Heatherside Junior School – Computing

INTENT

Within an ever changing and technological world, Heatherside Junior School understands and values the importance of teaching Computing from a young age. We acknowledge that future generations will rely heavily on their computational confidence and digital skills in order to support their progress within their chosen career paths. Therefore, our aim is to give children a wide experience of using different digital devices for a range of purposes in order to develop their skills, which can then be transferred to Maths, Science and DT. We intend to develop digitally literate children who are able to use, express themselves and develop their ideas through information and communication technology. Through our curriculum, we intend the children to be active and safe participants in the digital world.

IMPLEMENTATION

In order to achieve the outlined intentions, the Computing curriculum is continuously reviewed through monitoring and evaluation by the Subject Leader and Senior Leadership Team. The computing curriculum is taught as three strands, which support each other and also the use of technology in other curriculum areas. These three strands are: digital literacy, online safety and programming.

Each class has access to CHQ (the computer suite) weekly. There are enough computers for all children to work independently. In addition to this, extra time can be spent by using the laptops or iPads which are signed out in advance on weekly timetables.
Each hour-long computing lesson will cover one of the three strands, and have a learning objective to be covered during that session. These will follow progression across a unit, which usually lasts for 4-6 weeks, and across the academic year.

Year group teachers plan their own Computing lessons, using the Long Term overview and progression of skills document (which is based upon the national Curriculum objectives) to determine the specific learning objectives for each unit. The progression of skills document, written by the subject lead, has been devised to ensure that all children have an opportunity to develop their skills throughout their time in KS2 and that they cover each of the three strands every year.

Digital literacy includes effective use of word processing software (usually Microsoft Word), presentation software (usually Microsoft Powerpoint) and spreadsheet software (usually Microsoft Excel). Proficiency is attained through using these programs in every year group.

Programs available on the Internet, and apps on the school iPads are also used so that children have a wide range of experiences.
Coding is developed through different programming languages: Logo for Year 3 and 4, Scratch for Years 3-6, Flowol for Year 5 and 6. Children learn general programming skills such as using repeat and variables, and see how these are similar and different with different programming languages.

We use the ProjectEVOLVE toolkit to teach our online safety curriculum every half term. These objectives may be covered within the computing slot or as part of cross-curriculum units such as PSHE. At Heatherside we know that online technologies are constantly changing. Therefore, it is important that we support and help educate parents in keeping children safe online. To do this, we offer a range of useful resources such as newsletters, information meetings and useful websites.

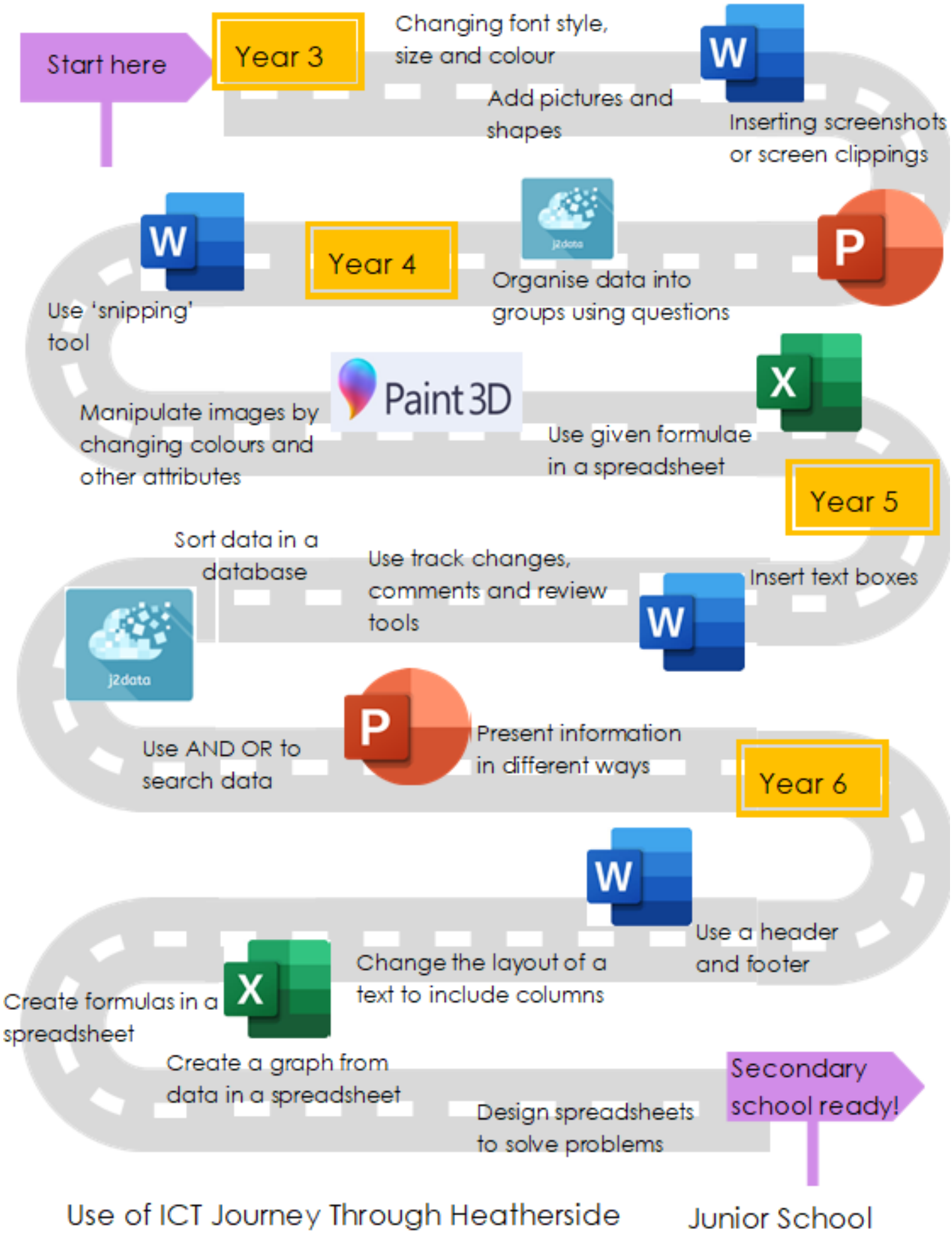
IMPACT

The success of the curriculum itself will be assessed through pupil voice and end of topic tasks which are planned into each unit, or assessments on skills or knowledge. These may be taken from the Teach Computing resources.

In order to demonstrate that we have accomplished our aims, pupils at Heatherside Junior School should:

- Be logical thinkers, able to solve problems within computing and continue these skills into other curriculum areas.
- Be able to identify the source of problems and work with perseverance to 'debug' or resolve them themselves.
- Have useable digital literacy skills such as typing, saving documents, retrieving documents and sorting folders, which they use in all subject areas that involve the use of computers.
- Be proficient, safe and responsible digital citizens of the future.
- Transition to secondary school with a keen interest in the continued learning of this subject for the next stage of education and future careers.

Digital Literacy Computing Road Map



Use of ICT Journey Through Heatherside Junior School

Programming Computing Road Map

Start here

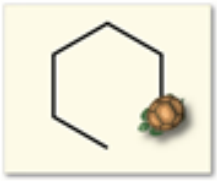
Copy a set of programming instructions

Check my coding for mistakes

Make small changes

Year 3

Use 'Repeat'



Write my own set of programming instructions

Year 4

Use a sensor and explain how it effects the output

Create a variable

Use If...Else

Combine procedures to make repeating patterns

Year 5

Explain how my program works

Plan and write my own set of programming instructions

Create my own variables

Annotate my programming

Year 6

Break my programming into components

Explain what each component does

Use a subroutine when coding a fairground ride

MakeCode

Explain how variables can be used in Make Code for the micro:bit

Secondary school ready!

Programming Journey Through Heatherside Junior School

Heatherside Junior School
Key Stage Two Computing Overview

National Curriculum

Purpose of study

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.

Aims

The national curriculum for computing aims to ensure that all pupils:

- 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.

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.

Computing Progression of Skills				
	Year 3	**Year 4**	**Year 5**	**Year 6**
design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	I can copy a set of programming instructions correctly (Logo, Scratch) I can adapt a set of instructions to make small changes (Logo, Scratch)	I can write my own set of instructions in LOGO or Scratch to complete a task (Logo, Scratch) I can plan my own program idea and write the instructions for it (Logo, Scratch)	I can plan and write a set of instructions using Flowol (Flowol) I can explain how my program works (Flowol, Scratch)	I can plan and write a set of instructions to control a fairground ride (Flowol) I can break my program down into components and explain what each one does. (Flowol, Scratch?)
use sequence, selection, and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs	I can use 'Pen up and Pen Down' REPEAT in programming (Logo, Scratch) I can explain whether a set of instructions has to be done in a certain order	I can combine procedures to create a repeating pattern (Logo, Scratch) I can copy a set of instructions that includes a sensor, and explain how the sensor affects the output. (Lego WeDo) I can follow instructions to create a variable (Scratch)	I can create my own variables and explain what they do (Scratch)	I can break my program down into components and explain what each one does. (HTML?)
use logical reasoning to explain how a simple algorithm works and to detect and correct errors in algorithms and programs	I can explain what some of the Scratch coding blocks can do (Scratch) I can check my coding against the set of instructions to find and debug any errors (Logo, Scratch)	I can explain what more complex Scratch coding blocks do (including IF…ELSE…) (Scratch) I can check my coding for errors and debug them (Scratch, Logo)	I can annotate my coding to explain what each section does. (Scratch, Flowol)	I can annotate my HTML coding, explaining what each tag does.
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	Digital devices accept inputs and produce outputs Devices can be classified as inputs and outputs A computer network passes messages through multiple connections	I know what the World Wide Web is and some of the services it provides	I can save work to the school's network to collaborate with other pupils	I know that connected devices exchange packets of data and this can convey a range of information from a text to a video call

describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely	Use search engines, typing in given key words including 'kids' to get the best results	Use search engines to find out information Learn which given websites are trustworthy	Use search engines effectively, thinking about search terms used	Use search engines effectively, choosing correct search terms to give the best results Decide independently which results can be trusted
select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information	I can save and retrieve documents I can change font style, size and colour I can insert pictures into a document using Online Pictures, resizing and moving pictures by using 'Wrap text' I can create a branching database by repeatedly creating sub groups of objects I can retrieve information from a branching database	I know what a hyperlink is and how to create one in a document. I can insert pictures into a document using screenshot to combine images from other programs I can take, adapt or create images to enhance or develop their work and to incorporate it in a wider project I can use a spreadsheet to search, sort and graph information.	I can add comments onto a document. I can choose from a variety of programs to present data in effective ways I can develop a storyboard and then create a simple animation using stop motion	I can use formulae in a spreadsheet I can use headers, footers and columns I can record and edit media to create a short sequence – extended by editing the final product in video editing software

Online Computing Coverage				
	Year 3	**Year 4**	**Year 5**	**Year 6**
Autumn 1	Privacy and Security	Online Relationships *Complete during PSHE time, but in put in Computing books*	Self Image and Identity	Self Image and Identity
Autumn	Online Bullying	Online Bullying *Complete during Kindness/Anti-Bullying Week*	Online Bullying	Privacy and Security
Spring 1	Self Image and Identity Online Reputation	Self-image and identity	Managing Online Information	Managing Online Information
Spring 2	Health, Wellbeing and Lifestyle	Copyright and Ownership Online Reputation	Health, Wellbeing and Lifestyle	Health, Wellbeing and Lifestyle
Summer 1	Online Relationships Copyright and Ownership	Privacy and Security Managing Online Information	Health, Wellbeing and Lifestyle Online Relationships Online Reputation	Online Bullying Online Relationships
Summer	Managing Online Information	Health, Wellbeing and Lifestyle	Privacy and Security Copyright and Ownership	Online Reputation Copyright and Ownership