

Creative Teaching in Primary Science

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Orla Kelly is a Lecturer in Social, Environmental and Scientific Education in the Church of Ireland College of Education in Dublin, with responsibility for science, history and geography education on the BEd. Prior to this appointment in 2013, she was the subject leader for science at Plymouth University. She was appointed as a Lecturer in Science Education in 2006 and the beginnings of a productive and enjoyable research partnership with Roger Cutting began when they were awarded a Plymouth University Teaching Fellowship. It was also at Plymouth University that she had the opportunity to share her passion for drama, teaching it to students on both the BEd and PGCE. As a qualified speech and drama teacher and a chemistry graduate Orla has long been aware of the perceived tension between the Creative Arts and Science. Her PhD research was centred around problem-based learning as an

innovative approach to teaching practical chemistry. Her passion and interest in innovative teaching approaches continues and guides her research and practice. She is a member of the advisory panel for *Chemistry Education Research and Practice* and is a regular reviewer. She has a number of peer-reviewed publications and has presented widely at a variety of international conferences.

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Introduction

Why we changed our approach to teaching science

A few years ago we presented a paper at a teaching and learning conference at Plymouth University called 'Hating the Smell of Science'. The title was based on an overheard conversation between two, presumably non-science students who happened to be passing by the laboratories, when one said to the other "Urrgh, I hate the smell of science". Funnily enough we knew what they meant.

For a couple of years we had shared the teaching of science modules on an initial teacher education degree for those wishing to become primary school teachers. We had taught them pretty well and the students seemed to enjoy them, but when we talked about, or reviewed our teaching it always seemed to be with a certain sense of dissatisfaction. For us science had always been exciting because it was about the unknown. It was about trying to find things out, whether the answer to a question, or the solution to a problem, and that science was essentially creative. It was that sense of excitement and wonder that had brought us into science in the first place, but somewhere along the line, we had lost our way in terms of communicating that sense of excitement. For our students with non-science backgrounds in particular, it was becoming anything but. They were creative in all sorts of wonderful ways and through all sorts of interesting media, but we were effectively asking them to leave all that creativity at the door when they entered the science classes.

As a result we decided to quite radically change our approach to teaching science. We introduced problem-based learning, the use of film making as a means of assessment,

we got students rapping about science, we put science into all sorts of issues and contexts, not so much socio-scientific concerns, but more immediate social and emotional issues, such as compassion and love. We used drama, story-telling, role play and art to help explain key concepts, not only in terms of processes, but also to help explore the nature and practice of science. We even had delegates at a number of international conferences singing!

Along the way some approaches and ideas were really successful and others were nothing less than spectacular disasters! You can read about the latter in Cutting and Kelly (2014). However, when we reviewed our teaching, we wanted to be creative and innovative in both contexts and approaches, but the trick was to do so and yet meticulously avoid compromising the authentic nature of science though inadvertently promoting any kind of pseudo-science.

This book represents something of a review of our time teaching together over the last few years. Part 1 considers aspects related to pedagogy for creative teaching and learning in science, including, amongst other things, misconceptions, scientific enquiry and even thinking creatively about assessment. The second part then considers what we call creative approaches and creative contexts. Creative approaches looks specifically at integrated approaches that can be employed to help children better understand science by the use of drama, art, technology and the outdoor classroom in a wide range of imaginative ways. Creative contexts concern specific topic areas that may be addressed in science classes. Here we consider ideas for the inclusion of science relating to issues such as sustainability, well-being, social equality and the use of controversial issues to stimulate children's understanding of

science and its wider applications. Each chapter asks you to reflect on various aspects through ‘Time for reflection’ sections, allowing you to consider your attitude to and experiences of science both as a student and teacher. It will also enable you to reflect on the nature of science and creativity amongst other things. Additionally, each chapter will provide opportunities to put some of the ideas raised into action through ‘Activity’ sections. These and the ‘Time for reflection’ sections will contribute to your professional development in both pedagogy and science.

Why you may need to change

In 2013 the UK Government published the new National Curriculum for England. In the accompanying documents, the following key point is made:

“It is the Government's intention that the National Curriculum be slimmed down so that it properly reflects the body of essential knowledge which all children should learn and does not absorb the overwhelming majority of teaching time in schools. Individual schools should have greater freedom to construct their own programmes of study in subjects outside the National Curriculum and develop approaches to learning and study which complement it.” Remit for Review of the National Curriculum in England (2012)

Less content and more time does appear to present teachers with a really intriguing prospect to develop something new. Of course, the temptation may be to use this extra time to merely concentrate on the ‘essential knowledge’ rather than branching out and trying something different. For the first time in perhaps decades of curriculum

constraint, teachers have the opportunity now to be really creative in both design and approach to teaching science. This book will provide you, not with resources, but hopefully with creative ideas for approaches and contexts that will help you develop not only your own science curriculum, but also your own teaching approaches to science.

When we changed our approach to teaching science, we would often worry out loud about what we were doing, whether the students were learning, how could we assess this? During one such angst-ridden discussion, a colleague said to us “In my experience the only things that are ever really worth doing in teaching always involve adrenalin!” We have a chance now to accept the invitation to develop and construct our own programmes of study and although such challenges may appear daunting and intimidating and involve adrenalin, the opportunity to be really innovative and creative in teaching is why many of us came into the profession. We hope that this book will help you develop such imaginative and creative programmes and that you find the process, as we have done, genuinely rewarding.

References

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