ABSTRACT
The emergence of the Internet as a new communication medium has profoundly changed many aspects of society and it is now having a commensurate impact on education and training. There are growing demands for flexible provision, continuing education, and lifelong learning, and educational institutions and training organisations across the world are under pressure to integrate new technologies into teaching and learning (Connolly, MacArthur, Stansfield, and McLellan, 2006). Over the last few years, eLearning has developed to a point where it now provides a credible alternative to more traditional forms of education and training, as well as providing new opportunities to both educators and learners (Gunawardena & McIsaac, 2004).

During the same period, there has been a shift in educational theory from behaviourist towards social constructivist models of learning. A behaviourist perspective views learning as being acquired through a series of linear steps to achieve a predefined goal in which periodic questions test progress and reinforcement of learned behaviour. In contrast, social constructivist models affect all aspects of a learner’s cognitive, emotional, social, and cultural development in which learning is contextual. Illeris (2002) views learning as consisting of three dimensions: knowledge and skills; feelings and motivation, and the social dimension of communication and cooperation – “all three of which are embedded in a societally situated context”. This shift presents a number of significant challenges to both educators and learners.

While researchers have expressed their hope that constructivism will lead to better educational software and better learning (for example, Brown et al., 1989; Jonassen, 1994; Connolly and Stansfield, 2006) and many researchers cite many advantages for eLearning, these views are not universally agreed and eLearning may have significant disadvantages that may outweigh the advantages. At the same time, while some tutors believe that the quality of eLearning courses can
be comparable to traditional place-bound courses (for example, Dutton, Dutton, and Perry, 2002),
there are also many tutors who are suspicious of such courses and have significant reservations
about the loss of face-to-face contact between instructor and learner. Learners are attracted by the
flexibility ("anytime, anywhere, anyplace") of eLearning but are also suspicious of the of the
medium.

In this paper, we examine current views on learning and examine the potential advantages and
disadvantages of eLearning for education and training within chemistry. We then present a survey
of staff attitudes to eLearning in analytical chemistry that has helped inform the design and
development of eLearning within a training organisation in the chemical industry.

**KEYWORDS:** eLearning, constructivism, pedagogical issues, analytical chemistry, staff
attitudes.

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