

4D Technologies: Appropriating Handheld Computers to Serve the Needs of Teachers and Learners in Rural African Settings

The Digital Education Enhancement Project (DEEP: <http://www.open.ac.uk/DEEP>) is investigating ways in which new technologies can improve teaching and learning in primary schools serving disadvantaged communities. Teachers in the project are carrying out classroom-focused professional development activities, using a range of new technologies, including a hand held computers and pocket cameras. This paper reports on the varied uses made of the handheld devices by teachers and pupils over a four - year period, including two case studies by teachers working in remote, rural settings. The findings of the study indicate that use of the hand held computers has varied in relation to context, particularly with respect to: teacher access to adjacent technologies; geographical location; local educational and cultural practices; home language. More general implications of the project for teacher education in the global south are presented.

Xholisa Fadana is a primary teacher and science specialist with some 30 years primary school teaching experience. She worked at Nqamakwe Primary School until earlier this year, a rural school in the Butterworth area of Eastern Cape Province, serving an area faced with high poverty, unemployment and limited agricultural opportunities. There are 300 learners (170 girls and 130 boys) in the school and 11 teachers. There is no electricity or telephone access in the school and resources are minimal. 40% of learners are unable to afford the school fees of R5 per annum. Xholisa has worked on the DEEP project since 2002. She has used a hand held computer in the classroom with her learners, especially to develop literacy activities. She has also approached the DEEP project theme creatively and integrated ICT with a range of other activities in the classroom, including drama, and the making of a book about local herbs. She now works at Teko Springs Junior Secondary School.



Andile Mbebe is a primary school teacher at Dongwe Combined Primary School, which is a rural primary school in the Eastern Cape Province, South Africa. Dongwe is located in an area close to the centre of Berlin about 40km from East London. It is co-educational and caters for learners from grade 1 to grade 7. It has about 217 learners with eight teachers including the principal (i.e. three males and five females). The school has electricity but has no staff room or office. The principal shares a class with the grade 5 or sometimes the grade 1 class. Although the school is taking part in the READ project, it is still lacking resources especially for isiXhosa, the learners' home language. All learners in the school are isiXhosa speaking children living with isiXhosa speaking guardians. Andile has five years' teaching experience and is a maths and science specialist. He has been working on the DEEP project since January 2002. Most recently he has been using a hand held computer in his teaching as part of a research project on the use of hand held computers for teacher professional development sponsored by the NGO bridges.org.



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Jenny Leach is lead researcher of the Digital Education Enhancement Project (DEEP). She has been involved in teacher education at the Open University (OU), UK since 1993 and is currently a Co- Director of the OU's Teacher Education in Sub-Saharan Africa (TESSA) programme. Her writing and research has focused particularly on the use of new technologies for teacher development. Publications include 'Learners and Pedagogy' (Sage, 1999), 'Open and Distance Learning for Teacher Education in Africa: Innovation and Change' (World Bank, 2005), both with her colleague Bob Moon and 'DEEP IMPACT: an investigation of the use of ICT for teacher education in the global south' (DFID, 2005). She is co-editor of the international journal 'Education, Communication, Information' (ECi: Routledge). Jenny has worked on UNESCO, British Council, COL and EU funded projects in South Africa, Egypt, Jordan, Hungary, Albania, the Caribbean and Ethiopia.



Tom Power is the assistant co-ordinator of the DEEP project. He has been involved with teacher education at the Open University (UK) since 2000, and is currently working on DEEP and the Teacher Education in Sub-Saharan Africa (TESSA) programme, as well as TeachandLearn.net, an online professional development environment for teachers in the UK. He has written on the use of mobile digital tools for teacher professional development Deep Impact using ICT transform the pedagogic knowledge and practice of teachers in the global South (Leach, Patel, Peters & Power 2003) & ICT and the building of professional knowledge: Experience in different African contexts (Leach, Power, Klaas and Mguibisi 2002) and has recently focussed on the forms of appropriate ICT for development, and models of costing these ICTs and teacher education in the global South: costing the benefits of learning (Power 2005). Tom has worked on DFID and British Council funded projects in South Africa and Egypt.



Rhodri Thomas is the Web & Conferencing Officer for the Centre for Research and Development in Teacher Education (CRTE) in the Faculty of Education and Language Studies (FELS) at The Open University, UK. He works on the Digital Education Enhancement Project (DEEP) as a Technical Adviser, particularly with respect to ICTs and mobile and handheld devices, and has trained teachers in Eastern Cape, South Africa in the use of this latest technology. His other work is on the currently running TeachandLearn.net Programme and on TeachGlobal - continuing professional development resources for teachers. TeachandLearn.net is a fully-online environment that offers up to date developments in subject knowledge and pedagogy through the use of interactives, web applications and streamed audiovisual material. He is also involved with other Centre developments such as the Teacher Education in Sub-Saharan Africa programme and related World Bank and UNESCO projects in the field.

