How can we collect evidence of learning?

When Ofsted reported on ICT in schools, assessment came in for particular criticism. Assessing computing can provide some particular challenges:

- It’s too easy to focus on the outcomes of a task at the expense of assessing the learning that takes place in the process.
- It’s too easy to focus on assessing pupils’ skills in using particular software instead of assessing their knowledge and understanding.
- If pupils have worked with a partner or in a group to complete a project, how can you assess each individual’s learning?

You can do much to meet these challenges and develop robust approaches to assessment, so that you can form a judgement about what individual pupils can do, know and understand, as well as helping pupils themselves reflect on how they’ve applied computational thinking.

Other approaches

Naace suggest using an interview at the end of a project. A pupil might explain the computational thinking they used in solving a problem, but could also reflect on what and how they have learnt.

There’s a place for formal testing in computing. In programming work, code tracing and debugging challenges are useful ways of assessing both specific knowledge of a programming language as well as logical reasoning and other problem-solving skills.

Evidence for pupils’ computational thinking will be found in how they approach projects, but well-designed questions might provide one way of assessing this more directly. The Beaver Challenge (see Further resources) is a series of online questions assessing computational thinking.

How can we track progress?

The ‘Progression Pathways Assessment Framework’ is used by many for both planning and monitoring progression in computer science. It was derived from CAS’s original computer science curriculum and provides detailed treatment of progression across six strands:

- algorithms
- programming and development
- data and data representation
- hardware and processing
- communication and networks
- information technology.

The authors, Mark Dorling and Matthew Walker, explain:  
The progression through each strand of computing is broken down into rows. The rows are colour coded (like karate belts) to help the teacher to assess whether students are showing competence at different levels and recognise achievement or attainment.
Schools can choose to assign arbitrary values (levels) to the coloured rows if they would like to use them with existing reporting systems.

The focus of this assessment framework is progression through and across the strands of computing. If you plan to use this assessment framework with your existing assessment/reporting system then you can agree the benchmark ‘level’ for the pupils entering a particular key stage and assign the arbitrary benchmark value (level) to the appropriate progression statements for each strand.\(^5\)

They recommend that primary teachers focus on the badge statements from the Pink to Purple rows.

**How can we assess attainment?**

The old national curriculum levels have been removed and not replaced. The statutory attainment target is clear:

> By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.\(^6\)

**Evidence of attainment**

Even just one Scratch script, such as this for a duck shoot game: http://scratch.mit.edu/projects/15907506/#editor, provides evidence of attainment for the key stage 2 programme of study.

From the Scratch scripts themselves, we have evidence of:

- write programs that accomplish specific goals
- use sequence in programs
- work with various forms of input (keyboard and mouse in this case)
- design programs that accomplish specific goals
- design and create programs
- use repetition in programs (forever loop, two different repeat until loops)

If pupils had also explained how they’d solved the problems, then you might also have evidence of a number of the ‘logical reasoning’ statements.

**SEN**

Pupils with special educational needs working below the level of the programme of study for their key stage should be assessed using the P-scale statements, as in the past. There’s much in these statements which reflect emergent computational thinking.

**Digital badges**

Digital badges can provide a great way to record and reward pupils’ attainment in computing. One approach (used by Rising Stars with Makewav.es) would be to have a badge for each of the bullet points in the programme of study, with clear criteria for each particular bullet point. If you’re using the ‘CAS Progression Pathways Assessment Framework’, there are Makewav.es badges for these too.

**Further resources**


\(^5\) Progression Pathways Assessment Framework (Computing At School).