

The best apps for primary programming

In order to gain a rich understanding of coding and its potential to create wonderful things, children need to experience a wide range of programming platforms and languages. **Neil Rickus** explores a range of the best apps for use with primary-age children and shares his advice for implementing them across the curriculum.

Since September 2014, schools in England have been mandated to teach the new computing National Curriculum. This revised curriculum replaces the existing Information and Communications Technology (ICT) programme of study, which was regarded by many as unfit to prepare pupils for the modern world by focusing extensively on how to use applications, rather than writing them. Consequently, the new curriculum includes elements of computer science such as programming, with Key Stage 1 (KS1) pupils required to sequence instructions and predict the behaviour of simple programs, and KS2 pupils expected to know how to implement concepts such as repetition, selection and variables.

Unfortunately, for a large number of teachers, understanding these concepts has been extremely difficult. In fact, the Times



Educational Supplement reported in January 2015 that although eager to develop their practice, most teachers were 'at least anxious and sometimes terrified' at the prospect.¹ However, it was also recognised that this is the start of a journey and change won't happen immediately; thus schools need to plan carefully to ensure staff have the required professional development and pupils are adequately challenged.

In primary schools, I often hear teachers say to pupils 'we're doing Scratch today'. Scratch is, of course, a powerful tool, with a vast range of free resources available for both teachers and pupils^{2,3}, but but it is more important for teachers to focus on the underlying concepts of programming to really help children understand what it is they're learning.

To do this, teachers will need to introduce pupils to a wide range of programming platforms and languages. Many schools are now getting rid of the traditional ICT suites and investing in tablets, such as the Apple iPad or Android-based devices like the Samsung Galaxy Tab. By using these tablets to teach programming, schools gain access to a wide

range of apps to both introduce and reinforce concepts, without having to be focused on a single piece of software.

So which apps are the best?

The table below highlights 21 iPad apps which allow teachers to cover the programming elements of the primary computing curriculum. Fortunately, the majority of apps are free, although those apps suited to older children often include in-app purchases, or require the user to sign up for an account, which also means the device requires access to the Internet. Some of the apps are also available for the Android operating system, although the choice is currently limited.

The table also gives the suitable age range for each app, based on the requirements of the computing curriculum, and shows whether the app features a 'creative mode', allowing pupils to produce their own content, rather than simply progressing through a set of increasingly difficult levels. Those apps not providing a creative mode can facilitate 'gamification' of the classroom, by providing game-like challenges to motivate and engage pupils.

App name	iOS	Android	Price	KS1	Lower KS2	Upper KS2	Creative mode	Sign up
Daisy the Dinosaur	Y	N	Free	Y	N	N	Y	N
Kodable	Y	N	Free	Y	Y	N	N	N
Bee-Bot	Y	N	Free	Y	Y	N	N	N
ScratchJr	Y	Y	Free	Y	Y	N	Y	N
The Foos	Y	Y	Free	Y	Y	N	N	N
Lightbot	Y	Y	Free/Paid	Y	Y	Y	N	N
A.L.E.X.	Y	Y	Free	Y	Y	Y	Y	N
My Robot Friend	Y	N	Paid	Y	Y	Y	N	N
Move the Turtle	Y	N	Paid	Y	Y	Y	Y	N
Pyonkee	Y	N	Free	Y	Y	Y	Y	N
Hopscotch	Y	N	Free	N	Y	Y	Y	Optional
Cato's Hike	Y	N	Paid	N	Y	Y	Y	N
Tynker	Y	Y	Free/Paid	N	Y	Y	Y	Optional
Tickle	Y	N	Paid	N	Y	Y	Y	N
CodeQuest (HTML)	Y	N	Paid	N	Y	Y	N	N
Cargo-Bot	Y	N	Free	N	Y	Y	N	N
Hakitzu	Y	Y	Freemium	N	N	Y	N	Y
Gamepress	Y	N	Freemium	N	N	Y	Y	Optional
Pythoni3.3	Y	N	Freemium	N	N	Y	Y	N
Treehouse	Y	Y	Freemium	N	N	Y	N	Y
Codecademy	Y	N	Free	N	N	Y	N	N