

Dear Parents, we regret to inform you that the curriculum does not include fungi

People interested in nature probably expect that any educational presentation of “biology” will include a balanced description of bacterial, animal, plant and fungal biology. After all, leave out any of these components and the story of life on Earth is incomplete. But when your children walk through the doors into school what they are taught depends on the developers of the school curriculum. In the United Kingdom, unfortunately, the developers of the National Curriculum don't seem to know much about fungi. Indeed, they seem to be totally ignorant about this Kingdom of organisms. As a result, children in the UK, from primary level onwards are taught about bacteria, animals, and plants. No fungi. In fact, in England alone, more than a million children each year complete their statutory National Curriculum (NC) with no knowledge of Kingdom Fungi (Moore *et al.*, 2005).

This is an astonishing omission because we are surrounded by, and dependent on, fungi every hour of every day of our lives. Yet the word ‘fungus’ does not appear in the 87-page NC 1999 Programme of Study for Science, which is the statutory instrument that defines the curriculum for Key Stages 1-4 (ages 5 to 16), and the same applies to the revised 2006 curriculum.

The fact that fungi are not plants, not animals, and not bacteria, is not even mentioned in current GCSE specifications. Instead, the National Curriculum persists with comparisons between animals with plants, and by so doing fails to show the pupils that fungi have their own unique cell biology, their own unique developmental biology, their own unique life style, and a crucial place in every ecosystem and in every food web on this planet.

Despite the NC, though, with just a little bit of thought, fungi can be used for teaching many areas of the current curriculum specifications, and in cross-curricular activities. Fungi are not just mushrooms, yeast and moulds:

- Fungi digest the grass eaten by cows (and all other herbivores);
- Fungi make plant roots work (more than 95% of all terrestrial plants depend on mycorrhizal fungi);
- We use fungal enzymes to start our cheese-making, clarify fruit juices, to distress denim for ‘stone washed’ jeans, and as fabric conditioners in the weekly wash;
- 21st century ‘wonder drugs’ from fungi include cyclosporin (used to suppress the immune response in transplant patients), the statins (very widely used to control cholesterol levels), and even today’s most widely used agricultural fungicides, the strobilurins.

The British Mycological Society has recently published a range of classroom tested teaching resources, including:

- class sheets dealing with cells and cell biology, which ensure proper representation of both yeast and filamentous fungus;
- a series of five ready-made KS4 lessons (that include class sheets for pupil and teacher) comprising an introductory *Welcome to the World of Fungi*, *Reproduction and Conservation*, *Favourite or Nastiest Fungus*, *Fungi and Industry* and *Fungi and Disease*;
- a series of class sheets describing 15 different ‘*What’s your favourite fungus?*’ stories from which the pupils extract important points, a pack of playing cards that mirror the class sheets and can be used to play a variety of games (and all the time the players are holding cards that each carry a different ‘fungal fact’), and a ‘name-game’ starter exercise.

The Key Stage 4 resources have been printed as a package that is available for distribution (free) from the author, and all work-sheets and classroom materials (ranging in suitability from primary to post-16) can be downloaded (free) from the British Mycological Society website at <http://www.fungi4schools.org/>.

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Reference:

Moore, D., Fryer, K., Quinn, C., Roberts, S. & Townley, R. (2005). How much are your children taught about fungi in school? *Mycologist* **19**: 152-158.

Figure Captions

Children being introduced to the idea of the growth of a mycelium (the string!), and its accumulation of nutrients and eventual production of fruit bodies (the balloons). At RHS Harlow Carr Gardens, Harrogate, October 2006. Resources and instructions for this activity can be obtained freely from http://www.fungi4schools.org/GBF_web/GBF_index.htm.

Education by stealth. GCSE pupils playing the *What's your Favourite Fungus?* card game. The cards in the two hands revealed to the camera carry information about Quorn, cyclosporine, statins, and citric acid – but it's still a card game! Resources and instructions for this activity can be obtained freely from http://www.fungi4schools.org/FF_contents.htm.

David Moore

From: David Moore [david.moore@manchester.ac.uk]
Sent: 12 October 2006 17:39
To: Paul F Hamlyn
Subject: Article on fungi4schools for NWFG Newsletter

Dear Paul

Attached herewith is my draft of the article, plus a few potential illustrations. The text is just about 640 words.

Let me know if it suits your purposes.

All best wishes

David

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Visit the best websites on the Internet:

<http://www.world-of-fungi.org/>

<http://www.britmycolsoc.org.uk/>

<http://www.fungi4schools.org/>

...and The Children's University of Manchester:

<http://www.childrensuniversity.manchester.ac.uk/>