

INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) AND SOUTH AFRICAN HIGHER EDUCATION: MAPPING THE LANDSCAPE

SECTION 1: INTRODUCTION

1.1 THE SCOPE OF THIS RESEARCH REPORT

That higher education – globally and locally – is both in transition and under pressure, is undisputed. That Information and Communication Technologies (ICTs) form an intrinsic part of that turmoil and change, is generally agreed. The role of ICTs is described as significant (Naidu, 2003); unprecedented (Lockwood, 2003); explosive, amazing and disruptive (Garrison & Anderson, 2003). There is, as yet, no consensus regarding ICTs' impact on or relationship with higher education environments, although internationally a great deal of attention is being paid to these questions. In the South African context, it is even less clear how ICTs are being understood, particularly in relation to teaching and learning. This project is therefore an exploratory mapping exercise, which describes and explores the landscape of ICTs and higher education in South Africa since 2000. Broadly delineating the terrain, the focus is on teaching and learning within higher education. This study sets out to answer five questions:

1. How are ICTs understood and described by practitioners and researchers?
2. What policies and structures for ICTs exist nationally and institutionally?
3. What does the emerging domain of enquiry look like?
4. How do practitioners and researchers understand ICTs in terms of change in higher education?
5. What are the key issues to be noted in the ICTs and higher education terrain?

The report describes the language of ICTs in higher education both in terms of the shifting, emerging terminology and the varied understandings of ICTs in terms of national and institutional policies and reported practices. It reveals the emerging organizational forms that locate the work, and argues that despite an absence of an over-arching policy framework, policy in South Africa is being formed implicitly by practice. It moves on to describe three prevalent meanings of technological change: change as improvement; change as innovation; and change as transformation. Finally, key issues and debates, which emerge from the data “texts”, are identified and examined.

1.2 FRAMING AND METHODOLOGY

The objective of this report is not to provide a comprehensive account of what is happening on the ground, although it is clear that there is a need for this kind of survey, as there is, as yet, no large-scale audit. The investigation forms part of the process of finding ways to delineate emerging understandings and issues. The interest is in what people think about their reported practices, in ‘what is said and the thoughts about a topic or subject’. It is also useful to mention what is not being said, as well as what is said, as ‘discourse is about what is said that, in the same space, designates the unsaid’ (Foucault, 1974: 25). Being able to comment on absence and omission may be as important as noting what is taking place and what is being understood.

When describing how ICTs and change are understood in higher education, what emerges, is that it is useful to use discourse as a way of capturing how and what is understood. Discourses signify a group of statements which represent a particular kind of knowledge about a topic. These statements work together, and fit together because any one statement implies a reaction to all the others. They refer to the same object, share the same style and support a ‘strategy... a common institutional ...or political drift or pattern’ (Hall, 1992: 291). A cluster of meanings may represent a discourse in this study.

We note during our analysis that discourses intersect and are contained in one another. This is relevant, because this report weaves between discourses of change in higher education and discourses of changing pedagogical practices, and determines the role of ICTs in each case. While these are interrelated, they are treated as separate. Key understandings, and clusters of meanings are flagged; and it is noted that, in each case, closer inspection will be needed in future.

Methodologically, we use an iterative approach, working firstly, up from the data and secondly, down from the theory to locate the data in the larger theoretical frame. The literature on higher education and the sociology and philosophy of science are drawn upon. Interview transcripts, national and institutional policies and regulations as well as published journal articles by South African researchers, and to some extent, Master’s dissertations and doctoral theses are used extensively.

The main sources of data for the report are higher education institutional policies, structures and interviews. Data on the institutional policies and structures was obtained through extensive website searches and in follow-up letters to all higher education institutions in South Africa. The interviews were undertaken with 16 people in varying roles at the intersection of technology and education within university structures in South Africa. The interviewees generally hold middle-management positions. They are interpreters at the interface between policy makers, on the one hand, and academics and students, on the other. A different picture would have emerged had the respondents been either senior decision-makers or discipline-based academics or students. The respondents were keen not to be personally identified given that they often raised institutionally based problems and critiques.

Moreover, the respondents by no means comprise a comprehensive list of those working in the field. They do, however, provide a sample of a range of South African institutions (as they existed in 2004), including historically advantaged and disadvantaged, primarily English speaking and primarily Afrikaans speaking technikons and universities. The table below describes the sample in terms of the following historical institutional types.

	Description	No. of institutions interviewed	No. of individuals interviewed ¹
	Historically advantaged institutions - English medium	3	5
	Historically advantaged institutions - Afrikaans medium	5	5
	Historically disadvantaged institutions	4	4
	Newly created merged institutions	2	2

No one from the dedicated distance education providers was interviewed as the focus was on ICTs in institutions that are primarily contact institutions. In the light of current debates about whether and how the increasing use of ICTs in education may blur the traditional distinctions between these two historical institutional types (that is, distance and contact), there are a host of important issues, policy decisions and empirical investigations concerning the use of ICTs in traditionally distance mode institutions that require specific in-depth study.

¹ In some cases there was more than one individual present during an interview.

Recent work in technology studies, particularly Feenberg (1996) and Brey (2004), provides a good starting point for understanding the relationship between ICTs, and the social context (educational context) and change. Feenberg presents a typology of the relation of technology to society along two axes. He does so by introducing two dichotomies – technology as value-neutral versus technology as value-laden; and technology as autonomous versus technology as humanly controlled – and views each quadrant as representing a different position along a ‘means-ends’ line of logic. He identifies four approaches – determinist, instrumental, substantive and critical – to the relation between technology and society.

Determinist approaches view technology as neutral and as developing autonomously (as having ‘an autonomous functional logic’), but also having powerful social impacts. Technology is seen to be changing everything, from the nature of society to social practices, identities, lifestyles, interactions and leisure, to the ways that people learn and teach. Technical functions are seen to be changing the nature of society. The history of this position can be traced back to different traditions, from the determinism evident in classical Marxist theory, to recent studies claiming that information technologies are leading humankind into a new kind of society, termed variously as post-industrial society (Bell, 1976), risk society (Beck, 1999), the information society (Carnoy *et al.*, 1996) or the network society (Castells, 1996).

Instrumentalist approaches view the logical means-ends relation as important, where technology is seen as a neutral means, serving a variety of ends: social justice, empowerment, transformation, economic competitiveness, active learning, student-centred learning, critical thinking, community development, and so on. This approach emphasizes the ends (the outcomes), and views technology as the neutral means towards a variety of ends. Substantive approaches emphasize the deep substantive effects of technology on society, including subjectivities and inter-subjective spaces. While technology is not viewed as value-free, its effects are seen to be fundamentally changing the nature of society.

Finally, critical theories of technology, in which Feenberg locates his work, differ from determinist and instrumentalist approaches to technology in their emphasis on the social contexts of technology – of technology as entirely embedded in the social world. It is therefore not neutral, and should be studied as a social object. Technology is seen to be determined in both its meaning and content by the social world; and because of this, it ought, according to Feenberg, ‘to be subject to conscious social control’. In other words, democratic processes ought to play a role in deciding on the direction, design, use and impact of technology. It is not merely a means to an end – for example, technical design standards and regulations come from social processes and social struggles. This approach views technology as a site of social struggle – a ‘parliament of things’ (Feenberg, 1991: 3).² It represents a non-determinist approach and also focuses on the ‘design’ of things. The meaning of how to democratize technology may be understood by looking at such aspects as struggles over its environmental effects, union struggles over health and safety, educational issues involving access, outsourcing, copyright, and so on. These technological controversies often include questions of design and may point to new forms of resistance, or counter-tendencies to the technocratic rationality pervading social spaces and practices.³

² The Freirean idea of “technology” as a site of social struggle.

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³ Feenberg explains some of the tensions arising in what he calls “technically mediated domains” by referring to the effects of the use of computers in healthcare, for example, where “caring” (or healing) is sometimes viewed as a side-effect of “treatment” understood in technical terms, with patients viewed as mere objects of this technique. Resisting this would involve identifying counter-tendencies to the technocratic organization of medicine. This important point is also evident in studies into alternatives to the technocratic organization of education.

Feenberg's framework is a valuable point of entry, but two tensions in his typology are problematic. First, he refers to each position in the singular, which may be limiting, because each approach lumps various traditions and diverse literatures, which may often straddle determinist, substantive and critical positions, together. Second, the distinction between value-neutral and value-laden may be problematic, because 'neutrality' can arguably also be seen as a value.

Brey's (2003: 50-54) work is also useful in pointing to current thinking in technology studies, that is, that technology and society are co-constructed, or 'deeply interwoven'. Brey argues that technology is socially shaped, and that society is simultaneously shaped by technology. Social-shaping approaches assert that social factors and social processes shape technology, and oppose determinist claims of technological change as a linear process resulting from an internal technological logic. Strong versions of this approach would include social constructivist approaches. Technological-shaping approaches, in contrast, claim that technologies shape their social contexts in various ways – by opening novel possibilities for change, in their side-effects (for example, environmental pollution; unemployment), and in their multiple uses.

Technologies become part of the fabric of society, part of its very social structure and culture, transforming it in the process. ...[and] seriously affect social roles and relations; political arrangements; organizational structures; and cultural beliefs, symbols and experiences (Brey, 2003: 52-53).

Actor-network theorists, for example, view society in terms of socio-technical networks of human and non-human actors.

The assumption of a causal relationship between technology and change in other non-technological spheres is evident, but not dominant, in the empirical data that we gathered for this report, particularly in some of the policy descriptions and reported ICT practices in South African universities. Examples include the idea that introducing an online learning environment will lead to better teaching and learning, or that online activities support constructivist learning approaches. This seems to appear in policy documents and practices reported in interviews. The strongest metaphor in the higher education literature is that of ICTs as the 'catalyst' of change in higher education. The related metaphors that emerged in the interviews, conducted for this research report, are those of a staircase (with a shining light at the top), and a door (behind which is a better place). Instrumental approaches focusing on technological use are also dominant in the data, and appear in terms of the metaphor of a tool or a vehicle. The tool may be perceived as neutral or as value laden; either way, it is the social rather than the technological factors, which are seen to cause effects.

The idea that technology, in addition to other variables (in the context), can function to enhance teaching and learning and bring about other changes in higher education appears quite strongly in the data. This explanation of the role of technology also seems to suggest a causal relationship between technology and higher education change, but views technology in relation to other variables that may impact on change. This seems to be a dominant understanding of the role of technology in the data; that the context plays a central role in influencing why and what technology will be used. Educational context and needs driving the use of technology are repeatedly reported.

It was found that the emphasis on social context is particularly useful in framing the emerging issues, and this is illustrated in the discussion of four key issues at the end of this research report. Technology may enhance educational goals, depending on the context, and social factors play the leading role in determining the ICT take-up. In accordance with these views, technology should be seen in relation to the specific context of its application. The specific context shapes the way in which technology can and will be used. In South African higher education, this includes paying attention to the colonial institutional histories and inherited systemic inequalities, the division of the universities, the student body, the ideologies of administrative elites, and so on (Ravjee, 2004b: 48). The emphasis on social context is particularly evident in the narratives recorded in this project. One example is the historical legacy of unequal resources, with some universities reporting that they have sufficient laboratories and others having very few available.

Ultimately, it was necessary to problematize the concept of technology – its language, assumptions, strategies, practices and effects – in its different contexts, as a way to explore both explicit and implicit power relations. This meant accepting that technology can at times function to enhance teaching and learning, but it can also disadvantage, stigmatize and exclude people in various ways (Ravjee, 2004a: 3-4). It also necessitated an examination of the technology itself, and asking about the different meanings that it might have for different groups of people – that is, determining whether the design, for example, privileges a dominant view, culture or gender. It was also important to acknowledge the different aspects of the ways in which change is understood in practice, which may be expressed in the choice of a specific online learning environment (OLE), in terms of proprietary versus open source options, as is discussed later. Such decisions may challenge or support prevailing intellectual property relations. These choices also relate to broader issues of higher education change.

1.3 GROWTH OF ICTs IN HIGHER EDUCATION

This review of the landscape reveals that there has been an increase in interest in technology in many higher education institutions in South Africa since 2000. In other countries, the interest in technology is related to national policy frameworks, rapidly changing ICT sectors and the impetus provided by funding bodies. This is not the case in South Africa, where there are no specific technology policies in higher education explicitly steering practices. Despite this, higher education institutions are spending more of their budgets on ICT infrastructure than in previous years, in the face of a poor ICT infrastructure nationally and in higher education (as is discussed in more detail later, in the section on Key Issues, Section 6 of this report).

1.3.1 Reasons for an increased interest

There appear to be several reasons for the increased attention paid to ICTs. The most common reason deduced from the data is that universities are refocusing their positions in the global economies and in the redefined local landscapes. There seems to be consensus that the move is towards a new kind of society – a knowledge society – for which ICTs are considered a basic requirement. Such a society requires a support infrastructure in the form of people with knowledge, skills, and the ability to deliver ICT services. It also involves a reformulation of the nature of learning and of what is required of a graduate.

These views are often expressed, at both the policy level and the practitioner level, as ‘common sense’. For example, at institutional policy level the following statement is typical:

Strategic Priorities 3. Optimise student learning:

Develop and implement open learning plan (introducing new modes of learning, new teaching/learning technologies, flexible learning opportunities). (University of the Free State Strategic Priorities, Challenges, Projects And Actions: 2004 to 2006, 9)

For many, working at the interface of technology and teaching and learning, it is accepted that technology is a prerequisite for the enhancement of teaching and learning, research, and communication and access to information.

Why are we a university? We are a university because we need to educate our students; we need to prepare our young South Africans for the future in the country and the future in [a] knowledge society. And we need to create people who are knowledge worthy, that is, in that [knowledge] society. But primarily we need to give them the best possible education that we can. (I.M.)

It is acknowledged that as an academic environment you actually need an effective means of communication within that [environment, and] with your external peers and also need access to information taking into account that WWW is an important source of information sharing and information gathering. (I.P.)

A number of institutions regard technology (specifically ICTs) as playing the role of agent for educational change, while others regard technological and educational innovation as intertwined.

2.4 Technology-enhanced education

The University should exploit technology, and particularly information and communications technology, to the utmost in order to enhance its teaching and learning processes. (University of Pretoria Strategic Plan Inspiring the Innovation Generation 2002 – 2005)

While this view is widely shared, its dangers are noted in a more critical perspective that suggests that hidden in these assumptions are protectionist mechanisms supported by legislation and specific practices, which ironically end up being obstacles to innovation.

Because what people usually mean when they talk about knowledge economy is hiding knowledge and protecting it through legislation and keeping it from people and dishing it out to people in bite-size[d] chunks that you pay for and human society has developed over the years largely because knowledge is available and freely shared. ...copyright, patenting everything under the sun ... [these practices are] not protecting innovation, they are killing it. ...So yes, the knowledge economy, yes you can make money out of knowledge but you don't have to do it by protecting and hiding it. (I.H.)

The question is therefore about innovation, but ‘towards what end?’ Is it towards ‘more of the same’, albeit more efficiently, or does innovation have a transformative potential? Implicit and explicit responses to such questions are described later in this report, in the section on understandings of ICTs and change (Section 5).

Some have more prosaic reasons for embracing innovation: technology is a fact of life and has to be engaged with, and engaging with it is either a competitive necessity or the result of circumstances. In the example below, the merger of two institutions will force the issue:

... but one of the reasons why they [the other merging institution] ha[ve] suddenly become interested in the online thing is because they have to move here. ... Yes, in the medium term but they have been resisting that and I don't know how far they will actually get because the then Minister and even the new Minister are quite adamant that they must move, but certainly in the meantime we have maybe five years of being two separate campuses or maybe even longer and certainly in terms of distributing learning I think it is going to become quite important. ... I don't think medicine is something that you can very easily do at a distance, you can certainly blend it, but one of the reasons why they ha[ve] suddenly become interested in the online thing is because they have to move here. (I.M.)

A few universities had put ICT strategies in place as long ago as the late 1990s. Such strategies were part of university-wide initiatives at the universities of Stellenbosch (E-campus) and Pretoria (Virtual University). For most institutions, however, policies and strategies have only been put in place in the last few years. In a few cases, it has been impossible to find any evidence of action in this arena at all. It may be worth investigating ICT in these other institutions in order to ascertain whether or not the lack of action was a deliberate policy choice.

Interest in ICTs appears to be part of the response to the global pressures that the twenty-first century South African university has to respond to in a technology-mediated world. In general, it seems that the purpose is an attempt to join that globalized knowledge economy. It is also interesting that increasing use of ICTs does not generally appear to be part of the response to historical inequities characterizing the national terrain. We noted that none of the reasons we were given in interviews for increasing use of ICTs included the idea that technology might serve as a tool to overcome inequalities. Whether or not this initial impression is valid deserves further attention.

1.3.2 Drivers for the increased interest

The three prime movers that emerged from this study are individual academic staff (in the form of champions), senior leadership (either informally or formally) and students.

Institutional staff

In all institutional contexts, individual institutional champions were cited as drivers: staff (academic and non-academic) already using computers. There are numerous examples of ICTs being introduced into higher education by key individuals. Sometimes, they are located in pockets of group activity; at other times, they are largely isolated.

They are located in different places in the structures and hierarchies, as described below.

It is also noteworthy that these individuals come from a variety of disciplines. The ones noted in the interviews include Botany, Archaeology and Literature, but there is a multiplicity of possibilities judging by a review of the different disciplinary domains in which ICT related research is taking place.

These individual champions became involved, because they had experienced technology on a particular course, or because they were ‘playing with technology’. Many began their involvement with technology, because they had taught a course and had used ICTs for administrative support, and had then moved on to experimenting with the possibilities in teaching and learning.

Senior leadership

Sometimes, the drivers are individuals at a senior level who recognize and support activity on the ground. In one case, an individual who had been innovative with technology in Humanities courses was asked to head a teaching and learning structure reporting to the Deputy Vice Chancellor for Academic Planning. The DVC subsequently employed the same member of staff as the senior level driver for e-Learning in a structure for e-Learning – and without a policy in place. The individual commented that she “got e-Learning started on campus”.

A similar case is reported below, in which the individual appointed to the job was asked to write the University Policy Document.

How did I get to be doing this? Well, there was a post in the IT division that had been frozen for many years and it was resurrected by the then administrator who was acting as Vice Chancellor, Council and everything else and I was asked to take that post. That is how I got there. That was in November 2002.

And what do you think made them decide to unfreeze the post?

I think it was about a year before that there was a big shake up of the university and all sorts of things happened and one of them was that there was a whole strategic document drawn up for the university and ICT was recognized as strategic and ICT in curriculum in particular was recognized as strategic in the development of the university so that is how the whole thing came about. It was a very senior decision.

And that was an institutional strategy document, it was not an e-Learning one?

No, there has been no document produced since then and one of the things that I have to do is produce some sort of policy document which I am working on but that is the only document that supports the delivering of online learning. (I.M.)

These two responses are excellent examples of policy being made in practice, as described in more detail later. Indeed, strategy is evolving from practical experience in both further education and training and the final phase education sector (Strategy for Information and Communication Technology in Education, Departments of Education and Communication, 2001).

There are also examples of senior level strategic decisions being taken to support the take-up of ICTs in higher education, with several institutions making senior level strategic commitments as well as pledging significant resources for the development of ICTs. These resources were acknowledged in one instance as a way of levelling the playing fields inside the institution.

The project is 2002 to 2007.... The document said we need a quantum leap, we need money and the fusion of money to get everybody up to the same level, the minimum presence with e-Learning, e-Research, we wanted to really push that, e-Registration, you know everything “e” so what we thought at that stage was we need an infusion of money... to get everybody up to a level and then make sure that is sustainable and then move on from there so that was the motivation behind that. (I.I.)

In other cases, there is senior level support as well as energy being spent on developing institutional resources, but there are no resources to partner this commitment. As one senior-level respondent emphasized in response to a question about the specific challenges or barriers being faced, “Besides money? The first one is money, the second one is money, the third one is money and the fourth one is ...money.” (I.X).

It is of note that one respondent commented on the need for internal change to be externally driven and said that where senior leadership was lacking, outside structures should play this role. “Sometimes, outside institutions are ... needed to drive internal processes; we need to be pushed from the outside.” (I.A.)

Students

According to the data (none of which is derived directly from students), the third significant group driving the increased use of ICTs is students.

My experience has been so far that students have been absolutely hungry for change and many of our lecturers also ... and you get some people that are negative, by and large people are very hungry for the role that technology can play in changing their lives. (I.H.)

Students are also understood to be the key drivers for and in the future.

I think eventually the demand is going to come from the students. The reaction of the students to the courses that are currently online is just absolutely phenomenal, they so excited, they are so committed, it actually becomes quite a problem, because they put too much time into their online courses to the detriment of other things and the reports and the experience that I have had in the courses myself, it has just been phenomenal. So, as more and more students go online, more and more other students are going to be asking, “Why are we not [online]?” and that is going to be a driver. (I.M.)

This research has revealed that the institutional drivers for this work appear to be located inside institutions, rather than the impetus coming from direct external pressures or incentives. In the next section, the day-to-day understanding of and discourse on ICT use in selected institutions are explored.