

Trainee teachers, Toni Cain, Jemima Davey, Georgi Colliety, Maddy Hayward, Camilla Robinson, Regan Kerr and Rob Shaw, talk about science and explore their reasons for becoming science specialists

The trainee teacher journey



The trainees get to grips with making birdfeeders

We are all students in the final year of a three-year undergraduate teacher-training programme at St Mary's University, Twickenham, London. As part of this course we were asked to identify our science-learning journey to date. So let's start at the beginning ...

The introductory lecture involved exploring our current views on science and science teaching. The general consensus was that science is about learning facts and in order to be good at the subject you need to be able to recall specific facts. Most of us felt that there was an overemphasis on fair testing and that we hadn't really considered other ways of working scientifically. For those of us that could remember our primary school science we reflected

that it seemed quite repetitive. There was a need to work within a strict structure, which included writing lab reports with the standard headings: aim, prediction, equipment, method, results and conclusion. A lab report always had to be completed before we were allowed to carry out the test. One of us noted that, because she was a slow writer, she rarely got to carry out the investigation.

In the same lecture, we were also asked to draw a scientist. Without exception we drew an old man with wild hair, glasses, wearing a lab coat and holding a beaker with exploding chemicals. There was a realisation at this point that we had all conformed and drawn the stereotypical scientist that many young children do. However, this activity highlighted our own potential to



A trainee constructing a wildlife habitat

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become really good science teachers and the immense influence we can have to change this perception.

Defining our individual ethos

Time on the course helped us to define our individual ethos of teaching in direct relation to our previous experiences. Sessions that prompted this included those that highlighted the specific skills of science and those where we carried out the different enquiry types of working scientifically. We all found that we shifted from our original focus of subject knowledge to one that promoted curiosity and autonomy within a framework of open investigations. We want children to ask and answer their own questions and feel it is important to encourage an approach where it is acceptable to make mistakes and be wrong.

Putting it into practice

Soon after this we had our first school placement and we were looking forward to this opportunity to teach science in a fun and creative way. In retrospect, we still lacked confidence in teaching in a manner that was different to our previous experiences and we were also aware that there might be a requirement to imitate our class teacher's science practice – although there was discussion that in reality it might be 'us' making this assumption based on a perceived 'trainee' status.

One of our most rewarding experiences of teaching science came when, as part of our course, we taught a stand-alone lesson in a local school. This allowed us freedom to teach in a manner of our own without the feeling that we were being assessed. In addition to this there were no constraints on how work

Trainees practise an activity reconstructing a tree

should be recorded.

Prior to our first placement, we had a number of additional worries about teaching science. What would we do if a child asked a question to which we didn't know the answer? What if unintentionally we taught or compounded a misconception? Perhaps our biggest worry was that children might find our science lessons boring, especially if the lesson did not involve practical work. Reflecting upon these we have noticed that our worries might be similar to those that children hold about being participants in a science lesson. Despite these concerns we were very excited at the prospect of being in front of our first class and getting the opportunity to enthuse the children about science.

We have currently completed two school placements and our confidence in teaching science has grown immeasurably through these experiences. We acknowledge that many of our fears were surmountable and, in fact, probably acted as a stimulus to ensure that our lessons were engaging and varied (Box 1). We also admitted that there are some science topics that we did not find as interesting. This reminded us that if our interest is diminished this may have a detrimental impact on the children's attitude to learning. We are constantly striving to build up a bank of exciting 'hooks' to counteract this.



Reflection

We feel much more comfortable admitting that we do not have the answers to all scientific questions. If we are encouraging children to be content that they can make mistakes we should be leading by example. In fact, we found that when we did not know an answer that this often maintained the curiosity of the children. We made a point of getting children to ask as many questions as possible, even though we knew that we may not have all the answers; we hoped that this might mimic the process that scientists go through. Despite the importance placed on a well-planned lesson, we realised that sticking to this rigid structure can sometimes be limiting. For example, we embraced the chance to discuss the growth of mould when really the investigation was about growing sugar crystals!

We have one more placement before we are let loose as 'proper' teachers; we now understand, and are learning to embrace the fact, that we will make mistakes, but we know that we will learn from this. Our future hopes are to make sure all children are willing to welcome the unknown and that none of them fear science. We appreciate that the onus is on us to create an environment where children can view the world around them with awe and wonder and are encouraged to keep asking questions.

Box 1 Examples of our engaging lessons

- One of us related the science they were teaching to the Alex Rider series of child spy books by Anthony Horowitz and planned for children to make parachutes out of different materials to mimic a section from a book.
- Another approach was making a human circuit out of all of the children in the class.
- We tailored a lesson to the interests of the class in order to make it relevant and the children classified dinosaurs instead of other animals.
- One of us dressed up as Darth Vader to build upon the phenomenon of the newly released *Star Wars* film and related this to friction.

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