Chapter 3
Achieving Multiple Literacy in Science Education:
A Classroom Teacher's Perspective

Sinclair Mackenzie
Science Teacher (Physics), Scotland

ABSTRACT

This chapter provides a teacher's view of the role and influence of multiple literacy in secondary school science. Multiple literacy from the author's perspective, (who is a secondary classroom science teacher) is the concept of doing things that teachers have always done in their lessons, but achieving them by incorporating new, engaging, ICT-rich strategies.

"Do you know how to find information?
do you know how to validate it?
do you know how to synthesise it?
do you know how to leverage it?
do you know how to communicate it?
do you know how to collaborate with it?
do you know how to problem-solve with it?
That's the new 21st Century set of literacies"
(Kay, 2008)

INTRODUCTION

Although not specifically aimed at science education, Kay (2008) provides a framework upon which to hang a definition of multiple literacy within the science classroom. How is this possible despite the absence of "digital" in the statement? Multiple literacy from the science teacher's perspective is the concept of doing things that science teachers and educators have always done in their lessons, but achieving them by assimilating new, engaging, ICT-rich strategies, styles and approaches. Although these interpretations of good pedagogy are new, they sit comfortably within existing constructivist models of learning and teaching, such as that described by Brooks & Brooks (1999):

"The teacher's responsibility is to create educational environments that permit students to assume the responsibility that is rightfully and naturally theirs. Teachers do this by encouraging self-initiated

DOI: 10.4018/978-1-60566-690-2.ch003

inquiry, providing the materials and supplies appropriate for the learning tasks, and sensitively mediating teacher/student and student/student interactions" (Brooks & Brooks, 1999, p49)

The shift towards a digital perspective on literacy has been, and continues to be, driven by forces outside of school itself. Beyond the classroom, from an early age, pupils are bombarded with highly stimulating material, including animation, games consoles, instant messaging and streaming video. The ability to bring these familiar modes of communication into the classroom as a tool for learning has become an essential skill. My own discussions with learners in the classroom indicate that, given the option, pupils prefer learning via interactive simulations and animations in preference to traditional text and practical delivery methods. Pupils have singled out the accessibility of animations and simulations as the main reason for their choice. Pupils can, and often do, respond well when they see that their teacher has made an effort to adapt to the preferred learning style of 'digital natives' (Prensky, 2001).

The rate at which learners have embraced the digital age has been highlighted by the 'Did You Know' (Fisch, 2006) and 'Did You Know 2.0' (Fisch & McLeod, 2007) presentations. Yet the idea of 21st Century (or digital) skills and literacy remain contentious (Matthews, 2009) and some science educators have made a call for the return of more basic skills (Doyle, 2009).

Often those arguing against the inclusion of a 21st Century skills set in the classroom suggest that a focus on ICT competency is achieved at the expense of course content, resulting in a lack of knowledge and understanding. The truth is that the two need not be mutually exclusive. Drexler (2008) illustrates the potential benefits of embracing digital literacy in the classroom with the 'Networked Student' presentation. Drexler's vision of the networked student shows that digital literacy entails the harnessing of technology to meet and redefine outcomes. While the objectives themselves may change little over time, the methodology and skills employed to meet objectives embrace new technology.

The shift in thinking presented by Drexler (2008) offers an opportunity for progressive reskilling of learners, who have not always benefited from the slow pace of change in our education system. A graphic illustration of this lack of change in pedagogical methods is provided by Picardo (2009) who argues that we, as educators, cling to traditional approaches to teaching by continuing to teach in the same way we ourselves were taught. In the process, we do little to meet the changing needs of pupils.

These differing opinions are one example of the digital divides that exist within school communities. Perhaps the most obvious of the digital divides results from lack of inclusion due to socio-economic factors (Selwyn & Facer, 2007). The perception of pupils as digital natives compounds the problem. Many teachers are reluctant to trial new ICT ideas in a classroom filled with 'expert users'. Hence there is potential for a section of school staff being left behind as new ICT strategies are adopted by more confident colleagues. A US-based survey (RIT, 2008) reported that many teachers continue to be uncomfortable supervising pupils while they worked on computers as they regard pupils' knowledge to be superior to their own. Respondents cited a lack of CPD in this area as the principal reason for their lack of confidence. Against this background, it is easy to see why many teachers see those colleagues who are embedding digital literacies in their classroom practice as risk takers, not innovators (RIT, 2008).

USING ICT IN SCIENCE EDUCATION

In science education there are many opportunities to embed the use of ICT into learning and teaching. While the current trend is for greater use of online tools and the social internet, often referred to as *Web2.0*, providing internet access to all members