

## SECTION 4: RESEARCH IN ICTs AND HIGHER EDUCATION IN SOUTH AFRICA

### 4.1 WHO, WHAT, WHERE, HOW, HOW MUCH

Local research trends suggest increased interest in ICTs in education as the focus of attention and a new research area. National funding bodies, such as the National Research Foundation (NRF) support such research obliquely, through the focus area on ICTs, globalization and education. In response to the call for proposals by the the Council on Higher Education (CHE) in 2003, the NRF was the first to offer funding for ICTs and teaching and learning research at the post-secondary level.

While there are international conferences where issues of ICTs in higher education can be shared and debated, it is only recently that such opportunities have been taken up and expanded in South Africa. For example, the IT Directors Forum (a grouping of Directors of ICT structures across South African higher education institutions) hosts a bi-annual conference on computers in tertiary education (CITTE), which was started in 1996. At the 2004 conference, a founding member of the Forum noted that it is only recently that academic and research computing issues have been considered important (Watermeyer, 2004). The related university conferences, such as the ‘WWW in Africa’, are predominately technical, but provide a space for educational technology papers. Highway Africa, an annual conference hosted by Rhodes University’s journalism department, is naturally biased towards journalism, but inevitably intersects with some of the key digital debates.

In 2003, for the first time, the Kenton Education conference included a session with three papers on ICTs in education. There were also a number of ICT in education papers at the SAADA (South African Academic Development Association) conference in 2003. And in 2004, a pioneering two-week conference was held entirely online (<http://emerge2004.net>.) Hosted by the Multimedia Education Group (MEG), in collaboration with the Western Cape Schools Network (WCSN) and TENET, the peer reviewing of abstracts by a national committee led to 26 presentations and three workshops. Over 200 practitioners, researchers and policy-makers in secondary and tertiary education in Southern Africa registered and participated. A capacity building element included a pre-conference training programme for online moderators.

With regard to postgraduate research, the Nexus database on Master’s and doctoral research records 135 Master’s dissertations or PhD theses in the areas of technology (computers or ICTs) and teaching, learning or education since 2001. Only a small percentage of these focus on higher education. The dissertations/theses are based in Education (40%), Information Systems/Computer Science (22%), in specific disciplines (21%), in Commerce (8%) and in Information Studies (9%).

Local publications also indicate a growth in ICTs in education in the country, and there are also signs of increasing publication in international journals. One example of the growth and direction of this emerging field is revealing. A key local journal where relevant articles are to be found is the *South African Journal of Higher Education*. In this journal in 2001, there was one article on ICTs in higher education. However, there were three in 2002 and 2004, and six in 2003. The articles that have been published in SAJHE come from several different institutions. Two were from the University of Cape Town, two from the then Rand Afrikaans University, two from the University of Pretoria, and one each from the University of the Western Cape, the University of the Witwatersrand, Cape Technikon, Unisa, the then University of Natal, and the University of Stellenbosch.

Of the topics, five were 'big picture' articles: on challenges, imperatives, change and critique.<sup>7</sup> The remainder were located in specific sites (for example, information literacy and early childhood interventions) or focused on specific issues (including learning design online and online games).<sup>8</sup>

South African researchers are also publishing in relevant overseas journals, such as *Educational Media International* and *Computers in Education*. In March 2004, the *British Journal of Educational Technology* devoted a special issue to the work of the Multimedia Education Group at the University of Cape Town, signalling an interest in local understanding of internationally shared issues.

## 4.2 OBSERVATIONS ABOUT RESEARCH IN SOUTH AFRICA

### 4.2.1 The nature of the research

A review of online learning in South Africa in 2002 (van der Westhuizen, 2002) noted that local research focused largely on case studies. This trend is in line with international experience, where the preponderance of case studies and personal descriptions has been challenged (Garrison & Anderson, 2003). Although rapidly growing, much of the work can be described as preliminary.

The focus on case studies may be ascribed to the early stage in which this field of work finds itself, although in South Africa the lack of large scale and cross institutional studies may also be due to lack of large scale funding. A rare exception is a donor-funded cross-institutional Western Cape study into access to and use of ICTs in the province at five higher education institutions.<sup>9</sup> There is a glaring lack of other large scale or longitudinal studies in higher education. This is unlike the schools sector where such research study has been undertaken at national level (Lundall & Howell, 2000, Howe, Muller & Patterson, 2005). Given the rapidly changing nature of ICTs, and the unpredictable ways that ICTs and higher education practices intersect, there is an urgent need for longitudinal studies which track changes, impacts and influences over time.

Although micro-level studies exist (as mentioned above), there is also an absence of research and analysis at a national policy level. In the light of the policy fragmentation mentioned earlier, this is of particular concern. Since both education policy and IT policy formulation and analysis are substantial loci of study, this is a striking omission.

As Van der Westhuizen noted in 2002, there is surprisingly little research addressing and locating specifically local concerns, such as access and diversity. There is little research that has been located in historically disadvantaged institutions. Exceptions do, however, exist: the work of the MEG published in the *British Journal of Educational Technology* (BJET) interprets and locates the work in the diverse local context, and some interesting work is emerging (see, for example, Henning & van der Westhuizen [2004] on pedagogy and access). Nonetheless, these studies remain the exceptions rather than the norm.

<sup>7</sup> The topics were: Distributive justice and information communication technologies in higher education in South Africa (Broekman, et al, 2002), Challenges of Online Education in a Developing Country (Mashile, & Pretorius, 2003), How the Internet Necessitates a Rethink of Multimodal Education (Wentzel, & Jacobs, 2004), Technology Development: Imperatives for higher education, (Broere, Geysler, & Kruger, 2003), E-Learning: Some Critical Thoughts (Le Grange, 2004).

<sup>8</sup> Reflections on Learning Online - the Hype and the Reality (Czerniewicz, 2001); Developing a Theoretical Evaluative Framework for Information Literacy Interventions: a South African Initiative (Haberle, 2002); Early Childhood Intervention: Web-based training for Transformation (Alant & Mophosho 2003); The benefit of Introducing Audit Software into curricula for computer auditing students - A student perspective from the University of Pretoria (Coetzee & Du Bruyn, 2003); A Questioning Environment for Scaffolding Learners' Questioning Engagement with Academic Text: A University Case Study (Hardman & N'gambi, 2003); Educational Game Models: Conceptualization and Evaluation (Amory & Seagram, 2003).

<sup>9</sup> This forms part of a broader, Western Cape Carnegie funded initiative, HICTE, Enhancing Quality and Equity in Higher Education through the Innovative Application of ICT

## 4.2.2 The roles of practitioners and researchers

In this applied working environment, one needs to be mindful of the relationships between practice and research, and practitioners and researchers, especially as these generally involve a single person. However, researchers from elsewhere suggest that the roles of educational technologists, as practitioners, on the one hand, and as researchers, on the other, can be separated. They suggest that until quite recently in the UK it was likely that the same person undertook both of these roles, but that as a second generation of educational technologists arises, more differentiation is taking place. They note that there is a danger in such differentiation, given the applied nature of the field. This danger is reiterated in a local paper, which expresses concern about the ‘separation of the functions of technicians from teachers’ when gearing up for the digital era (Tomaselli & Shepperson, 2003).

It is essential to ‘ensure a continuous feedback loop in which practice, evaluation, research and theory are part of a cohesive whole’ (Armitage *et al.*, 2004). Given the roles and positions of authors of conference papers and published articles, it seems that, locally, there is a mix of reflective practitioners and researchers currently working in the field. There is an argument to be made that it is important to acknowledge the value of this diversity, and consciously to try to ensure that a dialogue of reflexive research, informed by daily practice, remains central in South Africa.

## 4.2.3 An emerging domain of enquiry

As has been noted earlier, research in this area both in South Africa and abroad is published in and emerges from a range of disciplinary locations. The most common are education, new media studies, language and literacy studies, computer science, information systems and economics. Even without considering the work that is deeply discipline based and specific, the key disciplines drawn on have quite different content, practices, theories, methods and epistemologies. It has been suggested that this leads to inconsistencies and tensions in theory and practice, owing to the fact that human sciences tend to have deconstructive (not in a Derridian sense) theories and practices while the sciences (including economics, artificial intelligence, engineering, etc.) have theories arising from constructive practices (Bolter, 2003). The interdisciplinary nature of the field has been described as both a strength – in terms of its range of expertise – and a weakness, in terms of a shared understanding (Conole, 2004).

This field of research is still in the process of defining itself and clarifying its boundaries. It is even named differently in different parts of the world. In the USA, the field is known as instructional technology, while in the UK it appears to be called learning design. European countries, such as Germany and the Netherlands, tend to call it telematics. South African researchers often choose terms on the basis of the tradition they are following, although the use of educational technology seems to be growing locally. For example, it is defined as follows in one institutional policy document:

Educational Technology – “Knowledge domain that deals with the articulation of education and information and communication technologies (ICTs)” (1). Technology used to support educational activities. It is also a domain – or sphere of knowledge, influence, or activity. (UCT Education Policy, 2003)

Educational technology is also used as a framing concept:

We are now talking about education technologies as the core collection of things. Educational Technology is much broader [than e-Learning], Educational technology is the basket, it is the

container and within that you get all these different things of which one is e-Learning. It is like a container, an umbrella. (I.C.)

Despite their different legacies, South African institutions do have a shared community of enquiry (Fish, 2001), even if Educational Technology is arguably not yet a formal disciplinary domain. There are still no shared agreements about what counts as knowledge nor have the kinds of discourse in which communication between specialists takes place been specified (Ruthven, 2000). Even in the UK, where it is more than a decade old, learning technology is described as a young field (Jones, 2004) and a relatively new discipline (Conole, 2004).

It has been agreed both internationally (see, for example, Garrison & Anderson, 2003) and locally (van der Westhuizen & Henning, 2004) that there is not yet a coherent theory of online learning, despite work taking place in many domains. There is also insufficient local work founded on theoretically nuanced and contextualised understandings of technology in education. Relevant learning theories, which firmly locate learning in context, do exist. These have been rigorously developed over the last decade and are very slowly being taken up locally. These include theories of situated cognition (Brown, J. S., Collins, A., & Duguid, P., 1989; Clancey, 1997), and distributed learning (Lea & Nicoll, 2002), new literacy theories, (Cope & Kolantzis, 2000; Lankshear, 2000 and 2002; Kress, 2000), and explored locally, for example, by Walton and Archer (2004). Activity theory (Nardi, 1996, Engestrom, 1999) now has a substantial literature (especially in Human-Computer Interaction), and is beginning to be used locally (see, for example, Hardman, 2004). It is important that local empirical research entails explicit theorising, and that such work informs and is in constant dialogue with the theory building taking place in the field internationally.

ICTs are impacting on theories of curriculum design. The five key philosophical frameworks suggested by Toohey (1999) to describe current approaches to curriculum design each implicitly imply a take-up of ICTs. The impact on these ICTs frameworks<sup>10</sup> need to be explored.

While these issues have been investigated internationally (see, for example, Johnson, 2003, on how new technologies render more authentic outcomes driven performance based types of learning), they are only beginning to be addressed in South Africa (see Blignaut, 2003, as an exception). It is important to determine why so little is understood about the uptake of ICTs locally, and why so much of the international literature has failed to problematize the relationship between ICTs and higher education change.

Many research challenges in this field are similar to other applied, rapidly changing and politicized areas of work, which draw on different disciplinary bases. It will be important in the future to pay attention to developing a solid theoretical base to underpin and inform the work, especially given its complex and collaborative nature. In an area which is too often framed by hype and hyperbole, national research agencies and other outside bodies need to play a role to encourage rigorous theory-based research, which systematically investigates actual practices. Good practice can be encouraged and steered through integration with government quality assurance processes.

The dynamic mutual engagement of theory and practice is to be encouraged. It is early days yet, and developing countries, which confront inequalities and diversity in universities daily, have a special role to play in contributing to this emerging field of enquiry.

<sup>10</sup>These approaches are t□