Teachers need confidence to teach coding properly

January 27 2014, by Andrew Manches

Children are already experimenting. Teachers need the skills to keep up. Credit: San Jose Library

Michael Gove is ploughing ahead with plans to gather an elite team of computer science experts to help bring coding into schools. He has rightly acknowledged that teaching programming in schools is vital if we want to equip the next generation with the skills they will need in

working life but it is essential that we get the process right.

At this early stage, it is paramount that we don't overlook the importance of broad knowledge and confidence. It will not be enough for this new breed of teachers to be able to code themselves.

So far, we've got a problem with the age at which we start encouraging children to learn programming. Clubs are springing up all over to encourage them and toys and tools are on offer too but most appear to be aimed at children over eight – children who have already been at school for three years. Three years may not seem like a long time to a grown-up but it is significant in the context of a child's learning and their attitude.

Gove is right that we need to take a more strategic approach and right that it needs to start at an early age. But aiming at the early years carries great responsibility. There is a great risk of not doing it right and wasting time that could be spent teaching pupils other things.

How do you do it right?

All kinds of tools are being developed to encourage coding for fun and teachers already have expertise in the particular learning needs of children but it's not yet clear how easily this expertise can be mapped onto teaching coding.

While Gove's elite force of programming experts may know everything there is to know about coding, how much do they know about teaching and, crucially, how much do they know about teaching different age groups?

Teaching is not just a process of imparting knowledge to an attentive child. To compare it to reading, it is not enough to know how to read to teach it to others.

Learning needs to be engaging, social and interactive. It is also vital that the process is creative. Children shouldn't just be taught a series of procedures, they need to be able to explore different, novel, personal ideas and to share them with others. And it needs to be relevant and meaningful to a child's different experiences beyond the classroom.

The type of tools we use in the classroom will help. It's not enough for pupils to learn how to move a robot in a certain direction. The tools must enable them to understand how coding could address a range of problems in different ways and, preferably be adaptable to suit their own interests.

But the teacher will play the most significant role. With confidence and knowledge of the building blocks of coding and how this relates to the real world, they can adapt these tools. They could even create their own resources and might not even need digital tools to do it. A well-trained teacher might, for example, get their students to give each other instructions like robots. They can offer context to their classes by helping them understand how coding affects our daily lives, from its use in Google and Facebook to streetlamps and hand driers.

A well-informed teacher can also play a part in redressing gender imbalance by making sure that when the class talks about famous people in technology, women are part of the discussion. After all, there are more and more high-profile women in the industry with every passing day.

But to do all this, they need to have an active understanding themselves. To date, we are lacking research into what makes good coding pedagogy and the area is yet to have a significant place in teacher training. This issue in particular has been a concern for the best part of thirty years and has still not been addressed.

Some teachers are already intersted in the subject and can often be found at BETT, an event that focuses on technology and education. But Gove's aim is for all teachers to play a part. He, and they, need to appreciate that it will take more than the ability to code to make this happen.

More information: www.robotturtles.com/

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