Misconceptions within primary science essay

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Children’s Misconceptions in Primary Science While working in a primary school I took part in an investigation into children’s understanding and concept, of what is living and what is an animal. This investigation was taken from CLISP (Children’s learning in Science Project), and aims to understand children’s concepts, so to improve teaching of primary science. I asked a numerous children, from KS1 and 2, a range of questions based around this topic, asking them to explain their views. I firstly had to ensure I receive a natural answer from each child, to get the best insight into their thoughts.

To do this, I needed to ensure the child did not feel under pressure, nor be able to take other children’s answers. I therefore asked each child individually. I also made it clear that this was not a test, and I was interested in their thoughts. I also had to ensure other members of staff did not interfere with children’s answers. Before asking the children questions, I had already made a number of informal predictions. I envisaged children’s knowledge and understanding would improve as they progressed through the key stages.

My results were therefore very interesting, when it became clear my preconceptions of what they may say, were in fact incorrect. To elucidate my findings better, I have placed my results into graphs (found in supporting graph booklet) A number of correlations are clear throughout the graphs. Firstly when looking at children’s understanding of the term living (See fig. 1. 1 & 1. 2), children in both key stages have similar perceptions of fire and people, believing they are living, which of course is correct when referring to humans.

However it becomes clear that older children have a better understanding of what living means and can differentiate between characteristics of things termed alive. Secondly when looking at children's perceptions of what they classify as an animal, the answers differ drastically (see Figure 2. 1 & 2. 2). Both age groups understand a cow to be an animal; they both also fail to see a human as an animal. However key stage 1 Children have a much better understanding initially of what is meant by an animal

It is important to compare these results with those of different schools, in order to clarify if results are linked to teaching practice within specific schools, or are more general opinion held by most children of this age. I took a sample from a database of other results and compared them to my own. The results on both parts were very similar, mirroring the results I had found closely. These misconceptions seen across both topics may have arisen due to a number of reasons such as language used by significant adults in the child's life, schooling and representations of animals in everyday life. Piaget, 1929 in Peacock et al. , 2007 pp, 24 -25) explained his theory of animism. He found young children describe a number of non-living things such as clocks, the sun and moon, as living due to their ability to move or make noise or both. This correlates particularly with the results I have found in key stage 1, many of them identifying nearly all of the subjects to be living. One child even explained to me, " they are alive because they can move. " Children begin to learn how to distinguish between what is alive and what is not as they broaden their scientific knowledge through schooling.

The introduction of partial classification in key stage 2, seen in Peacock, et al (2007 p. 24) allows children to start to differentiate and catalogue living

organisms. They can do this by pinpointing key characteristics in order to determine whether it is alive. However other simpler classification tools to distinguish life processes taught in key stage 2, such as the acronym “ MRS NERG” (movement, reproduction, sensitive, nutrients, excretion, respire and grow) can bring about some confusion.

For example, when dealing with fire, under this classification tool, some children may be easily lead to believe a fire is alive, due to its appearance to follow all of these rules. When thinking about children’s misconceptions of animals, it is important to look at our own perceptions. Some may consider a spider an insect; does this refer to it being an animal? Others may not be able to distinguish a whale as an animal because it lives in the water. Our own perceptions of animals are often those depicted in everyday life, as beings with fur and four legs.

It can often go as far as finding books about animals and birds, this leads us naturally to think there are animals, then there are birds. This is of course is incorrect, but from a child’s point of view, it is very easy to see how this confusion may occur. From the results I recorded, children in key stage 1 seemed to have a better understanding of animals, than the understanding of key stage 2 children. This may be due to key stage 1 children yet to be introduced to animal classification, consequently having a limited vocabulary to refer to animals with.

However key stage 2 children have begun to identify different animal groupings, such as vertebrates and invertebrates, possibly suggesting to them, this is a separate parallel grouping to an animal, rather than a

classification under the a subheading. This is supported by the research of Bell and Barker (1982 in Peacock, et al, 2007) who found less than 30 % of 7 – 11 year olds (key stage 2) considered worms and spiders to be animals. The use of word animal within the context of language is often linked to these misconceptions.

A very small percentage of the children I asked, considered a person to be an animal, one child explained to me this was because; “ they are like us. ’ When looking at the everyday life of a child, animals are often depicted as separate to humans. For example going to the zoo to see the animals, or signs, books and toys demonstrating animals. When children learn about Noah’s ark, there is no mention of the two humans being taken aboard with the other animals. But what does this mean to me as a trainee teacher?

This gives me the opportunity to avoid these misconceptions occurring when teaching. Making sure I avoid promoting speaking in mannerisms that portray animals incorrectly. Also asking children early on there feelings of what is living, and trying to promote a better understanding of characteristics of living organisms. From an early age, could consequently increase children’s interest and correct understanding. Reference List

Peacock, G. , Sharp, J. , Johnsey, R. and Wright, D. (2007) Primary Science: Knowledge and Understanding. 3rd ed. Exeter: Learning Matters Ltd.