

The Evolution and Inheritance of the new Primary Curriculum

During writing our recent book 'Key Concepts in Primary Science', published by Critical Publishing, one of the newest topics we have explored is 'Evolution and Inheritance' with this focus being driven by its recent inclusion in the new primary National Curriculum (DfE 2013). It is important to note that we are not alone in our attempts to find meaningful and practical activities to develop a children's knowledge and understanding of this topic. Authors such as Russell and McGuigan (2015a, 2015b), Wenger et al. (2015) and Hatcher (2015) have all provided valuable insights into how this topic may be taught and understood. Such work has also been complimented by the Primary Evolution Project, supported by the Wellcome Trust, which has created free resources for teachers to promote this subject within the primary curriculum (www.primaryevolution.com). However despite such valuable contributions, the teaching of this topic is not without its many challenges for primary teachers.

These difficulties result primarily from a number of factors, namely the subject's contentious nature, the subject's ability to spawn many misconceptions and the concerns linked to its teaching given the apparent lack of understanding of this subject by primary teachers. Many primary teachers would argue that this is a topic best tackled at secondary school, where expertise from subject specialists such as biologists may be drawn upon.

Therefore, given this background, why should primary teachers be encouraged to consider this topic worthy of teaching to primary children? What are some of the most important barriers to be overcome and how might we promote its teaching in an accessible and relevant fashion so that children can fully engage and see the relevance of this topic in their learning and daily life.

Firstly, the teaching of this topic for many children will allow them to have an opportunity to consider the origins of the life that we see today and its evolution over successive generations. It will provide a vehicle to debate our role in creation and genetic engineering to promote new species which might have significant advances for humans. It will allow pupils to consider how our knowledge of the origins and development of life have developed since the seminal works of Charles Darwin and Alfred Wallace and how this knowledge and understanding can be applied to tackle issues we encounter in our modern lives today. These include making drought and pest resistant crops, feeding mankind with the current change in climatic geography, as well as treating and preventing disease both inherited and contracted.

One of the most notable issues linked to the teaching of this topic relates to overcoming what can be difficult, abstract conceptual frameworks, which pupils can find hard to relate to through first hand experiences. This can, for example mean overcoming the enormous timescales that are involved in the processes of evolution which have led to the diversity of life on our planet. It will entail for example, the challenge of helping children understand an incomplete fossil record containing various species now petrified of living and breathing things, that share common ancestry (often displayed by the image presented by the 'tree of life').

Given all of these issues, it is therefore more important than ever that we make this subject as practical and as a consequence, as accessible to primary children as is possible. This can include some children studying their own ancestry to see how they have carried forward the characteristics or traits of their own family's lineage, although this needs to be done sensitively. It can also entail

looking at how we as humans have promoted advantageous traits through selective breeding of plants and animals. Researching how birds' beaks have adapted to suit the food variety they now eat, or how species such as the peppered moth have had to evolve and adapt quickly over time to deal with and flourish given the environmental changes of the industrial revolution may be areas that are covered. Whatever the activity, we must make this topic as practical and relevant to children's life as is possible and use this approach to help deal with any misconceptions that may arise.

At the heart of our book 'Key Concepts in Primary Science', not only will you find a focus on subject knowledge, but also ideas on how to make science practical and exciting for children. We hope that when you read it, it will inspire you to follow suit. We hope it will help to inform you as a reader to promote science as a valued part of the primary curriculum and regarding 'Evolution and Inheritance,' give you the confidence and a starter for 10 when embarking on its study and teaching.

References

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