Simonside Primary School Programme of Study

Computing

The aim of this document is to provide an overview to the new Computing Curriculum and a programme of study across the Key Stages. It should also serve as a glossary of terms allowing a clear understanding

The national curriculum for computing has four main 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.

Assessment

By the end of each Key Stage, pupils are expected to know, apply and understand the matters, skills and processes outlined in the relevant programme of study.

Glossary of Terms

Abstraction

Only focussing on the details relevant to the task, in computing this may be by using a database to handle data. In doing this the data can be looked at in specific groups. An example is using Target Tracker to show the progress of pupils on Pupil Premium.

Logic

The non-arithmetic operations performed by a computer, such as sorting, comparing, and matching, that involve yes-no decisions. This might be completed using programs such as Excel or Flowol.

Algorithms

The step-by-step procedure for a machine to complete a task, for example the instructions given to a pro-bot to guide it round a track, or the instructions put into a bee-bot to guide it through a maze.

Data Representation

The way in which information is presented. In its simplest form this could be representing a data set as a graph. However it is also using the appropriate software for the task. Not everything has to be done in Word or PowerPoint.

Key Stage 1

By the end of Key Stage 1 children should be able to:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
  - Think of a cup tea, what steps need to be taken to make it? What decisions have to be made? Do you want milk? Do you want sugar?
  - Program a Bee-Bot through a maze, right down the instructions first, plan the instructions.
  - Program a Pro-Bot to travel to a specific point. What instructions do you need to include in order for it to get there? Links to maths, measuring, angles, turns.
- Create and debug simple programs
  - Why does my cup of tea not taste right? Is it too sweet, too milky?
  - Bee-Bot and Pro-Bot, where has it gone wrong, where does it need to change?
  - Flowol 4. Why are the lights not working?
- Use logical reasoning to predict the behaviour of simple programs
  - If I put in two spoons of sugar will I like my cup of tea?
  - If I put in these instructions where will the Bee-Bot/Pro-Bot end up?
  - Scratch. Where will the cat end up?
  - Logic. Moving the turtle?
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
  - Create a folder and save work
- Use technology safely and respectfully, keeping personal information private; know where to go for help and support when they have concerns about material on the internet
  - Ceop
  - Hector the Protector
- Recognise common uses of information technology beyond school
  - Learning Platform
  - Create a poster on publisher for all the technology they use at home

Key Stage 2

By the end of Key Stage 1 children should be able to:

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
  - What steps are required to make a cup of tea?
  - Probots, around the rally track or to check points around the fairground.
  - Trip to a centre that uses controls
- Use sequence, selection and repetition in programs; work with variables and various forms of input and output
  - Probots, repetition to draw shapes
  - Flowol, using mimics such as the greenhouse – when the temperature reaches a set point the water needs to come on, when the light drops below a set reading the lights need to come on.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
  - Draw out the algorithms (processes) for making a cup of tea, the tea is too sweet because the decision to add sugar wasn't given a chance to follow on so it kept on adding.
- Understand computer networks including the internet; how they provide multiple services, such as the world-wide web; and the opportunities they offer for communication and collaboration
  - Using the learning platform to chat to peers and to communicate on joint projects together.
  - Skype on the tablets, video links between the classes on a shared learning day.
  - Use the learning platform to save work to, retrieving it and editing it in a variety of locations e.g. home and school.
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
  - Using advanced searches
  - Google is not the internet it is simply a search engine and there are others (Bing has a simple list of short cuts for advanced searches)
- Use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour
  - CEOP training
  - Hector the Protector
- 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

- Minibeast search – photograph the minibeast, upload to a computer. Another child views the uploaded images and creates a spreadsheet of what has been found. This has been analysed
- Tablets to find facts
- Internet to retrieve images
- Cameras to create a digital image