Mike Sharples, Learning Sciences Research Institute, University of Nottingham, Nottingham, United Kingdom

Josie Taylor, The Open University, United Kingdom

Giasemi Vavoula, University of Birmingham, United Kingdom

Mike Sharples is Professor of Educational Technology at the University of Birmingham and Director of the University's Centre for Educational Technology and Distance Learning (CETADL). His current research interests include human-centred design of learning technology, the theory and development of mobile learning, and application of models of cognition and social interaction to the design of technology for learning and knowledge working. He is the author of 7 books and over 150 other publications in the areas of interactive systems design, artificial intelligence and human-computer interaction.

Towards a Theory of Mobile Learning

There is a need to re-conceptualise learning for the mobile age, to recognise the essential role of mobility and communication in the process of learning, and also to indicate the importance of context in establishing meaning, and the transformative effect of digital networks in supporting virtual communities that transcend barriers of age and culture.

In this paper we offer a framework for theorising about mobile learning, to complement theories of infant, classroom, workplace and informal learning. A related aim is to inform the design of new environments and technologies to support mobile learning, since the work described here has been developed through a series of projects to design mobile learning technology.

In the tradition of Activity Theory we analyse learning as a cultural-historical activity system, mediated by tools that both constrain and support the learners in their goals of transforming their knowledge and skills. We separate two perspectives, or layers, of tool-mediated activity. The semiotic layer describes learning as a semiotic system in which the learner's object-oriented actions are mediated by cultural tools and signs. The technological layer represents learning as an engagement with technology, in which tools such as computers and mobile phones function as interactive agents in the process of coming to know.

These layers can be prised apart, to provide either a semiotic framework to promote discussion with educational theorists to analyse learning in the mobile age, or a technological framework for software developers and engineers to propose requirements for the design and evaluation of new mobile learning systems. Or the layers can be superimposed to examine the dynamics and co-evolution of learning and technology.