PhD Registration R1 - supporting abstract

(Prac) Retrospective (Part time)

Richard Millwood, 9th November 2011

The Design Of Learner-Centred Technology Enhanced Education

My work began in 1976, aged 20 as an untrained teacher of Mathematics in a secondary school in London. Even at this stage, I was exposed to the design of (mathematics) education through the SMILE (Secondary Mathematics Individual Learning Experiment). In my second post as a Mathematics and Computer Studies teacher (1977-1980), I developed an interest in the teaching of both Computing and Mathematics using the computer. As well as taking part in the design of the Computer Studies Mode 3 CSE exam syllabus, I attended continuing professional development courses in the design of educational materials for the computer and joined a development group of computer studies teachers, Microcomputers in Computer Education, to develop computer software as educational resources for learners. In this period I developed a computer program called 'Snooker' which simulated a snooker table, inviting learners to estimate angles to improve their knowledge of bearings, which was subsequently published as part of the SMILE Mathematics scheme after peer review by teachers engaged in that curriculum development. In 1980 I sought a position as a university researcher to develop educational resources. I was appointed as the first developer for the Computers in the Curriculum Project at Chelsea College, University of London. Over the decade I became a project leader in software development, an author of design guidelines for the team and a teacher educator involved in teacher training. I was responsible for the design and development of many educational packages based on computer simulations, working with teams including practising teachers to offer advice on the pedagogical and practical design issues. In researching human computer interface issues, I was strongly influenced by Donald Norman's models of user-centred design which proved practical as applied theories in my everyday work and formed the basis for my working model of the learning process. In this decade I joined the ESRC funded London Mental Models Group led by the late Professor Joan Bliss and Professor Jon Ogborn and planned to conduct a PhD supervised by Professor Paul Black to focus on modelling using computers. I took part as a lecturer in the development of a diploma course to retrain teachers for Computer Studies and finally as a half-time lecturer in Mathematics Education. I co-directed the Modus project to develop computer modelling software for learners to create their own simulations, resulting in the development of Expert Builder and Model Builder software. I acted as Research Fellow on interoperability in educational software for the national Microelectronics Education Support Unit, creating several publications and was a member of the Software Advisory Group for the BBC Domesday Project. I began to be invited to academic conferences as a speaker and to take part in international seminar and workshop activity as co-tutor. In 1990 I joined Prof Stephen Heppell to form a new research centre, ultimately called Ultralab. Over seventeen years I offered practical, analytical and evaluative guidance to a team which grew to fifty staff, offering research leadership and developing collective knowledge, procedures, values and attitudes for the development of delightful learning approaches. I developed new interactive multimedia CD-ROM materials, taking responsibility for production within a team of experts for all phases of published learning resources in Environmental Science, Mathematics, Drama and Business Studies. The predominant research approach was that of applied and action research, creating small and large-scale actions involving education in formal and informal contexts. I helped formulate the conceptual framework, manage development and analyse findings in many projects including the a longitudinal study of online community as a learning tool 'Learning in the New Millenium', the University for Industry pilot 'Online Learning Network', the headteachers' online community 'Talking Heads', the teachers' informal continuing professional development online community TeacherNet UK, the creation of a new toy for pre-school meta-level learning, Étui, the development of learner's creativity through multimedia technology for our own 'Summer School' and the BBC's 'Input BBC' pilot, and many more. In 2005 I took over as head of Ultralab for two years before joining the University of Bolton in 2007 to further develop Ultralab's ground-breaking Ultraversity project as the Inter-Disciplinary Inquiry-Based Learning project. This final period has permitted substantial reflection, analysis and articulation of ideas through peer-reviewed publications developed in over thirty years of practice in technology enhanced learning and has led to this proposal for the award of PhD by Practice. (741 words)