Computing Handbook

Year 6

Vision for Computing

Through teaching computing we equip children to participate in a world of rapidly changing technology. 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.

At ***INSERT SCHOOL NAME*** we intend to

- Enable our children to reach their full potential and recognise their strengths and talent through a progressive, inclusive creative curriculum.
- To further develop the skills learnt in the computing lesson so that they can be used across all subjects. Cross-curricular computing throughout the curriculum should be encouraged.
- Access to learning platforms from home will help raise standards and enhance learning (Education City, Reading Plus, TT Rock Stars).

Scheme Of Work

We have a bespoke curriculum that is ever evolving to suit the needs of the children at school. We have recently carried out a review and have adapted it to meet the ever-evolving needs of our children at school.

In year 6 we are looking to develop the following skills:

Skills Overview Year 6		
Computer Science	DL & IT Beyond school	Information Technology
● Understand the importance of planning, testing and correcting algorithms. ● Demonstrate a range of different strategies to solve a problem including: abstraction, decomposition, logic & evaluation. ● Understand why sequence & patterns are important when creating simple algorithms that are part of a more complex program. ● Gives reasoning for each step within algorithms and applying them to a program. ● Understand & develop complex flow diagrams. ● Use a variable to increase programming possibilities. ● Use a variable and relational operators (e.g. < = >) within a loop to stop a program. ● Evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that program. ● Use different inputs (including sensors) to control a device or onscreen action and predict what will happen. Use logical reasoning to predict and debug more complex programs including: selection, variables and operators.	● Be aware of fake news and how to dissect it. ● Understand the difference between misinformation and disinformation. ● Understand what Copywriting is and using someone else's work responsibly. Manage their conduct and contact appropriately and safely when using technology and online services. ● Explain the Internet services they need to use for different purposes. ● Describe the different parts of a webpage. ● Understands how to construct a website using basic HTML tags. ● Explain what copyright is and acknowledge the sources of information that they find online. ● Understands how data is transmitted across a network. ● Understand what IP is and how it's used. Can explain how networks use the Internet to send and receive data.	● Select the most effective tool to collect data for their investigation. ● Check the data they collect for accuracy and plausibility, ● Plan the process needed to investigate a set environment or setting. ● Interpret and present the data they collect. ● Use the skills developed to interrogate a database. ● Uses a range of strategies to increase the accuracy of keyword searches. Makes confident inferences about their effectiveness. ● Talk about audience, atmosphere and structure when planning a particular media outcome. ● Combine a range of media, recognising the contribution of each to achieve a particular outcome. ● Confidently identify the potential of unfamiliar technology and how it can be used effectively. ● Explain why they select a particular online tool for a specific purpose. ● Be digitally discerning when evaluating the effectiveness of their own work and the work of others. Recognises the importance of copyright and how to

		acknowledge the sources of information.

Year 6 Curriculum Overview

Year 6	*Autumn 1*	*Autumn 2*	*Spring 1*	*Spring 2*	*Summer 1*	*Summer 2*
	IT	*COMPUTER SCIENCE*	*COMPUTER SCIENCE*	*DIGITAL LITERACY*	*DIGITAL LITERACY*	*IT*
	Creating Formula in Excel	*Understand what variables are and how to use them.*	*Creating a program for a specific audience.*	*Learn how to plan and compose music*	*Explore different ways data can transferred and stored over a network*	*Pupils use HTML to design and create their own webpage*

Autumn 1 - *Creating Formula*

What the children will learn:

- Enter and organise data appropriately
- Use the 'Formula' method to make calculations
- Interpret and present the data they collect.
- Use the skills developed to interrogate a spreadsheet

Vocabulary

- Cell, Column, Row, Formulae, Graph, Chart Spreadsheet, Cell Reference, Grid, Tab, Workbook, Merge, Auto Sum

Ways to support children's learning

- If you have access to Excel or Google sheets (Free tool with a Google email account) you could get the children to help you calculate the total of a shopping list.
- https://www.thekitchn.com/how-i-use-google-sheets-for-grocery-shopping-227725
- Help them to budget for a birthday party.

Autumn 2 - *Understand what variables are and how to use them*

What the children will learn:

- Use a variable to increase programming possibilities.
- Use a variable and relational operators (e.g. < = >) within a loop to stop a program.
- Evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that program.

- Use logical reasoning to predict and debug more complex programs including: selection, variables and operators.

Vocabulary

Algorithm, abstraction, decomposition, logic, sequence, variable, input, output, debug, operators, loops, conditionals

Ways to support children's learning

- Talk to the children about what a variable is. A variable is basically a place to store a score for example in a game. Use the following BBC video which explains this. https://www.bbc.co.uk/bitesize/clips/z89w7ty
- Load Scratch 3 onto the computer of the IPad so children can get a chance to use variables. 2 Tutorial videos to show you how to use them
- https://www.youtube.com/watch?v=aMYdxqsQNBA
  https://www.youtube.com/watch?v=wS1QETPfgGE
- Try the Pong Game in the Scratch 3 Tutorials – this uses a variable to keep the score.
- https://scratch.mit.edu/projects/editor/?tutorial=all

Spring 1 - *Creating a program for a specific audience*

What the children will learn:

- *Understand the importance of planning, testing and correcting algorithms.*
- *Demonstrate a range of different strategies to solve a problem including: abstraction, decomposition, logic & evaluation.*
- *Understand why sequence & patterns are important when creating simple algorithms that are part of a more complex program.*
- *Gives reasoning for each step within algorithms and applying them to a program.*
- *Use a variable to increase programming possibilities.*
- *Use a variable and relational operators (e.g. < = >) within a loop to stop a program.*
- *Evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that program.*
- *Use logical reasoning to predict and debug more complex programs including: selection, variables and operators.*

Vocabulary

- Algorithm, abstraction, decomposition, logic, sequence, variable, input, output, debug, operators, loops

Ways to support children's learning

- The children will be using Scratch in this lesson. The program is now available online and contains various tutorials that you can run through with your child. It is available on PC and will run on IPad.
- https://scratch.mit.edu/projects/editor/?tutorial=home Click on tutorials for examples.
- Other popular coding games available:
- https://code.org/minecraft - Minecraft Hour Of Code

- https://code.org/starwars - Star Wars Hour of code
- https://codecombat.com/play/dungeon - Code Combat

Spring 2 - *Learn how to plan and compose music*

What the children will learn:

- Talk about audience, atmosphere and structure when planning a particular media outcome.
- Combine a range of media, recognising the contribution of each to achieve a particular outcome

Vocabulary

- Timeline, crop, split, layer

Ways to support children's learning

- Here's a list of websites, which can be used to compose music online.
- https://musiclab.chromeexperiments.com/ Chrome Music Lab
  http://isleoftune.com/ - Isle Of Tunes
  https://microbit.org/lessons/musical-microbit-unit-overview/ Microbit
- Scratch 3 has the capability to produce Music. Some of the online tutorials show you how to program the musical instruments using phrases or notes.
- Download Audacity to combine tunes and record your own voice to add to a track. https://www.audacityteam.org/download/

Summer 1 - *Explore different ways data can transferred and stored over a network*

What the children will learn:

- *Understands how data is transmitted across a network.*
- *Understand what IP is and how it's used.*
- *Can explain how networks use on the Internet to send and receive data.*

Vocabulary

- Server, Router, Data, Switch, Modem, Client Devices, Wireless Devices

Ways to support children's learning

- Following video explains what a network is https://www.youtube.com/watch?v=Dxcc6ycZ73M
- This video explains how the Internet works: https://www.bbc.co.uk/bitesize/clips/zsyr9j6
- https://www.bbc.co.uk/bitesize/topics/z4gwhyc/articles/zgwnsbk

Summer 2 - *Pupils use HTML to design and create their own webpage*

What the children will learn:

- Describe the different parts of a webpage.
- Understands how to construct a website using basic HTML tags.
- Evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that program.

Vocabulary

- HTML, Tags, Elements, Body, Head, Line breaks, Paragraph, Link, images

Ways to support children's learning

- Talk about the websites that the children access – what makes a good website? Watch the video. https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/zgx3b9q
- Children can create their own Web pages using a language called HTML. There are websites which allow the children the opportunity to create simple pages.
- Following website allows the children to experiment with different aspects of designing a webpage including formatting text, changing colour and adding images.

https://www.w3schools.com/html/default.asp

Online safety

At ***INSERT SCHOOL NAME*** we understand the importance of keeping your child safe online. Here are a few tips and websites to help you and your child understand the message.

Home and Family Guidelines

- Talk together and have fun learning together.
- Involve everyone and agree your family guidelines and rules.
- Remember that sometimes what is acceptable for a Year 6 child is not necessarily acceptable for a Year 3 or Reception child.
- Discuss regularly online safety and go online with your children. Communication is the key to eSafety.
- Keep virus and firewall software up to-date.
- Enable your 'browser safe' search option and/or consider using Internet filtering software, walled gardens and child-friendly search engines.
- Keep the computer in a communal area of the house, where it's easier to monitor what your children are viewing. Never let children have webcams, or similar, in their bedroom.
- Talk to your children about why they should not to give out their personal details. If they want to subscribe to any online service then make up a family email address to receive the mail.
- We all love to chat and children are no different. Encourage your children to use moderated chat rooms and never to meet up with an online 'friend' without first discussing it with you.
- Time children spend offline following a range of other activities is equally important. Time spent online should be monitored to help prevent obsessive use of the internet
- Encourage your children, and in fact all family members, to tell you if they feel uncomfortable, upset or threatened by anything they see online.
- Have proportionate responses if the family guidelines are not followed.

Websites for you to use with your child to help with the eSafety conversation

Thinkuknow website... this website has been specially developed by CEOP for children of all ages to help them to learn about staying safe online. There's information for parents here too. https://www.thinkuknow.co.uk/

Kidsmart.... Help and advice for children using the Internet.

https://www.childnet.com/resources/looking-for-kidsmart

https://www.teachertube.com/videos/jigsaw-8-10s-147297 Keeping information private

Social Media

Social media is a massive part of our lives now and more and more children are using it to connect with the world. Any form of social media isn't advisably for children under the age of 13. We aware that many children may feel the pressure to open an account. Following links for advice. See home learning book for further information.

https://www.net-aware.org.uk/