Chapter 14
The Networked Pupil and the Vanishing Paper Trail:
A Re-Culturing of the Learning Process in the 21st Century

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ABSTRACT

This chapter offers a theoretical discussion of the impact upon the processes of teaching and learning by the increasing predominance of ICT in the school scenario, and posits other future scenarios where the social realm of the classroom could disappear altogether. Questions are raised as to what the consequences of this could be, both for teachers and learners (as agents), but also for the notion of school science as an entity (and indeed the socio-structuralism of the school itself).

INTRODUCTION

I am 'not a teacher', but have grown to understand the teaching scenario based upon having taught in the university sector, teaching sociology. I might also add that neither am I a scientist, I merely operate as a social scientist with an ever increasing observing interest in the world of science teaching and learning. My principal position is as a theoretical researcher who has developed an increasing interest in the science teaching and learning scenario, and the questions that arise from it: how does the ever increasing role of ICT change the relationship between the learner agent and the teaching-agent within the structure that is the school?

In years gone by, the education process was a balancing of the literal and the practical. The 20th century pupil would quite probably have had a learning day, combining the reading of books, the creation and or manipulation of physical materials during Metalwork or Woodwork classes, and possibly also a sports class of some sort. However, times are changing. The ever-greater dependence upon technology in all aspects of the practical and social world in the current century appears to be changing the process of education. Is education becoming something of a 'Practical'/'Literal'/'T

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echnical' triad – having previously merely been a 'Practical'/'Literal' axis - with skills being imparted by the education process now being conveyed from all points of this triad and received as necessary from it?

Was it, perhaps, always this way, and it is merely that with the ever-increasing dependence upon ICT, all forms of learning are becoming technical (and quite possibly, 'virtual')? Could, for example, a study of literature be partaken without ever having recourse to read a book – such as by downloading each and every chapter as (and when) required?

As such, the technical/ICT related aspects of the learning processes could be becoming dominant within the classroom – and the triangle alluded to above would certainly not be equilateral in proportion.

- What would or could the consequences of this be?
- Are the processes of learning to be improved?
- What effects, moreover, could it have on the learning environment for the pupils themselves?
- Would any cultural changes related to expansion and dominance of ICT as a teaching and learning tool necessarily work for the good of the pupils in their wider social networks?
- How will the ever-greater dominance of ICT in the learning sphere alter the relationship between pupils and teachers?

Could the ICT based aspect of the learning process indeed be (eventually) becoming the centrality of the learning culture – and indeed the centrality of childhood development as the 'classroom' becomes less and less of a norm? Moreover, will the alteration of the physicality of learning also change the power relationship between teacher and pupil – and to what end? Finally, it must be asked, what will the effect of all this be for the teaching and learning of science?

ICT AND THE CULTURE OF LEARNING

Every society sets up a certain ideal of man, of what he should be as much from the intellectual point of view as from the physical and moral. This ideal is, in some degree, the same for all members of society, but it becomes differentiated beyond a certain point, *according to specific groupings that every society contains* in its structure. It is this ideal, which *both integral and diverse*, that is the focus of education. (Durkheim, 1922, p.203, *emphases added*)

'Computers don't have to be motivated to do what you tell them to. But *children do*.' (Sax: 2007, p.34, *emphasis added*.)

Law (1991, p.165) argues that no social relations are purely 'social' in character; rather they are 'heterogeneous', being embodied in a series of corporeal, textual, natural and technical materials. Thus, the social relationship of the classroom experience becomes dependent upon not only the verbal and physical interaction of teacher and pupil (and pupil with pupil) and teacher and pupil with books, material etc., but also (above all for the case of this discussion) with *technology*. Will the ever-increasing predominance of ICT in the learning environment always necessarily have a positive effect for the participants[1]?

ICT AND SOCIAL CLASS

There is evidence to suggest that ICT can have a downward effect on learning outcomes of pupils when in combination with social class, especially when factored against computer ownership (and corresponding familial wealth). Wainer *et al* (2008) found that …