Staff Attitudes to eLearning in the Analytical Chemistry Industry

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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.

REFERENCES

Brown, J.S., A. Collins and P. Duguid. 1989. Situated cognition and the culture of learning. *Educational Researcher*, Jan-Feb: 32-42.

Connolly, T.M. and Stansfield, M.H. (2006) From eLearning to Games-based eLearning. *International Journal of Information Technology Management* (accepted).

Connolly, T.M., MacArthur, E., Stansfield, M.H., and McLellan, E. (2006). A Quasi-Experimental Study of Three Online Learning Courses in Computing. *Computers and Education (in press).*

Dutton, J., Dutton, M., and Perry, J. (2002). How do online students differ from lecture students? *Journal of Asynchronous Learning Networks*, *6*(1), 1–20.

Gunawardena, C.N. and McIsaac, M.S. (2004). Distance Education. In D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology (2nd edition),* Mahwah, NJ: LEA, 355–396.

Jonassen, D.H. (1996). Computer-mediated communication: Connecting communities of learners. *Computers in the Classroom*. (158–182). Edgewood Cliffs, NJ: Prentice-Hall, Inc.