

Do ICTs enhance teaching and learning in resource poor environments?

The Digital Education Enhancement Project (DEEP) is exploring how information and communications technology (ICT), particularly mobile technologies, can improve the quality of teacher education and learning. The first phase of this research was carried out with 50 teachers and over 2,000 pupils in primary schools in South Africa's Eastern Cape Province and in Cairo, Egypt. The findings shows that ICT can transform educational opportunities for teachers and pupils and that digital devices such as lap tops and hand held computers, so far aimed mostly at the business market, can be used by schools for a range of professional and learning experiences.

Teachers work in pairs to implement and then evaluate a short, curriculum-focused, professional development using computers, digital cameras and all-in one-printer/scanners/photocopiers. Activities focus particularly on the teaching of literacy, numeracy and science. ICT have enhanced teachers' professional knowledge, skills, and capabilities by extending their subject knowledge, enabling planning and preparation for teaching to be more efficient and extending existing curriculum activities. All participating teachers have introduced ICT into their lessons.

DEEP research shows that:

- Some of the most effective practice was developed by teachers with no previous experience of ICT and/ or no prior experience of using ICT for teaching.
- Use of ICT increased pupil school attendance levels.
- The use of ICT enabled the development of a new and more effective curriculum, improved classroom practices and learning activities
- Use of peer learning approaches allowed teachers and students to develop a wide range of ICT skills quickly, focused on the aims of the curriculum.
- Participants readily learnt to use hand held/ lap top computers and a variety of programmes and accessories such as scanners, printers and digital cameras.

The significance of the DEEP programme has been recognised in Egypt: plans are in train to extend the programme to rural schools across the country. In South Africa, the DEEP project is being integrated into the Nelson Mandela Foundation and University of Fort Hare's Unit of Rural Schooling and Development. The project is continuing to expand into other settings and is developing new training and research programmes into how the use of ICT, particularly mobile technology, can provide quality education and professional development for children and teachers living in rural areas.

The research suggests that politicians and education planners need to:

- acknowledge the potentially key role of ICT for increasing access and improving quality learning

- ensure teacher development is not isolated from other ICT development such as those focusing on students and curriculum
- recognize that ICT policy and practice must be closely matched to local context and needs with a particular focus on classroom relevance and learner achievement
- understand that existing cost analyses are likely to be based upon outmoded ICT models and use.

In addition:

- recognize that personal or extended ICT use, together with peer and team learning, is what enables confidence and the integration of ICT into daily classroom and community practices
- understand the importance of user evaluations of both ICT hardware and software
- realise that the lack of software in teachers and children's first language (such as Xhosa and Arabic) limits the effective uses of ICT, relevant content should also be produced in local languages
- encourage the development of local and international professional e-networks so that school communities can share experiences
- build links between teacher education and agriculture, healthcare and other government services in their uses of and policies on ICT.

The use of ICT in some of the poorest parts of the world, if well planned and implemented, can have a significant impact on the confidence, self-esteem and professional knowledge of teachers. In this way, ICT offers the potential to redefine and enhance the status of teachers within communities and more broadly across the communities they work with.

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Egypt + South Africa

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