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A Potent Mix: when science and poetry combine.

The teaching of Science, has, for some schools, been overshadowed by the demands for literacy and numeracy - with the focus on SATS and emphasis on national targets. This has led, in many cases, to the demise of teacher's subject knowledge, the seeping of teacher confidence and reduction of interesting, engaging science lessons. However, with the forthcoming return of Science as a tested subject in year 6, new routes into this subject need to be developed. But what does this have to do with an English journal? In this article I will provide examples of how poetry can be used to develop scientific enquiry and method, whilst inspiring scientific learning using rich tasks that open doors to fantastic worlds of wonder.

The national curriculum states that pupils should develop scientific knowledge and conceptual understanding of the nature, processes and methods of science. In addition, we should equip learners with the scientific knowledge to understand the uses and implications of science. How can such demands be met by poetry? Many may agree with Victorian physicist Paul Dirac when he grumbled, "The aim of science is to make difficult things understandable in a simpler way; the aim of poetry is to state simple things in an incomprehensible way. Thus, the two are incompatible." These words were surely said in jest, as Dirac was himself an amateur poet and relished the challenges of both disciplines. So, is poetry and science really two separate domains? To unpack this let us start by considering an essential scientific skill.

Observation. Looking closely at something in great detail, is a skill that all scientists need to develop. Pupils are often asked to diligently observe and record changes as beans grow, chickens hatch, and yeast rises. But, is there a way into looking at the world closely that can engage the learner through poetry?

Three poems that I have successfully used to develop the skill of observation are:

- Christina Rossetti's 'What is Pink?' (perfect for Early Years and KS1),
- Walter de la Mare's 'The Magnifying Glass' (useful for KS1 and lower KS2),
- Wallace Stevens' 'Someone put a pineapple together' (for upper KS2 – though equally interesting to use lower down the school).

All three poems provide a way into looking at the world, exciting the learner about what they see and how things change. Opening up a world of wonder. Through reading, reciting and enjoying the poetry, learners can be guided to undertake their own discoveries – just as Martha did in her poem based on Rossetti's 'What is Pink?'.

What is yellow? A daffodil is yellow

Near an ocean scene so mellow.

What is green? A leaf is green

On a windy road so lean,

What is peach? Skin can be peach

And it changes colours on the beach!

What is lavender? Lavender is lavender

Why lavender, just lovely likeable lavender

Martha, Year 2

Thinking about the skill of observation, both de La Mare and Wallace's poems offer ways to begin looking more closely at the world. As a year 6 teacher, and more latterly freelance consultant, I often use this poem as a way into observing the world in detail. Borrowing high resolution microscopes from local secondary schools I take an ordinary, yet visually interesting object as a starting point.

As summer and autumn Science topics are often 'Living things' this could be a dandelion, or a dead spider or fly collected from the windowsill which has been overlooked by the cleaners. Using the plant or animal pupils work at different resolutions (the naked eye, x2, x2, x5, x10) and begin to observe, for example, how the dandelion seed, leaf and stem change as they in more and more detail. A whole new world they never before realised existed appears through the eye piece of their microscopes. After these observations and, as a class, we gather a word bank of description in order to create our own poems in the style of Wallace's.

A success criteria is agreed, based on the original poem, this usually includes:

- The need to be original and creative, but still make sense.
- Remembering that lines do not have to connect with each other as each line is a separate description of how you see the object .
- Rhyming is not necessary – though sometimes learners go further and say rhyming is not allowed.

Following this criteria learners begin to write. However, very quickly, after sharing initial ideas, a further criteria is usually added:

- Avoid saying "The dandelion looks like…." again, and again, and again….

This process engages children, provides them with an opportunity for using scientific equipment and make careful observations. Scaled drawings can be made, or further research into the use of electron microscopes where perhaps the beauty of pollen can be investigated, or other micro biology if learners want to go further. This process is a great way of developing scientific skills through poetry.

If you want to continue with this type of activity – literacy inspired science, or vice versa - then Ted Hughes' 'Pike' is another great poem to use. With its detail about the fish's habitat, cannibalistic tendencies and physical description, it provides a doorway into a research project on other animals, perhaps in your local area or country being studied in Geography. Working with schools in Pembrokeshire, I asked pupils to consider the endangered species of this county in west Wales. Using research skills, pupils chose one animal from horseshoe bats, large blue butterflies, dormice and sand lizards. They then had to find out information about the animals':

- habitat,
- diet,
- what it looked like
- unusual characteristics

Similar activities could be used based on Scottish poet Edwin Morgan's 'Hyena' .

If describing habitats isn't enough and you want an even more challenging poem to really allow learners to dig deeper, then consider offering RS Thomas' 'White Tiger'. White tigers are Bengal tigers. They are not albino. They are not their own separate species. In fact, they occur when two Bengal tigers that carry a recessive gene controlling coat colour are bred together. In order to retain this recessive gene, zoos and other breeders must continually inbreed generation after generation. Unsurprisingly, such tactics cause a range of genetic problems, including cleft palates, scoliosis of the spine, mental impairments and crossed eyes.

For years, breeders have used the excuse that white tigers are an endangered species in order that they be allowed to continue breeding them; yet there is no species survival plan - they are breeding for money. RS Thomas provides beautiful, sorrow filled imagery for learners to absorb, as well as interesting technical strategies; leaving the reader asking big questions about literacy, science and ethics.

In my classroom, this poem has led to a debate around the pros and cons of zoos, research into other endangered animals in the areas we are studying and persuasive writing regarding protecting species. It has also opened the way to considering genetic modification, and selective breeding – a concept many of the pupils were familiar with due to the agricultural nature of the locality, and a concept that would never have been discussed had the poem not been read, understood and discussed.