

[O21] Writing on the walls: helping students grasp scientific terminology

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Introduction

For over a hundred years Writtle College has specialised in training and education for the land-based industries, principally agriculture and horticulture. In recent years the College's course portfolio has been extended to include degrees in interior and garden design, landscape studies, rural resource management, leisure management, and animal and equine studies, all of which are validated by the University of Essex.

In addition, the College has established several Centres of Innovation which represent areas of strategic importance both for the College and the industries it serves. One of these, CADE (Centre for the Arts and Design in the Environment), was established to encourage collaborations within Writtle's academic community and with the arts and design communities beyond Writtle. CADE activities have included collaborations between students, staff and various artists-in-residence, a number of whom have been sponsored by Essex County Council, which have resulted in the production of several community artworks. CADE has also collaborated with healthcare organisations in the Eastern Region to produce conceptual designs for courtyards in a new hospital, and is currently converting a redundant farm building to provide studio facilities for recent art and design graduates wishing to develop their careers and businesses.

A very recent project involved artist-in-residence Lynn Schwartz, who was sponsored by Essex County Council as part of an exchange programme with Picardy, France. Lynn worked with Science staff who were keen to explore new and/or novel ways to help students to understand scientific concepts and the vocabulary associated with them. Lynn, an American who now lives in Montataire in Picardy, was selected for this two week residency because of her interest in systems, classification and exploring alternative ways of communicating ideas. She has knowledge of these scientific approaches because of her background in environmental science.

Lynn's remit was to produce a temporary or permanent art work whilst working and interacting with students and staff, to enable them to think differently about their environment. Although time constraints meant that the final artwork was of a temporary nature, Lynn has left a legacy with her sketchbooks and drawings, and has inspired students and staff to see their subjects in a new way.

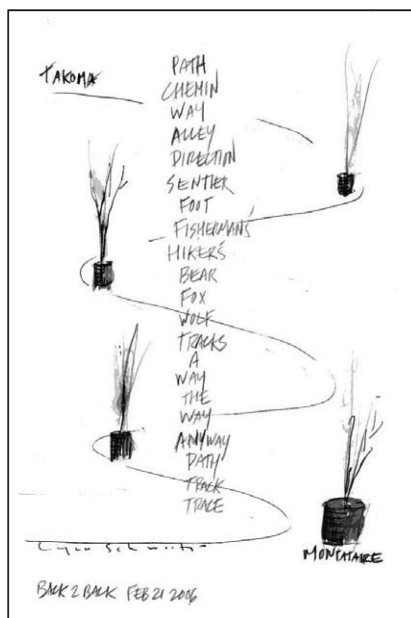


Figure 1: Representation of a walk from Takoma to Montataire, Lynn Schwartz, February 2006

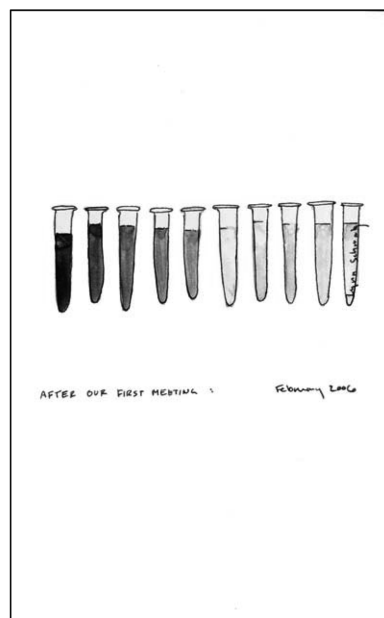


Figure 2: 'After our first meeting', Lynn Schwartz, May 2006

Exploring Ideas

A recurring theme in Lynn's work is the concept of journeying either real, undertaken in the built or natural environment, or a journey of knowledge, of the spirit or of the emotions. In attempting to make this concept explicit, Lynn has explored arresting ways to get people to think about their environment by challenging their usual view of it. For example, **Figure 1** illustrates a walk from one place to another; features being represented by words and containers which are key elements in Lynn's work.

Consequently, at the start of Lynn's residency she suggested exploring the idea that words and containers out of context could be used to stimulate discussion of scientific concepts. For example, observing the differences in depth of colour in test tubes (**Figure 2**) might lead to discussions about the concept of dilution and the use of light absorbance to determine concentration. Letters drawn onto cans placed in the landscape (**Figure 3**) might encourage discussion of the use of symbols as representations of elements, molecules and compounds. Lynn's drawings (**Figure 4**) exploring concepts of bonding and three dimensional structural representations certainly stimulated staff interest, eliciting such comments as 'the chemistry is wrong' and 'there are too many bonds attached to oxygen'!

As observational skills lie at the heart of the Biosciences, Lynn also suggested that we might encourage students to view their natural environment in different ways by undertaking a series of drawing exercises. For example, participants were asked to draw leaves, trees and people by concentrating solely on the outline of the object being drawn and without looking at the marks they were making on the paper (**Figure 5**). This approach helps to encourage observation, hand-eye co-ordination and prevents the conscious mind from influencing the image drawn (Edwards, 2001).

As students often have difficulty with scientific words, Lynn suggested that we might try presenting them in unusual ways. For example suspending word-carrying cans from leafless trees (**Figure 6**) might lead to a discussion of the meaning of the word on the can. If the word were leaf, for instance, the discussion could be about the structure and function of leaves, the functions of the chemical compounds found in leaves and leaf adaptations



Figure 3: Letters on cans, Lynn Schwartz, May 2006

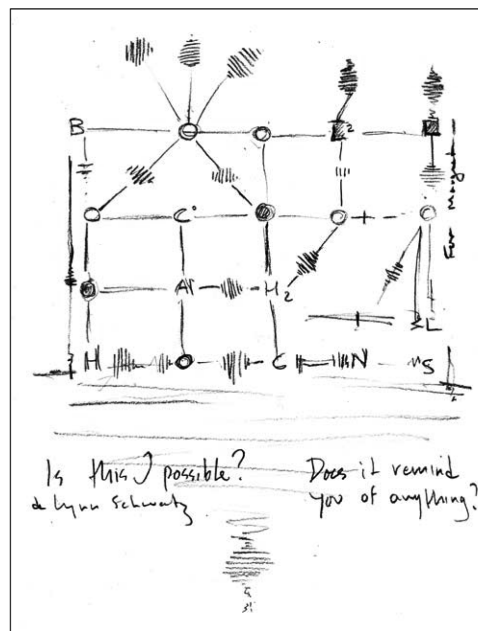


Figure 4: Chemical bonding, Lynn Schwartz, May 2006

such as those preventing water loss. Alternatively, words placed on flower pots could be used to indicate the factors influencing plant growth.

Lynn wanted to consider the normally unseen, and often overlooked, parts of the natural environment and considered representing a soil profile by painting different coloured bands on a structural column in the Science building (**Figure 7**).

The Installation

The art work which was eventually installed outside the entrance to, and in the foyer of, the Science building, brought together these ideas of journeying, words, containers and 'seeing' the natural environment. The art work started on the canopy outside the building, continued down an external column (**Figure 8**), apparently disappeared underground and finally re-emerged inside the building on an internal column (**Figure 9**). The journey

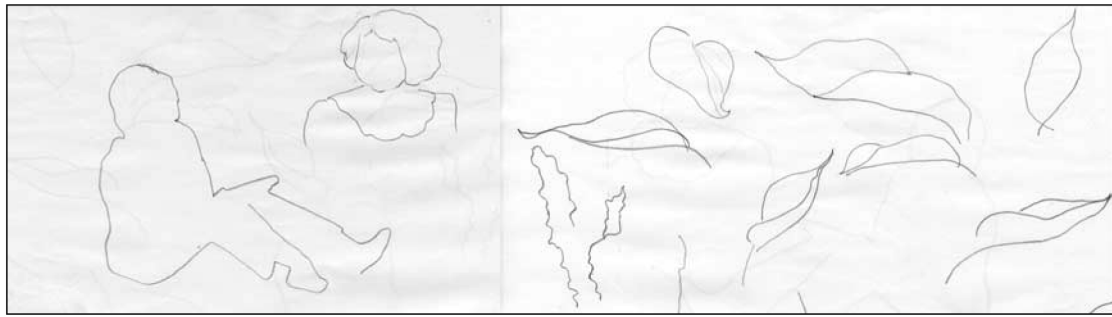


Figure 5: Line drawings, Ron Fryer, May 2006

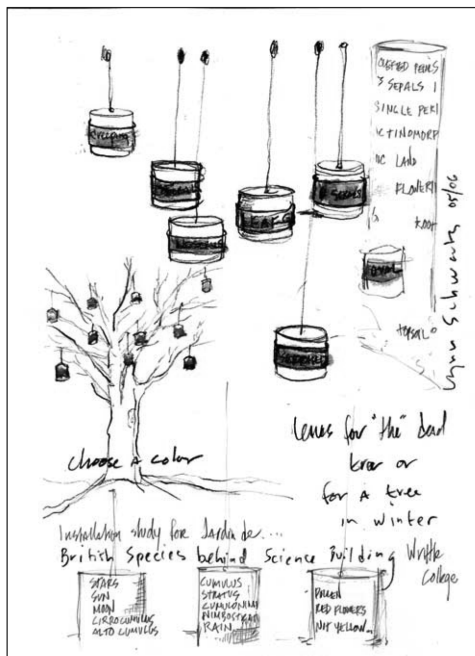


Figure 6: Words and containers, Lynn Schwartz, May 2006

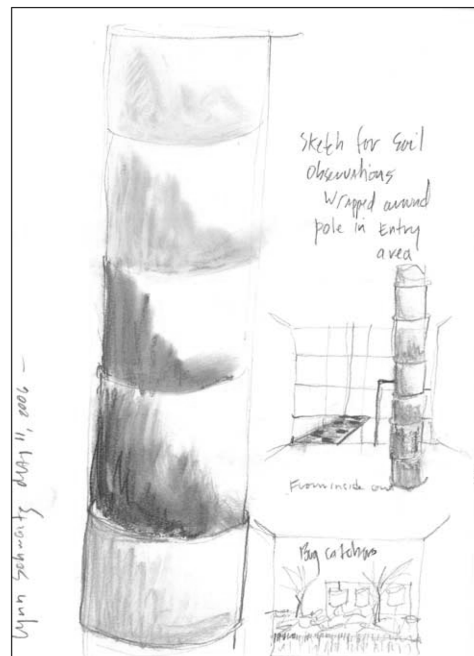


Figure 7: Representation Soil Profile, Lynn Schwartz, May 2006

represented by the artwork started with the words ‘Universe, Stars, Sun, Moon, Atmosphere . . .’ and ended with the word for a specific living organism and a description for its identification wrapped around the internal column. In the same way that the artwork can only be understood by moving around and observing it from different angles, the natural environment can only be fully appreciated by approaching it from different perspectives and involving many disciplines.

Reflections

A few staff and students found the ideas behind the residency difficult to comprehend, couldn’t ‘see the point’ of the installation or didn’t consider it to be ‘art’. However, most visitors to the building were able to appreciate the connections made, and that words may be used not only to describe the world we see but also to conjure up many other mental images and, indeed, many other words. The experience was perceived as successful by all those involved, and further ways of explaining science through art are envisaged. Our hope is that a permanent version of the artwork will be installed so that it might help students learn terminology either as part of a lesson or as a revision aid.



Figure 8: 'A Certain Order', Lynn Schwartz, May 2006



Figure 9: 'A Certain Order' with detail, Lynn Schwartz, May 2006

In the final analysis, this piece of environmental art did reflect concepts and ideas, provoked responses, and did form the starting point for discussion, even among scientists!

Acknowledgments

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