Leading Computing

Source: A.Czizmadie et al - Computing at School – Computational Thinking

Date: November 2015

Summary:

Computational thinking

- Computational thinking is an important life skill which all pupils now need to develop.
- It is central to both living in and understanding our digitally enriched world.
- It is a cognitive process involving logical reasoning by which problems are solved and artefacts, procedures and systems are better understood.
- Importantly, children relate to thinking skills and problem solving across the whole curriculum and through life in general.

Source: Miles Berry (principal lecturer and the subject leader for computing education at the University of Roehampton)

Date: September 2014

Summary:

Creativity in the new computing curriculum

- The computing programme of study speaks of pupils coming to understand and change the world through computational thinking and creativity and includes as one of its aims that pupils become creative users of ICT.
- Creativity starts with Sir Ken Robinson's notion of 'the process of having original ideas that have value'.
- There should be scope in computing education for pupils to do their own original work
- Creativity has to involve making something: not necessarily a physical artefact, but designing algorithms and making programs, systems and content across a range of digital media which will all draw on, and allow pupils to express, their creativity.
- The focus of computing is to be creative, often collaborative, where pupils can apply their own originality and engage in a process of designing, implementing, reviewing and, often revising, reflecting the way in which software and digital content are developed beyond the classroom.

Source: Miles Berry: Computing in the National Curriculum – A guide for primary teachers

https://www.computingatschool.org.uk/data/uploads/CASPrimaryComputing.pdf

Date: Published 2013

Summary:

- Computing is a practical subject in which invention and resourcefulness are encouraged.
- Information technology - things that have long been part of ICT in schools, such as finding things out, exchanging and sharing information, and reviewing, modifying and evaluating work, remain as important now, for a broad and balanced technological education, as they ever were.
- Lack of clarity as to whether pupils leave primary school with much knowledge of how computers, software, the internet, the web and search engines work.
- Emphasis on children learning and remembering more about how computers and computer systems work, and how they are designed and programmed. Pupils studying computing will gain an understanding of computational systems.
- The focus of the new programme of study - moves towards programming and other aspects of computer science – this has often been overlooked previously.
- The core of computing is computer science - 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.
- There is more to computer science than programming. It incorporates techniques and methods for solving problems and advancing knowledge.
- The role of programming in computer science is similar to that of practical work in the other sciences – it provides motivation, and a context within which ideas are brought to life.
- Computer science aims to cover two distinct, but related, aspects. There's a focus on computer science itself (the ideas and principles that underpin how digital technology works) but this sits alongside the practical experience of programming, almost certainly the best way for primary pupils to learn about computer science.
- • Pupils will learn to use information technology more effectively if they're doing something creative
- Pupils will learn computer science far more effectively by writing programs to show to others.