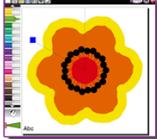




Ark Blacklands Primary Academy Computing Curriculum



Computing Overview

| | Autumn Term | | Spring Term | | Summer Term | |
|--------|---|---|---|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| | In addition to specific year group content, E-Safety is a common theme throughout all aspects of computing curriculum | | | | | |
| Year 1 | e-safety  | Maze explorers & BeeBots  | Coding  | Use of IT across Curriculum  | Animated Story Books  | Use of IT across Curriculum  |
| Year 2 | e-safety  | Coding  | Creating Pictures  | Use of IT across Curriculum  | Effective Searching  | Use of IT across Curriculum  |
| Year 3 | e-safety  | Coding  | Simulations and Branching  | Use of IT across Curriculum  | Email  | Use of IT across Curriculum  |
| Year 4 | e-safety  | Coding  | Logo and Animation  | Use of IT across Curriculum  | Spreadsheets  | Use of IT across Curriculum  |
| Year 5 | e-safety  | Coding  | Game Creation  | Use of IT across Curriculum  | Blogging  | Use of IT across Curriculum  |
| Year 6 | e-safety  | Coding  | Quizzing  | Use of IT across Curriculum  | Network and Binary  | Use of IT across Curriculum  |

Subject Intent:

Computing at Ark Blacklands develops children's ability to use a wide range of resources to **creatively communicate and present their ideas; learn to programme for different purposes and adapt to emerging technologies.**

E-safety is woven through our curriculum ensuring children develop responsible attitudes to digital life, preparing them for the 21st Century.

Implementation:

Children's discovery of world of technology begins in the Early Years where they are provided with regular access to a range of devices in the learning environment. Children are taught to recognise that technology is used in places such as homes and schools and they have opportunities to select and use technology for different purposes.

Following a large investment in IT infrastructure and hardware, including the purchase of two trolleys of 30 laptop devices, pupils from year 1 to year 6 now have regular access to in-class computing at least once a week.

The academy has also recently invested in a subscription to the Purple Mash online suite of tools. This software enables children to be taught effective computing skills for life in word processing and formula writing alongside more specific skills in coding and programming.



Each child has access to the internet and is taught how to use it appropriately and safely alongside how search engines and websites operate. Every child also has access to online safety resources from Purple Mash with an individual login. Internet safety is taught regularly at an age appropriate level and forms the basis of all Computing learning.

Children are also taught about vocabulary linked to computing and key skills for life including touch typing. Computing is also cross-curricular, progressing children's learning in all areas of the curriculum. For example, children are given the opportunity to create graphs in Maths, blogs in English or using digital maps in topic-based work.

As pupils progress through key Stage 2 and develop their skills, they begin to be taught using a range of well-known software including Microsoft Word, PowerPoint and Excel which are widely used in the wider world.

To support the successful implementation of our Computing curriculum, training has been provided at different levels. Staff have been upskilled to learn both how to use the Purple Mash suite but also to better understand coding and other aspects of computer science which are quite new to the primary curriculum.

Pupils in UKS2 are also given opportunities to become Computing Ambassadors; supporting teachers and younger pupils to be successful in their computing lessons with the additional opportunity to become Digital Leaders in our school using the Purple Mash resources provided.

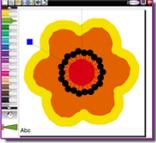
Developing Skills

Our Computing curriculum supports pupils to develop skill sin the following areas: E-safety; Using Technology; Algorithms & Programming & Communicating and Presenting

Year 1 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|-------------------------------|---|---|--|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 1 | <p>e-safety</p>  | <p>Maze explorers & BeeBots</p>  | <p>Coding</p>  | <p>Use of IT across Curriculum</p>  | <p>Animated Story Books</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p><i>Pupils will program a toy to move around a map to find buried treasure. They will think of algorithms for their routes and input these as store programs for the robot.</i></p> <p>Hunt for treasure Record an algorithm Experiment with a robot Program a robot Program a robot to find treasure Debug a program</p> | | <p><i>Pupils will examine a variety of different types of coding skills and explore these in a variety of contexts.</i></p> <p>Understand what coding means in computing Undertake block coding Create backgrounds and characters Introduce moving characters Add more actions using when Code interactivity between objects</p> | | <p><i>Pupils will work creatively to examine illustrations from books that they have read to create illustrate a simple eBook.</i></p> <p>Understand e-books Continue a previously saved story Add sound to a story Add backgrounds Copy and paste page Share and discuss e-stories</p> | |
| Program(s) | 2go, 2logo | | 2code | | 2create a story | |
| Equipment | BeeBots | | Laptops | | Laptops | |
| Use of IT in wider curriculum | | | | | | |

Year 2 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|---|--|---|---|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 2 | <p>e-safety</p>  | <p>Coding</p>  | <p>Creating Pictures</p>  | <p>Use of IT across Curriculum</p>  | <p>Effective Searching</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p><i>Pupils will examine a variety of different types of coding skills and explore these in a variety of contexts.</i></p> <p>Introduce algorithms Use repeat and timer commands Undertake debugging Explore possible actions of objects Create a complex story to tell a problem</p> | | <p><i>Pupils will examine a wide variety of artists and use programs from Purple Mash to explore and recreate work from famous artists.</i></p> <p>Examine the impressionist style. Recreate pointillism art Examine and recreate the work of Piet Mondrian Examine and recreate the work of Williams Morris Explore surrealism and e-collage</p> | | <p><i>Pupils become further aware of the ability to source information on the internet and the need to consider their own safety when searching online.</i></p> <p>Understand the terminology associated with searching Gain a better understanding of searching on the internet Create a leaflet to help others search online Refine searches Understand the concept of a digital footprints</p> | |
| Program(s) | 2code | | 2collage, 2art | | 2do, 2respond | |
| Equipment | Laptops | | Laptops | | Laptops | |
| Ideas for use of IT in wider curriculum | | | | | | |

Year 3 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|---|---|---|---|--|--|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 3 | <p>e-safety</p>  | <p>Coding</p>  | <p>Simulations and Branching</p>  | <p>Use of IT across Curriculum</p>  | <p>Email</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p><i>Pupils will examine a variety of different types of coding skills that develop in complexity; they will explore these in a variety of contexts.</i></p> <p>Write a program Design a program for a physical system Use repetition commands Introduce if statements Undertake debugging Introduce variables</p> | | <p><i>Pupils will understand the concepts and purposes of branching databases and simulations creating their own to analyse and evaluate a variety of situations.</i></p> <p>Sort objects into yes/no situations Complete a branching database Create a branching database Examine simulations Explore simulations Analyse and evaluate simulations</p> | | <p><i>Pupils will examine sending and receiving emails in a safe environment and discuss the importance of e-safety.</i></p> <p>Consider different methods of communication Open and respond to emails Use email safely Add attachments to an email Explore a simulated email scenario</p> | |
| Program(s) | 2code | | 2question, 2do | | 2email | |
| Equipment | Laptops | | Laptops | | Laptops | |
| Ideas for use of IT in wider curriculum | | | | | | |

Year 4 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|---|--|---|--|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 4 | <p>e-safety</p>  | <p>Coding</p>  | <p>Logo and Animation</p>  | <p>Use of IT across Curriculum</p>  | <p>Spreadsheets</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p>Pupils will examine a variety of different types of coding skills that develop in complexity; they will explore these in a variety of contexts.</p> <p>Write a specific program Introduce variable statements Use repetition and user input Undertake debugging Work with variables Make a control situation</p> | | <p>Pupils will learn and undertake commands using a logo program.</p> <p>Learn the language of Logo Create letter shapes using Logo Use the repeat function to create shapes Use and build procedures in Logo</p> <p>Pupils will learn basic instruction to animate objects.</p> <p>Learn how animations are created Learn about onion skinning in animation Add background noises and sounds Understand what stop motion is</p> | | <p>Pupils will begin to understand the basic functions of spreadsheets and are introduced to a variety of different formulae and ways of presenting data.</p> <p>Add formulae and format cells Use the timer and spin button Create line graphs Use a spreadsheet for budgeting Explore Place Value within a spreadsheet</p> | |
| Program(s) | 2code | | 2logo, 2animate | | 2calculate | |
| Equipment | Laptops | | Laptops | | Laptops | |
| Ideas for use of IT in wider curriculum | | | | | | |

Year 5 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|---|---|---|--|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 5 | <p>e-safety</p>  | <p>Coding</p>  | <p>Game Creation</p>  | <p>Use of IT across Curriculum</p>  | <p>Blogging</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p><i>Pupils will examine a variety of different types of coding skills that develop in complexity; they will explore these in a variety of contexts.</i></p> <p>Write a program that accomplishes a specific goal Simulate a physical system Introduce text variables Create and improve a game Understand internet safety</p> | | <p><i>Pupils will plan their own simple computer game. They will design characters and backgrounds and create a working prototype.</i></p> <p>Set the scene Create the game environment Create a game quest Finish and share a game Evaluate the games created</p> | | <p><i>Pupils will extend their sense of membership of a learning community beyond school as they create a media-rich blog, comment on blogs and respond to the comments of others.</i></p> <p>Find out what makes a good blog Write a blog post Comment on other people's blog posts Add images to a blog post Insert audio or video into a blog post Write blog posts about an event as it occurs</p> | |
| Program(s) | 2code | | PurpleMash | | 2blog | |
| Equipment | Laptops | | Laptops | | Laptops | |
| Ideas for use of IT in wider curriculum | | | | | | |

Year 6 - Computing

| | Autumn Term | | Spring Term | | Summer Term | |
|---|---|---|---|--|---|--|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 6 | <p>e-safety</p>  | <p>Coding</p>  | <p>Quizzing</p>  | <p>Use of IT across Curriculum</p>  | <p>Network and Binary</p>  | <p>Use of IT across Curriculum</p>  |
| Suggested Content | <p>Pupils will examine a variety of different types of coding skills that develop in complexity; they will explore these in a variety of contexts.</p> <p>Write a complex program that accomplishes a specific goal Introduce functions Review vocabulary Use buttons to showcase work Create a text-based adventure</p> | | <p>Pupils will create and test quizzes on a variety of different topics.</p> <p>Make a Picture Quiz for younger children Use question types Explore grammar quizzes Create a quiz that requires searching a database Create quizzes to test teachers and parents</p> | | <p>Pupils will develop an understanding of the origins and working of the internet before looking at binary code and how it is used to represent content.</p> <p>Understand the origins of the internet Discover how internet is accessed in different locations Represent numbers in binary Represent object states in binary Explore division as a tool in binary code</p> | |
| Program(s) | 2code | | 2DIY | | 2connect, 2question | |
| Equipment | Laptops | | Laptops | | Laptops | |
| Ideas for use of IT in wider curriculum | | | | | | |

Year Group Specific e-safety Curriculum

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|--------------------------|--|--|---|---|--|---|
| | In addition to specific year group content, E-Safety is a common theme for assemblies across the year | | | | | |
| Suggested Content | <p>To log in safely.</p> <p>To learn how to find saved work in the Online Work area.</p> <p>Learn how to search Purple Mash to find resources.</p> <p>Become familiar with the icons and types of resources available in the Topics section.</p> <p>Start to add pictures and text to work.</p> <p>Explore the Tools and Games section of Purple Mash</p> <p>Learn how to open, save and print.</p> <p>Understand the importance of logging out.</p> | <p>Know how to refine searches using the Search tool.</p> <p>Use digital technology to share work on Purple Mash to communicate and connect with others locally.</p> <p>Develop knowledge and understanding about sharing more globally on the Internet.</p> <p>Introduce Email as a communication tool using 2Respond simulations.</p> <p>Understand how we should talk to others in an online situation.</p> <p>Open and send simple online communications in the form of email.</p> <p>Understand that information put online leaves a digital footprint or trail.</p> <p>Identify the steps that can be taken to keep personal data and hardware secure.</p> | <p>Know what makes a safe password.</p> <p>Methods for keeping passwords safe.</p> <p>Understand how the Internet can be used in effective communication.</p> <p>Understand how a blog can be used to communicate with a wider audience.</p> <p>Consider the truth of the content of websites.</p> <p>Learn about the meaning of age restrictions symbols on digital media and devices.</p> | <p>Understand how to protect themselves from online identity theft.</p> <p>Understand that information put online leaves a digital footprint or trail and that this can aid identity theft.</p> <p>Identify the risks and benefits of installing software including apps.</p> <p>Understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism.</p> <p>Identify appropriate behaviour when participating or contributing to collaborative online projects for learning.</p> <p>Identify the positive and negative influences of technology on health and the environment.</p> <p>Understand the importance of balancing game and screen time with other parts of their lives.</p> | <p>Gain a greater understanding of the impact that sharing digital content can have.</p> <p>Review sources of support when using technology and children's responsibility to one another in their online behaviour.</p> <p>Know how to maintain secure passwords.</p> <p>Understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.</p> <p>Be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.</p> <p>Learn about how to reference sources in their work</p> <p>Search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information.</p> | <p>Identify benefits and risks of mobile devices broadcasting the location of the user/device.</p> <p>Identify secure sites by looking for privacy seals of approval.</p> <p>Identify the benefits and risks of giving personal information.</p> <p>Review the meaning of a digital footprint.</p> <p>Have a clear idea of appropriate online behaviour.</p> <p>Begin to understand how information online can persist.</p> <p>Understand the importance of balancing game and screen time with other parts of their lives.</p> <p>Identify the positive and negative influences of technology on health and the environment.</p> |
| Program(s) | <p>Avatar creator</p> <p>Paint Projects</p> <p>Writing Templates</p> <p>2Count (Pictograms)</p> <p>2Explore (Music)</p> | <p>Writing Templates</p> <p>Display boards</p> <p>2Respond (2Email)</p> | <p>2Connect (Mind Map)</p> <p>2Blog (Blogging) Writing Templates</p> <p>Display boards</p> | <p>2Connect (Mind Map)</p> <p>2Publish Plus</p> <p>Display boards</p> | <p>2Publish Plus</p> <p>Writing Templates</p> <p>Display boards</p> <p>2Connect</p> | <p>2DIY 3D</p> <p>2DIY 2Code</p> <p>2Blog</p> |



Computing Skills Progression

| | End of Year 2 | End of Year 4 | End of Year 6 |
|------------------|--|---|--|
| E-Safety | <ul style="list-style-type: none"> To be able to talk about using ICT to find information / resources noting any frustrations and showing an emerging understanding of internet safety Keeping personal information private Reports content they are unsure about to adults | <ul style="list-style-type: none"> Through discussion, has due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic Keeping personal information private across hardware Reports content (including unacceptable behaviour) they are unsure about to adults and aware that you can report concerns to reliable sources Be aware of the reliability of internet sources | <ul style="list-style-type: none"> Independently and with due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic Keeping personal information private across software and hardware Reports content (including unacceptable behaviour) they are unsure about to adults and aware of how to report concerns to other reliable sources To discuss the reliability of specific internet sources – difference between facts and opinions |
| Using Technology | <ul style="list-style-type: none"> To be able to turn a device on and off To find software icons To use usernames and passwords confidently To use the internet to find text and images To accurately place, control and use the cursor Can name and understand the basic parts of a computer Can use trackpads to left-click and drag to manipulate on-screen objects Can use identify and use common keys such as spacebar, backspace, shift, enter, caps lock To save and retrieve documents with a suitable file name | <ul style="list-style-type: none"> To understand when MS Word and PowerPoint should be used and can navigate the home toolbar Through discussion, search the internet using a variety of techniques to find a range of information and resources on a specific topic To begin to decide whether keyboard or touchscreen is appropriate To develop editing skills - such as copy, paste and highlighting To save, edit and retrieve documents with a suitable file name and creating new folders when necessary | <ul style="list-style-type: none"> Can choose and use MS Word and PowerPoint, navigating more advanced toolbars Independently search the internet using a variety of techniques to find a range of information and resources on a specific topic To justify whether keyboard or touchscreen is appropriate Have a range of strategies to resolve simple hardware and software issues (Hold power button if frozen or if laptop in tablet mode – click on notification screen and select not tablet mode) Keyboard skills-commands to edit documents such as ctrl x, c or v, To independently manage a workspace on a network by saving, editing and retrieving documents with a suitable file name and creating new folders when necessary |

| | | | |
|---------------------------------------|--|---|--|
| Algorithms & Programming | <ul style="list-style-type: none"> • Predict outcome of simple programs • Create simple set of instructions that accomplish specific goals • Incorporate basic variables • Use trial and improvement to debug algorithms | <ul style="list-style-type: none"> • Design and create simple algorithms that accomplish specific goals • Working with variables • Use logical reasoning to debug algorithms | <ul style="list-style-type: none"> • Design, create and explain more complex algorithms that accomplish specific goals • To manage and choose from several variables • To use logical reasoning to identify and explain how to debug algorithms |
| Communicating & Presenting | <ul style="list-style-type: none"> • Use formatting tools in Purple Mash programmes to change font type, size and colour, and add pictures | <ul style="list-style-type: none"> • Be introduced to MS Word and use to present pieces of work • Be introduced to MS PowerPoint to create a multimedia presentation that contains sound and animation, taking into consideration good design principles • Be introduced to MS Excel and use simple formula to calculate | <ul style="list-style-type: none"> • To use MS Word to present work, making choices about programs and features to use and justifying these choices to others • To use MS PowerPoint to create a multimedia presentation that contains sound, animation, video and buttons to navigate taking into consideration good design principles • To use MS Excel purposefully to organise and present data • To make independent choices about the best media to use and considering the needs of the audiences and the impact the presentation will have |

National Curriculum 2014 – Subject Content:

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Key stage 2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.