour of simple programs. They will be shown how to use a range of technology purposefully to create, organise, store, manipulate and retrieve digital content as well as recognise common uses of information technology beyond school. They will be taught to 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. Each of these skills will be taught through exciting half termly units.

In Key Stage 2 the children will design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. They will use sequence, selection, and repetition in programs, use logical reasoning to explain how some simple algorithms work and correct errors in algorithms and programs. Children will be taught to understand computer networks, including the internet, and the opportunities they offer for communication and collaboration. They will use search technologies effectively, learn to appreciate how results are selected and ranked, and be discerning in evaluating digital content. Children will be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to create a range of programs, systems and content that accomplish given goals. They will use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Our children in Early Years provision will be exposed to the understanding of internet safety as they explore the world around them and how technology is an everyday part of their learning and understanding of the world and are expected to use the computing suite and be able to be independent with basic skills. Furthermore, the school participates in Safer Internet Day every year as well as anti-cyberbullying projects.

Computing Impact

After the implementation of this robust computing curriculum, children at Manor Park will be digitally literate and able to join the rest of the world on its digital platform. They will be equipped, not only with the skills and knowledge to use technology effectively and for their own benefit, but more importantly – safely. The biggest impact we want on our children is that they understand the consequences of using the internet and that they are also aware of how to keep themselves safe online. Computing delivery is monitored through Lesson Observations, Data Analysis, Book Scrutiny, Pupil Voice and Learning Environment reviews. Verbal Feedback is given to children in order to support them to progress within and across lessons.

As children become more confident in their abilities in Computing, they will become more independent and key life skills such as problem-solving, logical thinking and self-evaluation become second nature.

Computing Curriculum Progression Skills and Knowledge – Cycle A

Overall Aims of National Curriculum	<ul style="list-style-type: none"> • 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.
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Subject	Reception	Year 1	Year 2	Year 3/4	Year 5/6
Focus of Study	ELG (No specific Computing)	Toys Let’s Find and Film. Shadows and Stickmen.	Fix it and Find it Shapes and safety. Animal top trumps	Programming/Comics Games and Information Become a game Designer	Programming Inside your Insides Understanding &Challenges

Technology in our lives	Find out about the environment by talking to people, examining photographs, simple maps and visiting local places	Recognise the ways we use technology in the classroom. Begin to talk about how technology is used in the home and community. Use links to websites to find information Begin to identify some of the benefits of using technology.	Explain why we use technology in the classroom. Talk about how technology is used in the home and community. Begin to understand that other people have created the information we use. Identify the benefits of using technology including finding information, creating and communicating. Discuss the differences between the internet and things in the physical world.	Describe whether a resource is on the Internet, the school network or own device. Identify key words to use when searching safely on the World Wide Web. Think about the reliability of information on the World Wide Web. Discuss how to check who owns photos, text and clipart. Create a hyperlink to a resource on the World Wide Web.	Talk about how Internet services are used for different purposes. Describe how information is transported on the Internet. Select an appropriate tool to communicate and collaborate online. Talk about the way search results are selected and ranked. Check the reliability of a website. Talk about copyright and acknowledge the sources of information found online.
E Safety	Explain the reasons for rules, know right from wrong and try to behave accordingly.	Begin to understand what personal information is and who you can share it with. Begin to recognise the need to know who it is they are sharing their learning with online Know who to tell when they see something that makes them uncomfortable. Know that sometimes pictures and words on the Internet cannot be copied because they belong to someone else.	Explain why we need to keep passwords and personal information private. Recognise the difference between real and imaginary online experiences. Recognise that the Internet is an exciting place to be and begin to make good choices about age-appropriate activities. Describe the things that happen online that I must tell an adult about. Recognise different types of content on websites and know that some things may not be true or safe. To know that not everyone is who they say they are on the internet.	Choose a secure password. Talk about the ways to protect myself and my friends from harm online. Use the safety features of websites as well as reporting concerns to an adult. Know that anything posted online can be seen by others. Choose websites and games that are appropriate for age. Make good choices about how long is spent online. Talk about why to ask a trusted adult before downloading files and games from the Internet Comment positively and respectfully online.	Protect my password and other personal information. Explain the consequences of sharing too much personal information online. Support others to protect themselves and make good choices online, Explain the consequences of spending too much time online or on a game. Explain the consequences of not communicating kindly and respectfully. Protect a computer or device from harm on the Internet.

Programming	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.	Describe what happens when buttons are pressed on a floor robot. Press the buttons in the correct order to make a floor robot move. Describe what actions are needed to make something happen and begin to use a word algorithm. Begin to predict what will happen for a short sequence of instructions. Begin to use software/apps to create movement and patterns on a screen. Use the word debug when you need to correct mistakes.	Relay the order in which things need to be done to make something happen and talk about this as an algorithm. Program a floor robot or software to do a particular task. Use programming software to make objects move. Watch a program execute and spot where it goes wrong so that it can be debugged.	Use an efficient procedure to simplify a program. Use a sensor to detect a change which can select an action within a program. Use logical thinking to solve an open-ended problem by breaking it up into smaller parts. Know how to keep testing a program while putting it together. Use a variety of tools to create a program. Recognise an error in a program and debug it. Recognise that an algorithm will help to sequence more complex programs. Recognise that using algorithms will also help solve problems in other learning such as Maths, Science and DT.	Deconstruct a problem into smaller steps, recognising similarities to solutions used before. Explain and program each of the steps in an algorithm. Evaluate the effectiveness and efficiency of an algorithm. Recognise when you need to use a variable to achieve a required output. Use a variable and operators to stop a program. Use different inputs (including sensors) to control a device or onscreen action and predict what will happen. Link errors in a program to a problem in the algorithm on which it is based.
Text and Multimedia	Find out about the environment by talking to people, examining photographs, simple maps and visiting local places	Create different effects with different technology tools. Combine a mixture of text, graphics and sound to share ideas and learning. Add text and images to a template document using an image and word bank. Use a keyboard to build words and sentences. Use index fingers (left and right hand) on a mouse. Use technology to organise and present ideas in different ways. Use the keyboard to add, delete and space text for others to read. Tell others about an online tool that will help to share ideas with other people. Save and open files.	Use technology to organise and present ideas in different ways. Use the keyboard to add, delete and space text for others to read. Tell others about an online tool that will help to share ideas with other people. Save and open files. Use an increasing variety of tools and effects in paint programs and talk about choices. Create own documents, adding text and images. Use templates to make electronic books Explore the effects of sound and music in animation and video Use keyboard to enter text (index fingers left and right hand). Know when and how to use the RETURN/ENTER key. Use SHIFT and CAPS LOCK to enter capital letters. Use DELETE and BACKSPACE buttons to correct text.	Use photos, video and sound to create an atmosphere when presenting to different audiences. Explore new media confidently Change the appearance of text to increase its effectiveness. Create, modify and present documents for a particular purpose. Use a keyboard confidently and make use of a spellchecker to write and review work. Use an appropriate tool to share work and collaborate online. Give constructive feedback to others to help them improve their work and refine own work.	Talk about audience, atmosphere and structure when planning a particular outcome. Confidently identify the potential of unfamiliar technology to increase creativity. Combine a range of media, recognising the contribution of each to achieve a particular outcome. Be digitally discerning when evaluating the effectiveness of own work and the work of others.
Handling Information		Contribute to and interpret a pictogram. Take photographs, video and record sound to record learning experiences. Look at how data is representing digitally. Talk about the different ways in which information can be shown. Use technology to collect information, including photos, video and sound. Sort different kinds of information and present it to others. Add information to a pictograph.	Ask questions and consider how to collect information. Collect data; generate graphs and charts to find answers. Save and retrieve the data to show to others. Create paper/object decision trees and explore a branching database. Take and save photographs, video and record sound to capture learning. Use microscopes or other devices to capture and save magnified images. Investigate different types of digital data e.g. online encyclopaedias.	Organise data in different ways. Collect data and identify where it could be inaccurate. Plan, create and search a database to answer questions. Choose the best way to present data to others. Use a data logger to record and share readings with others.	Plan the process needed to investigate the world around us. Select the most effective tool to collect data for an investigation. Check the data collected for accuracy and plausibility. Interpret the data collected. Present data in an appropriate way. Use the skills to interrogate a database.

Year One



SOW Toys
Beebots, multimedia, Word, digital stories, research.
Online Safety- rules.



SOW Let's Find and Film.
Beebots, map of Knutsford. Simple algorithms, Debugging, filming info around Knutsford. Data handling- pictographs.
Online Safety- passwords.



SOW Shadows and Stickmen.
Simple photo blogging, animation, pivot stick. Measuring/recording Weather.
Photo, printing, displaying

Year Two



SOW Fix it and Find it Programming a robot to get through a fire, use technology for find information of the fire of London.
Blogging, programming, debugging. Research online, displaying info/adding photos. keyboard skills.
Online Safety- e safety online.



SOW Shapes and safety. Programme a robot to follow a route around the continents Investigate questions about Amelia Earhart.
Quadblogging. Safety poster/talking posters. Data/sorting. Programming robots. Debugging.
Online Safety- online gaming

Each term each year group covers aspects of computing from Multimedia, Online Safety, Data Handling, programming and Technology in our lives. Teaching will add to prior learning.

SOW Games and Information
Lego WeDo Programming -Prevent Flooding
Creating games, 'if something happens ... then ...'- adaptation
Handling Data -Collect and organise Data, Datalogger. Hyperlinks.
Online Safety- Digital Footprint, age appropriate games, Online chat



SOW Programming/Comics
Programming -Hopstotch, debugging
Scratch-stories
Creating own Comics
Research -Fact or Fiction
Powerpoint-info presentation
Online Safety - online images



Year Three /Four



SOW Animal top trumps linked to rainforest.
Programming algorithms. Displaying data. Multimedia -reports. Simple film animation.
Online Safety-Kindness online

SOW Become a game Designer
Programming -Lego WeDo Frogs Metamorphosis /Extreme Habitats
Kodu, complex programming, maths games linked to Olympic Games.
Create persuasive adverts, collect and present data around advert. Branching databases. Simulation Programmes
Online Safety- Kindness and Respect online



SOW Programming
Web searches, acknowledging sources. Collaboration. Scratch- Times
Table games, possibilities, modifying and adding sound.
Lego WeDo. -sending messages.
Online Safety- Cybercafes



SOW Inside your Insides
Research, multimedia, digital imagery, greenscreen filming, Handling Data, Online Surveys and sharing results.
Lego WeDo -animal senses.
Online Safety- Online Reliability



SOW Understanding &Challenges Webpages (webpage hosting), Data Handling, interrogating databases, Logo possibilities, challenges and errors/Scratch/Lego WeDo. - City safety.
Online Safety- Permissions, Cyber Bullying



Year Five /Six

